



Technical Communication

a practical approach

8



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■ Kaye E. **Adkins** ■

Technical Communication

A Practical Approach



8th EDITION

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Warren Wilson College

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Dedication

Deepest thanks go to my family—Evelyn, Zachary, and Katie—for their love and support throughout this and every writing project I take on.

—Sandy

To those who have taught me about technical communication—Dr. Joanna Freeman, the programmers at Phoenix/SSC, TechWhirlers, my colleagues in ATTW and CPTSC, and my former students who are now practitioners in the field.

—Kaye

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Preface

Good writing is always a breaking of the soil, clearing away prejudices, pulling up of sour weeds of crooked thinking, stripping the turf so as to get at what is fertile beneath.

—Henry Seidel Canby (1878–1961), “Cultivate Your Garden”

Most writers agree with Henry Seidel Canby that writing is hard work, but well-crafted writing makes the effort worthwhile. Clear writing, of the kind we call *technical writing* or *technical communication*, helps businesses run more smoothly, helps government run more effectively, and helps all of us accomplish our goals.

To help you become an effective technical communicator, all editions of this book have stressed one simple principle: You learn to write well by doing as much writing as possible. This eighth edition adds new features that make it even more usable, without changing what has made the book work in all editions—updated models and references, clear explanations of the writing process, advice for using technology, and a new organization that emphasizes the technical communication process in the workplace context.

The eighth edition continues the use of M-Global, the fictional company that serves as the basis for many examples and assignments. M-Global provides a complex case that runs throughout the book, with examples of technical communication practices in a variety of professional fields. It reflects the communication experience of people at all stages of their careers, providing students with an insight into situations they will find as they start their careers, as well as introducing them to the kinds of communication challenges they will face as they advance professionally. The M-Global case also gives students a rich context for assignments. Students are welcomed to M-Global in the first chapter, and they learn more about the organization throughout the book, just as new employees are introduced to an organization with orientation and an employee handbook and then learn more about the organization and their colleagues as time passes.

At the start of our classes, we sometimes ask students to describe their professional goals for the next 10 years. As you might expect, they hope to rise to important positions in the workplace and make genuine contributions to their professions. Such long-term thinking is crucial, keeping you on course in your life.

Yet, ultimately, the way you handle the small details of daily life most influences the contribution you make in the long run. If you do good work, believe in what you do, and communicate well with others—both interpersonally and in writing—success will come your way. The author Robert Pirsig put it this way in his 1974 classic, *Zen and the Art of Motorcycle Maintenance*: “The place to improve the world is first in one’s own heart and head and hands, and then work outward from there.”

We believe—and this book tries to show—that clear, concise, and honest writing is one of the most powerful tools of your heart, head, and hands.

Kaye Adkins, Professor of English/Technical Communication
Missouri Western State University

William S. Pfeiffer, President
Warren Wilson College

>>> New Features of Technical Communication: A Practical Approach, Eighth Edition

Technical communication is a rapidly changing field that helps users adapt to advances in technology. At the same time, technical communicators must recognize the changes in how users access and use information about technology. Throughout this edition, you will find revisions and new information to reflect the changing field of technical communication. First of all, the chapters have been reordered and grouped to reflect how writing is created and used in today's workplace.

- **Part 1, Introduction to Technical Communication**, defines technical communication as a practice. It helps students understand how they can apply what they have learned about the writing process in an academic setting to a workplace setting. The chapter on collaboration has been moved to this section to reflect its integral role in workplace writing.
- **Part 2, Effective Workplace Documents**, introduces students to the elements of all workplace documents, including organization and document design. It also includes a chapter on the most common form of workplace writing—correspondence.
- **Part 3, Common Technical Communication Genres**, explains the common genres traditional in technical communication—definitions, descriptions, process explanations, and instructions. These genres may serve as building blocks for larger documents, or they may stand by themselves.
- **Part 4, Presenting Research**, focuses on workplace research. The chapter on research has been moved so that it is the first chapter in this section, with an emphasis on the research processes common to technical communication. Although research is the basis of articles in professional journals, it is also the foundation for most reports, proposals, and white papers.
- **Part 5, Alternatives to Print Text**, brings together chapters that will help students present information in formats other than print text. As users access more information through digital and visual formats, alternatives to print text become more important.
- **Part 6, Communicating a Professional Image**, comprises two chapters to help students begin and succeed in professional careers.

Through all of the chapters, you will find a number of other changes as well. Chapters now open with a list of objectives, and the chapter summaries are presented as easy-to-read lists of key points from the chapter. Assignments at the end of the text are now clearly marked as Analysis or Practice exercises, and assignments placed in the context of M-Global are clearly identified. New and revised figures and models also appear in every chapter. Throughout the text, there is an increased emphasis on the use of computers in technical communication.

New and revised material in each chapter includes the following:

- **Chapter 1** now emphasizes the importance of context as an influence on the writing process and written documents. The information about M-Global, the fictional company

that is the basis for cases and examples throughout the book, is now collected in a model employee orientation document at the end of the chapter.

- **Chapter 2** includes an expanded discussion of how software tools are used in the writing process.
- **Chapter 3** has been moved in this edition to emphasize that collaboration is a writing process, and that it is central to most workplace writing. The chapter has been expanded and now includes a section on writing in a Content Management System (CMS) environment.
- **Chapter 4** includes an expanded discussion of modular writing and new information about organizing digital documents for easy access by users.
- **Chapter 5** now treats document design as a whole, including navigation elements, color, fonts, and consistent design. It includes a new section on designing digital documents for a variety of platforms and an increased emphasis on the role of computers in the document design process.
- **Chapter 6** now emphasizes the qualities that make all forms of business correspondence effective. Correspondence is now categorized by its purpose and content. The chapter includes expanded discussion of how context and purpose lead writers to choose among e-mail, letters, and memos.
- **Chapter 7** has expanded the discussion of definitions and descriptions, including new ABC guidelines for organizing each. The discussion of definitions has been expanded to include the importance of definitions of abstract concepts in daily life.
- **Chapter 8** has expanded the discussion of process explanations and instructions, including new ABC formats for each. The discussion of process explanations now includes a discussion of script formats and the use of scripts, flowcharts, and lists in process explanations. The chapter also includes a new section on point-of-use documentation.
- **Chapter 9** has been revised and reorganized to explain how and why research is conducted by professionals in the workplace. It explains the importance of literature reviews as the foundation of any research. It now introduces quantitative and qualitative research, including new information about research with human subjects. The chapter clearly distinguishes between primary and secondary sources. Discussion of online tools for research has been expanded. New sections in the chapter include an ABC format for presenting technical research and usability testing as a form of research.
- **Chapter 10** now puts all of the information about informal and formal document formats in one chapter, removing redundancy from previous editions. The chapter includes a new discussion of how to format documents to suit their context and purpose.
- **Chapter 11** now emphasizes two main purposes for reports—for information and for analysis. Informative reports are explained as a means of conducting daily operations and record keeping in organizations. The chapter introduces guidelines and ABC formats for four types of informative reports: activity reports, progress reports, lab reports, and regulatory reports—a type of report new to this edition. Analytical reports are explained as a resource for problem solving in organizations. The chapter

introduces guidelines and ABC formats for four types of analytical reports: problem analyses, recommendation reports, feasibility studies, and equipment evaluations.

- **Chapter 12** now classifies proposals in three ways—as unsolicited or solicited, and as grant proposals (new to this edition). The chapter includes guidelines and ABC formats for these three types of proposals. Also new to this edition is a discussion of white papers, a type of document that is important to many organizations. The chapter includes two new models: a grant proposal and a white paper.
- **Chapter 13** includes new and updated discussion and examples. It includes two new sets of guidelines—for photographs and for screen captures. Included in the chapter is a discussion of how to take and use screen captures in documents.
- **Chapter 14** has been revised to emphasize the dynamic nature of Web pages and Web sites, and to focus on the importance of developing content with the user in mind. As Web sites have become increasingly complex, the role of technical communicators in creating and maintaining Web sites has changed. The chapter has been revised to reflect those changes. The chapter includes three new models with sample Web pages from Web sites—a professional Web site and two student Web sites.
- **Chapter 15** includes a new section on poster sessions, with information about designing and printing posters.
- **Chapter 16** includes new information on the role of networking in the job search process. The chapter also includes a new section on portfolios for technical communicators.
- **Chapter 17** has expanded the discussion of sample sentence revisions. The section on sexist language has been revised to address multiple varieties of language bias. The chapter includes new discussion of the role of style sheets and style guides in workplace writing.
- The information for speakers of **English as a second language (ESL)** has been moved from the Handbook to a separate appendix, to make it easier to access.
- A new appendix has been added with suggestions for **Further Reading**. This bibliography includes all sources cited in the textbook, as well as additional readings, organized by general chapter topic.

>>> Core Features of Technical Communication: A Practical Approach

This edition continues the emphasis on the practical aspects of technical communication in a workplace context.

Focus on Process and Product in a Workplace Context

This book has students practicing writing early (Chapter 1). The text immerses them in the process of technical writing while teaching practical formats for getting the job done.

Chapter 1 | Technical Communication in the Workplace

>>> Chapter Objectives

In this chapter, students will

- Be introduced to the key characteristics of technical communication
- Learn how workplace writing differs from academic writing
- Learn the effect of organizational culture on workplace communication
- Be introduced to communication challenges in the global economy
- Learn basic ethical principles for use in the workplace
- Be introduced to the M-Global case that is used throughout the book

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Types of Messages in Correspondence

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ABC Format Positive Correspondence

- **ABSTRACT:** Puts correspondence in the context of an ongoing professional relationship by referring to previous communication related to the subject
 - Clear statement of good news you have to report
- **BODY:** Supporting data for main point mentioned in abstract
 - Clarification of any questions reader may have
 - Qualification, if any, of the good news
- **CONCLUSION:** Statement of eagerness to continue relationship, complete project, etc.
 - Clear statement, if appropriate, of what step should come next

Numbered Guidelines

Many sets of short, numbered guidelines make this book easy to use to complete class projects. Each set of guidelines takes students through the process of finishing assignments, such as writing a proposal, doing research on the Internet, constructing a bar chart, and preparing an oral presentation.

A Simple ABC Pattern for All Documents

The “ABC format”—Abstract, Body, and Conclusion—guides students’ work in this course and throughout their careers. This underlying three-part structure provides a convenient handle for designing almost every technical document.

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Chapter 6 Correspondence

By taking an extra minute to check the style and tone of your message, you have the best chance of sending an e-mail that will be well received.

>> **E-mail Guideline 1: Use Style Appropriate to the Reader and Subject**
E-mail sent early in a relationship with a client or other professional contact should be somewhat formal. It should be written more like a letter, with a salutation, closing, and complete sentences. E-mail written once a professional relationship has been established can use a more casual style. It can resemble conversation with the recipient on the phone. Sentence fragments and slang are acceptable, as long as they contribute to your objectives and are in good taste. Most important, avoid displaying a negative or angry tone. Don’t push the Send button unless e-mail will produce a constructive exchange.

>> **E-mail Guideline 2: Be Sure Your Message Indicates the Context to Which It Applies**
Tell your readers what the subject is and what prompted you to write your message. If you are replying to a message, be sure to include the previous message or summarize the message to which you are replying. Most e-mail software packages include a copy of the message to which you are replying, as in Model 6-3. However, you should make sure that you include only the messages that provide the context for your reader. Long strings of forwarded e-mail make it difficult to find the necessary information.

>> **E-mail Guideline 3: Choose the Most Appropriate Method for Replying to a Message**
Short e-mail messages may require that you write only a brief response at the beginning or end of the e-mail to which you are responding. For complex, multi-page messages, however, you may wish to split your reply by commenting on each point individually (Figure 6-5).

>> **E-mail Guideline 4: Format Your Message Carefully**
Because e-mail messages frequently replace more formal print-based documents, they should be organized and formatted so that the readers can easily locate the information you want to communicate.

- Use headings to identify important chunks of information.
- Use lists to display a series of information.
- Use sufficient white space to separate important chunks of information.
- Use separators to divide one piece of information from another.

Figure 6-6 illustrates an e-mail message with headings, separators, and white space.

>> **E-mail Guideline 5: Chunk Information for Easy Scanning**
Break the information into coherent chunks dealing with one specific topic, including all the details that a reader needs to get all of the essential information. Depending on

M-Global, Inc.—A Fictional Company

M-Global, Inc., creates a fictional company for the classroom. Not all students have experience working in a professional or technical organization, so M-Global supplies a realistic backdrop for many of the book's examples and assignments.

Learning Portfolio

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Worldwide Locations of M-Global, Inc., Offices

U.S. Locations

- 1. Corporate headquarters—Baltimore, Maryland
- 2. Baltimore, Maryland
- 3. Boston, Massachusetts
- 4. Atlanta, Georgia
- 5. Houston, Texas
- 6. Cleveland, Ohio
- 7. St. Paul, Minnesota
- 8. St. Louis, Missouri
- 9. Denver, Colorado
- 10. San Francisco, California

Non-U.S. Locations

- 1. Caracas, Venezuela
- 2. London, England
- 3. Moscow, Russia
- 4. Munich, Germany
- 5. Nairobi, Kenya
- 6. Dammam, Saudi Arabia
- 7. Tokyo, Japan

M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

Model 1-1 Employee orientation guide for M-Global, Inc.



Daisuke Motta/Photodisc/Getty Images

Brief Project Description
In response to public concerns about the security of private data, the Kansas Department of Social and Health Services undertook a systematic documentation of all security protocols for personal information. Using the recommendations of an Information Systems Audit, M-Global created on-line and print documentation of computer security procedures.

Main Technical Tasks

- Identified procedures to be documented
- Designed information architecture for procedural documentation
- Created on-line help files to be used by computer operators
- Created print-format guide to data security procedures

Main Findings or Benefits

- Assisted in meeting public expectations of privacy of confidential information
- New documentation contributed to improved security rating in follow-up audit
- Recognized by Kansans for Security and Privacy for contributions to security of state records.

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Model 12-6 continued

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over a four-hour period, for a list with almost 200 members?
2. Read through the list of subject lines. Do any of them seem inappropriate for the M-Global [NEWS] list, given its users and its history?
3. Are there any subject lines that could be improved? Explain.
4. What do you think about Jeannie's suggestion that all messages sent to the [NEWS] list be approved before being posted? What problems do you see with this approach? What advantages?
5. What do you think of Jane's decision to assign the task of creating rules for the [NEWS] list to a college intern? What benefits does it offer Bart? What potential problems does he face in completing this task?

Write About It

Assume the role of Bart. Do some research on etiquette and decide what guidelines might apply to a list like the employee [NEWS] list. Look over the subject lines and decide what subjects, if any, should be kept off the list. Think about what advice you might offer about subject lines for the list. Do you like Jeannie's idea about messages to the list requiring approval? What alternatives are there? If your campus has a similar list (or lists) that go out to everyone, look at the subjects of that list. Your instructor may be willing to share the subjects of a day's worth of postings to any similar campus lists that she or he is on.

Write a persuasive memo to Janet that responds to Jeannie's request and explains your reasons for your decisions. Include citations from any sources that you have researched.

Collaboration at Work Choosing the Right Mode

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) use team time inside or outside of class to complete the case, and (3) produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

A century ago, business professionals had few opportunities for communication beyond the formal letter or meeting; today, the range of options is incredibly broad. On one hand, we marvel at the choices for getting our message heard or read; on the other hand, the many ways to communicate present an embarrassment of riches that can be confusing.

In other words, when you have multiple communication options, you're challenged to match the right method with the right context—right in terms of what the reader

wants and right in terms of the level of effort you should exert to suit the purpose. You may think this challenge applies only to your working life. However, it also can influence your life in college, as this exercise shows.

Team Assignment

Brainstorm with your team to list every means you have used to communicate with your college and university, from the time you applied to the present. Then for each communication option that follows, provide two or three situations for which the option is the appropriate choice:

1. Letter that includes praise
2. Letter that describes a complaint
3. Letter that provides information
4. Letter that attempts to persuade
5. Telephone call
6. E-mail
7. Memo
8. Personal meeting

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

“Write About It” Assignments in Each Chapter

Each “Communication Challenge” includes a writing assignment that asks students to analyze and respond to the challenge and the discussion questions.

Individual and Collaborative Assignments

The “Assignments” section of each chapter includes a number of projects that can be completed by students working as a class, in teams, or individually.

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Uses informative subject line.

Gives purpose of memo and highlights content.

Uses side headings for easy reading.

Shows that the change arose from their concern.

Adds evidence from outside observer.

Gives important information about Ron in first sentence.

Establishes his credibility.

Refers to attachment.

Focuses on benefit of change to reader.

Restates next action to occur.

DATE: December 4, 2012
TO: Technical Staff
FROM: Ralph Simmons, Technical Manager RS
SUBJECT: New employee to help with technical editing

Last week we hired an editor to help you produce top-quality reports, proposals, and other documents. This memo gives you some background on this change, highlights the credentials of our new editor, and explains what the change will mean to you.

PROBLEM: TIME SPENT EDITING AND PROOFREADING

At September's staff meeting, many technical staff members noted the excessive time spent editing and proofreading. For example, some of you said that this final stage of writing takes from 15 to 30 percent of the billable time on an average report. Most important, editing often ends up being done by project managers—the employees with the highest billable time.

Despite these editing efforts, many errors still show up in documents that go out the door. Last month I asked a professional association, the Engineers Professional Society (EPS), to evaluate M-Global-Boston documents for editorial correctness. (EPS performs this service for members on a confidential basis.) The resulting report showed that our final reports and proposals need considerable editing work. Given your comments at September's meeting and the results of the EPS peer review, I began

SOLUTION:

To help solve this problem, I have experience working with editors and have worked with similar organizations. Sage L. Ron, who has worked with us out of our Denver office, has proposed to take on our editing needs.

CONCLUSION:

By doing this, we can free up our resources to focus on our core mission of service to our clients. I hope you will consider this proposal.

Enclosed is a copy of the proposal.



◀ Model 6-1
◀ Model 6-2

MEMO

Silver Rush Museum
1864 Heritage Rd.
Silver City, CO 80212

Mr. John Davis
Director
National Park Service
Save America's Treasures Grant Program
4567 Ridge Rd.
Washington, DC 20240

Dear Mr. Davis:
I enjoyed speaking with you last week about the needs of the Silver Rush Museum located in Silver City, Colorado. In response to your interest in museum, I am submitting this proposal to renovate the windows of the historic museum.

This proposal outlines the history of the Silver Rush Hotel, need for renovation, and project objectives. This project will benefit the building by:

- Reglazing and painting windows, cornices, exterior wood trims, and the iconic cupola
- Renovating the historic glass panes

I'll give you a call next week to discuss and answer any questions or concerns you may have regarding this proposal.

Sincerely,

Eva Kline
Director of Museum Operations
Silver Rush Museum

Learning Portfolio

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Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?

- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Executive summary

Review the following executive summary for a formal, solicited sales proposal. Evaluate its effectiveness as an overview of the proposal.

EXECUTIVE SUMMARY

This proposal outlines features of a custom-made accessory designed for today's sailors—whether they be racers, cruisers, or single-handed skippers. The product, Teak Cam Cleat Spacers, has been developed for use primarily on the Catalina 22, a boat owned by many customers of the 10 Bosun's stores. However, it can also be used on other sailboats in the same class.

The predictable success of Teak Cam Cleat Spacers is based on two important questions asked by today's sailboat owners:

- Will the accessory enhance the boat's appearance?
- Will it make the boat easier to handle and therefore more enjoyable to sail?

This proposal answers both questions with a resounding affirmative by describing the benefits of teak spacers to thousands of people in your territory who own boats for which the product is designed. This potential market, along with the product's high profit margin, will make Teak Cam Cleat Spacers a good addition to your line of sailing accessories.

2. Analysis: Conclusion

Review the following conclusion section from a formal, solicited sales proposal. Discuss its tone and page design. Are they appropriate to a formal solicited proposal? Is the use of a numbered list effective?

Conclusion

Why should a marine supply dealer consider carrying Teak Cam Cleat Spacers? This product satisfies two common criteria of sailboat owners today: It enhances the appearance of any sailboat, and it makes the boat easier to handle. The potential success of this product is based on its ability to meet these criteria and the following features and benefits:

1. It is a high-quality, ornamental cleating.
2. It is ideally suited for a variety of sailing whether they are racing, cruising, or sailing single-handedly.
3. It is a high-quality, handcrafted product that enhances the appearance of any sailboat.
4. It is a product that benefits the dealer by making a valuable addition to her or his inventory. It complements existing sail accessories and satisfies a customer need.
5. It is geared toward a stable potential market. Today there are thousands of sailboats in the class for which this accessory is designed.
6. It is affordably priced and provides a good profit margin.

3. Analysis, M-Global context: Solicited Proposal

Review the solicited proposal that follows, submitted by MainAlert Security Systems to the M-Global, Inc., office in Atlanta. Evaluate the effectiveness of every section of the proposal.

Annotated Models

The text contains models grouped at the end of chapters on pages with color edging for easy reference. Annotations in the margins are highlighted in color and show exactly how the sample documents illustrate the guidelines set forth in the chapters.

>>> Additional Features Define the Book's Mission and Demonstrate Its Utility in the Classroom

Learning Portfolio 203

>>> Learning Portfolio

Communication Challenge Biofuels Brainstorm: Describing New Technologies

Sylvia Barnard, manager of the Denver branch of M-Global, has a special interest in the energy industry. As a geologist working in oil and gas exploration, she joined M-Global to contribute to its construction projects in the oil and gas industry, such as oil fields and refineries. Sylvia wants to see M-Global respond to changes in the energy industry by diversifying into work on biofuels projects. This case study explains her approach to the problem. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Research

As a first step in developing a proposal for Jim McDuff, Sylvia wants to learn more about the biofuels industry and biofuels technology. Although she has read about biofuels in newspapers and general news magazines, she knows that to propose that M-Global enter the field, she must have more specialized knowledge about what biofuels are. With better understanding of the technology, she will be able to focus her proposal on the ways in which M-Global's experience in the oil and gas industry can be transferred to construction projects in the biofuels industry. After her research, she decides to focus on the following types of fuels:

- Biodiesel
- Bioalcohols
- Biogas
- Cellulosic biofuels

The Report

Before she writes her proposal, Sylvia decides to create a report that compares refineries and refinery construction needs for biofuels to the oil and gas refineries that M-Global has worked on in the past. The report will be primarily descriptive. It must define biofuels and describe the equipment and site construction needs of biofuels refineries.

Sylvia knows that M-Global has a history of looking for opportunities in new technologies. In fact, in the 1970s, the company (then McDuff, Inc.) began work in hazardous waste disposal. (See Model 1-1 on pages 26–35.) At the time, however, it was clear that there was a need for such services, and that the technology was rapidly

developing. Sylvia is concerned that her enthusiasm for biofuels may be premature. Although there are companies building biofuel refineries, many of them seem more focused on the environmental issues than on long-term profitability. Her research also suggests that the technology is in its early stages. She worries that it might be too early for M-Global to get into the biofuels industry, but she decides to write the report anyway.

Questions and Comments for Discussion

1. How can Sylvia use her knowledge of M-Global's history, especially Rob McDuff's interest in environmental issues, to make her report appealing to Jim McDuff? Should Sylvia let Jim know that she plans to follow this report with a proposal? If so, why and what should she tell him?
2. What must Jim McDuff understand about biofuels before he can make a decision about exploring the opportunity further? What illustrations might help him make his decision?
3. What terms must Sylvia define? What kinds of definitions should she write, and where should they be included in the report?
4. Should Sylvia include her concerns about the fact that the biofuels industry is in its early stages? If so, what should she say? Should she even send the report, or should she save it until the biofuels industry is better established?

Write About It

Sylvia has assigned you the task of writing a short description of biofuels that she can include in various documents related to her biofuels proposal. Write a one-page description of biofuels that could be used or adapted to a variety of documents related to the biofuels initiative at M-Global. You should define biofuels and describe them. You may decide to compare different types of biofuels that Sylvia has decided to focus on (classification) or you may decide to compare them to oil and gas products (comparison/contrast). Use illustrations as appropriate. Include a list of references on a separate page.

Communication Challenges

Every chapter includes an M-Global case study, with related questions and a short writing assignment. Called a “Communication Challenge,” each case describes a communication problem that relates to the material in its respective chapter. These case studies can be used as a springboard for class discussion or for project assignments.

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Write About It

Assume the role of Bart. Do some research on netiquette and decide what guidelines might apply to a list like the employee [NEWS] list. Look over the subject lines and decide what subjects, if any, should be kept off the list. Think about what advice you might offer about subject lines for the list. Do you like Jeanie's idea about messages to the list requiring approval? What alternatives are there? If your campus has a similar list (or lists) that go out to everyone, look at the subjects of that list. Your instructor may be willing to share the subjects of a day's worth of postings to any similar campus lists that she or he is on.

Write a persuasive memo to Janet that responds to Jeanie's request and explains your reasons for your decisions. Include citations from any sources that you have researched.

Collaboration at Work Choosing the Right Mode

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) use team time inside or outside of class to complete the case, and (3) produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Team Assignment

Brainstorm with your team to list every means you have used to communicate with your college and university, from the time you applied to the present. Then for each communication option that follows, provide two or three situations for which the option is the appropriate choice:

1. Letter that includes praise
2. Letter that describes a complaint
3. Letter that provides information
4. Letter that attempts to persuade
5. Telephone call
6. E-mail
7. Memo
8. Personal meeting

Collaboration at Work

Each chapter also includes a “Collaboration at Work” exercise that engages the student’s interest in the chapter content by getting teams to complete a simple project.

180 Chapter 6 Correspondence

Write a one-page memo to your supervisor recommending the purchase. You might want to consider criteria such as

- Relevance of information in the source to the job
- Level of material with respect to potential readers
- Cost of book or periodical as compared with its value
- Amount of probable use
- Important features of the book or periodical (such as bibliographies or special sections)

16. Persuasive Memo Practice, M-Global Context—Request

Assume you work at an M-Global office and have no undergraduate degree. You are not yet sure what degree program you want to enter, but you have decided to take one night course each term. Your M-Global office has agreed to pay 100 percent of your college expenses on two conditions. First, before taking each course, you must write a memo of request to your supervisor, justifying the value of the class to your specific job or to your future work with the company. Clearly, your boss wants to know that the course has specific application or that it will form the foundation for later courses. Second, you must receive a C or better in every class for which you want reimbursement.

Write the persuasive memo just described. For the purpose of this assignment, choose one course that you actually have taken or are now taking. Yet in your simulated role for the assignment, write as if you have not taken the course.

18. International Communication Assignment

E-mail messages can be sent around the world as easily as they can be sent to the next office. If you end up working for a company with international offices or clients, you probably will use e-mail to conduct business.

Investigate the e-mail conventions of one or more countries outside your own. Search for any ways that the format, language, or style of e-mail e-mail may differ from e-mail in your country. Gather information by collecting hard copies of e-mail messages sent from other countries, interviewing people who use international e-mail, or consulting the library for information on international business communication. Write a memo to your instructor in which you (1) note differences you found and (2) explain why these differences exist. If possible, focus on any differences in culture that may affect e-mail transactions.

19. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Whether you commute or live on campus, your everyday life at a college or university may be influenced by student

Coverage of International Communication

Because globalism continues to transform the business world, this book includes suggestions for understanding other cultures and for writing in an international context. In addition, each chapter’s set of exercises ends with an “International Communication Assignment.”

Assignments on Ethics

To reinforce the ethical guidelines described in Chapter 1, each chapter includes an ethics assignment. No one can escape the continuous stream of ethical decisions required of every professional almost every day, such as deciding what tone to adopt in a proposal. The text addresses ethical issues in these assignments.

294 Chapter 9 Technical Research

9. Practice: Interview
Select a simple research project that would benefit from information gained from an interview. (Your project may or may not be associated with a written assignment in this course.) Using the suggestions in this chapter, conduct the interview with the appropriate person.

10. Practice: Usability Test
Choose a simple, specific task for using a computer program that you have access to, for example, changing paragraph format. Identify the aspect of usability that you will test, such as how long it takes a user to complete the task, how many errors a user makes while trying to complete the task, or how many clicks it takes a user to find information in a Help file. Practice the task several times yourself to determine the criteria for a successful interface. How many minutes? How few errors? How many clicks?

Pair up with a class member and administer your usability test, recording your data. Your instructor may ask you to include a think-aloud protocol in your test. Write a brief report of your results, including whether the interface was successful for your user.

11. Ethics Assignment
This assignment is best completed as a team exercise.
Assume your team has been chosen to develop a Web-based course in technical communication. Team members are assembling materials on a Web site that can be used by students like you—materials such as (1) guidelines and examples from this book, (2) scholarly articles on communication, (3) newspaper articles and graphics from print and online sources, and (4) examples of technical writing that have been borrowed from various engineering firms.

Your team has been told that generally speaking, the "fair use" provision of the Copyright Act permits use of limited amounts of photocopied material from copyrighted sources without the need to seek permission from, or provide payment to, the authors—as long as use is related to a not-for-profit organization, such as a college. Your tasks are as follows:

A. Research the Copyright Act to make sure you understand its application to conventional classroom use. If possible, also locate any guidelines that relate to the Internet.

12. International Communication Assignment
Using interviews, books, periodicals, or the Internet, investigate the degree to which writers in one or more cultures besides your own acknowledge borrowed information in research documents. For example, you may want to seek answers to one or more of the following questions: Do you believe acknowledging the assistance of others is a matter of absolute ethics, or should such issues be considered relative and therefore influenced by the culture in which they arise? For example, would a culture that highly values teamwork and group consensus take a more lenient attitude toward acknowledging the work of others? These are not simple questions. Think them through carefully.

13. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)
Interview two or three students to find out why they do or do not participate in student elections on campus. On the basis of information you gather from the interviews, develop a survey form by which you systematically solicit information on the topic from a wider audience. Administer the survey to at least 10 students and include the results in an oral or written report, depending on the instructions you are given.

Appendix A

>>> Handbook

This handbook includes entries on the basics of writing. It contains three main types of information:

1. **Grammar:** The rules by which we edit sentence elements. Examples include rules for the placement of punctuation, the agreement of subjects and verbs, and the placement of modifiers.
2. **Mechanics:** The rules by which we make final proofreading changes. Examples include the rules for abbreviations and the use of numbers. A list of commonly misspelled words is also included.
3. **Usage:** Information on the correct use of particular words, especially pairs of words that are often confused. Examples include problem words like *affect/effect*, *complement/compliment*, and *who/whom*.

Another editing concern, technical style, is the topic of Chapter 17, including guidelines for sentence structure, conciseness, accuracy of wording, active and passive voice, and unbiased language. Together, Chapter 17 and this handbook will help you turn unedited drafts into final polished documents.

This handbook is alphabetized for easy reference during the editing process.

A/An

A and *an* are different forms of the same article. *A* occurs before words that start with consonants or consonant sounds. EXAMPLES:

- a three-pronged plug
- a once-in-a-lifetime job (once begins with the consonant sound of *w*)
- a historic moment (many speakers and some writers mistakenly use *an* before *historic*)

An occurs before words that begin with vowels or vowel sounds. EXAMPLES:

- an eager new employee
- an hour before closing (*hour* begins with the vowel sound of *o*)

A lot/Alot

The correct form is the two-word phrase *a lot*. Although acceptable in informal discourse, *a lot* usually should be replaced by more precise diction in technical writing. EXAMPLE: "They retrieved 25 [not *a lot of*] soil samples from the construction site."

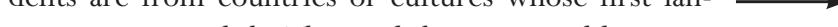
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Writing Handbook

This book provides a well-indexed, alphabetized writing handbook on grammar, mechanics, and usage that gives quick access to rules for eliminating editing errors during the revision process.

Information on English as a Second Language

A growing number of technical communication students are from countries or cultures whose first language is not English. The English as a second language (ESL) appendix focuses on three main problem areas: articles, prepositions, and verb use. It also applies ESL analysis to an excerpt from a technical report.



Appendix B

English as a Second Language (ESL)

Technical writing challenges native English speakers and nonnative English speakers alike. The purpose of this appendix is to present a basic description of three grammatical forms: articles, verbs, and prepositions. These forms may require more intense consideration from international students when they complete technical writing assignments. Each form is described by means of the ease-of-operation section from a memo about a fax machine. The passage, descriptions, and charts work together to show how these grammar forms function collectively to create meaning.

Ease of Operation: Article Usage

The AIM 500 is so easy to operate that a novice can learn to transmit a document to another location in about two minutes. Here's the basic procedure:

1. Press the button marked TEL on the face of the fax machine. You then hear a dial tone.
2. Press the telephone number of the person receiving the fax on the number pad on the face of the machine.
3. Lay the document face down on the tray at the back of the machine.

>>> Your One-Stop Source for Technical Communication Resources



MyTechCommLab for Technical Communication: A Practical Approach, Eighth Edition

Instructors who package MyTechCommLab with *Technical Communication* provide their students with a comprehensive resource that offers the very best multimedia support for technical writing in one integrated, easy-to-use site. Features include tutorials, case studies, interactive model documents, activities, quizzes, Web links, multimedia resources, downloadable PDFs of Pearson publications, the Longman Online Handbook, and Pearson's unique MySearchLab feature for conducting research. MyTechCommLab is available packaged with *Technical Communication* at no additional cost or for purchase at www.mytechcommlab.com.

>>> Instructor's Resources

All instructor's resources are available for download at the Instructor's Resource Center. To access additional support materials online, instructors need to request an instructor access code. Go to www.pearsonhighered.com/irc, where you can register for an instructor access code. Within 48 hours of registering you will receive a confirming e-mail, including an instructor access code. Once you have received your code, locate your text in the online catalog and click on the Instructor Resources button on the left side of the catalog product page. Select a supplement, and a log-in page will appear. Once you have logged in, you can access instructor material for all Prentice Hall textbooks.

■ Instructor's Manual

An expanded Instructor's Manual is loaded with helpful teaching notes for your classroom, including answers to the chapter quiz questions, a test bank, and instructor notes for assignments and activities.

■ MyTest Test Bank

■ PowerPoint Lecture Presentation Package

■ Templates for M-Global Letterhead and Planning Forms

■ Companion Website. www.pearsonhighered.com/pfeiffer

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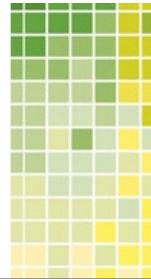
Four companies allowed us to use written material gathered during Sandy’s consulting work: Fugro-McClelland, Law Engineering and Environmental Services, McBride-Ratcliff and Associates, and Westinghouse Environmental and Geotechnical Services. Although this book’s fictional firm, M-Global, Inc., has features of the world we observed as consultants, we want to emphasize that M-Global is truly an invention.

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Chapter | 1 | Technical Communication in the Workplace



>>> Chapter Objectives

In this chapter, students will

- Be introduced to the key characteristics of technical communication
- Learn how workplace writing differs from academic writing
- Learn the effect of organizational culture on workplace communication
- Be introduced to communication challenges in the global economy
- Learn basic ethical principles for use in the workplace
- Be introduced to the M-Global case that is used throughout the book

Good communication skills are essential in any career you choose. Jobs, promotions, raises, and professional prestige result from your ability to present both written and visual information effectively. With so much at stake, you need a clear road map to direct you toward writing excellence. *Technical Communication: A Practical Approach* is such a map. Chapters 1–3 of *Technical Communication: A Practical Approach* give you an overview of technical writing and prepare you to complete the assignments in this book. Chapters 4–6 give you a foundation for effective work-

place writing. Chapters 7 and 8 introduce basic genres of technical communication documents. Chapters 9–12 discuss the ways that research is usually presented in the workplace, in more complex documents such as reports and proposals. Chapters 13–15 show you how to present information in nonprint formats. The last two chapters, 16 and 17, will help you present a professional image in workplace situations.

This textbook also includes examples and assignments set in the context of M-Global, Inc., an international company that is explained later in the chapter.

>> Writing in the Workplace

Effective communicators understand the needs of the context in which they are speaking and writing, what Lloyd Bitzer has labeled the “rhetorical situation.”¹ This understanding means they must respond to audience expectations about appropriate content, form, and tone for a particular setting. You may have taken other writing courses that taught you how to write for an academic context. Although techniques you learned will help you with workplace writing, there are important differences between writing in academic and workplace contexts. This section highlights features of traditional academic writing on the one hand and workplace communication on the other.

Features of Academic Writing

Academic writing requires that you use words to display your learning to someone who knows more about the subject than you do; thus, the purpose of most academic writing is evaluation of the writer. Because your reader’s job is to evaluate your work, you have what might be called a captive audience. The next section examines a different kind of writing—the kind you will be doing in this course and in your career. Note the similarities to the kind of writing you have been doing in other classes. Planning, drafting, and revising are important, even for short correspondence. Clear organization is essential. Finally, your purpose should be clear, and you should understand your audience, even though the purpose and audience differ considerably from those of academic writing.

Features of Workplace Communication

The rules for writing shift somewhat when you begin your career. Employees unprepared for this change often flounder for years, never quite understanding the new

¹L. F. Bitzer. (1992). The rhetorical situation. *Philosophy and Rhetoric*, 1, 1–14.

■ **Table 1–1** ■ Features of academic and workplace writing

Features	Purpose	Writer's knowledge of topic	Audience	Criteria for evaluation	Graphic elements
Academic writing	Communicating what the student knows about the topic, to earn a high grade	Less than the teacher who evaluates the writing	The teacher who assigned the project	Depth, logic, clarity, unity, supporting evidence, and grammar	Sometimes used to explain and persuade
Workplace writing	Getting something done within an organization	Usually more than the reader's knowledge	Often several people with differing professional backgrounds	Clear content organization, appropriate to the needs of busy readers	Frequently used to help readers find information and understand ideas

rules. *Workplace communication* is a generic term for all written and oral communications done on the job—whether in business, industry, or other professions. The terms *professional writing*, *business writing*, and *occupational writing* also refer to writing done in your career.

Besides projects that involve writing, your career will also bring you speaking responsibilities, such as formal speeches at conferences and informal presentations at meetings. Thus this textbook covers the full range of the writing and speaking formats required to communicate your ideas on the job. Table 1–1 compares common features of academic writing and workplace writing.

Organizations depend on writing for clear communication, effective action, and necessary record keeping. Although the forms of written communication are changing rapidly, clear, concise, and accurate writing is essential. With increasing use of electronic communication, employees may even be writing more than they have in the past. As an employee, you may be writing to readers in the following groups:

- Supervisors and their superiors
- Colleagues in your own department
- Subordinates in your department
- Employees at other departments or branches
- Clients
- Subcontractors and vendors

You will write a variety of documents for internal and external audiences. Figure 1–1 lists some typical on-the-job writing assignments. Although not exhaustive, the list does include many of the writing projects you will encounter.

■ Figure 1-1 ■

Examples
of technical
communication

Correspondence: In-house or External

- Memos to your boss and to your subordinates
- Routine letters to customers, vendors, etc.
- “Good news” letters to customers
- “Bad news” letters to customers
- Sales letters to potential customers
- Electronic mail (e-mail) messages to co-workers or customers over a computer network

Short Reports: In-house or External

- Analysis of a problem
- Recommendation
- Equipment evaluation
- Progress report on project or routine periodic report
- Report on the results of laboratory work or fieldwork
- Description of the results of a company trip

Long Reports: In-house or External

- Complex problem analysis, recommendation, or equipment evaluation
- Project report on field or laboratory work
- Feasibility study

Other Examples

- Proposal to boss for new product line
- Proposal to boss for change in procedures
- Proposal to customer to sell a product, a service, or an idea
- Proposal to funding agency for support of research project
- Abstract or summary of technical article
- Technical article or presentation
- Operation manual or other manual
- Web site

>>> Defining Technical Communication

Technical communication is characterized by the following goals and features:

- Technical communication aims to help people make decisions and perform tasks.
- Technical communication responds to the needs of the workplace.
- Technical communication is created by an informed writer conveying information both verbally and visually to a reader who needs the information.
- Technical communication is read by readers who have specific questions to answer or tasks to accomplish.
- Technical communication emphasizes techniques of organization and visual cues that help readers find important information as quickly as possible.

■ **Figure 1-2 ■**
Short report

MEMORANDUM

DATE: December 6, 2011
TO: Holly Newsome
FROM: Michael Allen
SUBJECT: Printer Recommendation

Introductory Summary

Recently you asked for my evaluation of the Hemphill 5000 printer/fax/scanner/copier currently used in my department. Having analyzed the machine's features, print quality, and cost, I am quite satisfied with its performance.

Features

Among the Hemphill 5000's features, I have found these five to be the most useful:

1. Easy-to-use control panel
2. Print and copy speed of up to 34 pages per minute for color and black-and-white
3. Ability to print high-quality documents like brochures & report covers
4. Built-in networking capability
5. Ability to scan documents to or from a USB port

In addition, the Hemphill 5000 offers high-quality copies, color copies, and faxes, and it uses high-capacity ink cartridges to reduce costs.

Print Quality

The Hemphill 5000 produces excellent prints that rival professional typeset quality. The print resolution is 1200 x 1200 dots per inch, among the highest attainable in combination printer/fax/scanner/copiers. This memo was printed on the 5000, and as you can see, the quality speaks for itself.

Cost

Considering the features and quality, the 5000 is an excellent network combination printer for work groups within the firm. At a retail price of \$239, it is also one of the lowest-priced combination printers, yet it comes with a two-year warranty and excellent customer support.

Conclusion

On the basis of my observation, I strongly recommend that our firm continue to use and purchase the Hemphill 5000. Please call me at ext. 204 if you want further information about this excellent machine.



M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

See Figure 1–2 for an example of a short technical document. Note that it has the five features of technical communication listed previously.

1. It is written to get something done—that is, to evaluate a printer.
2. It is sent from someone more knowledgeable about the printer to someone who needs information about it.

3. Although the memo is directed to one person, the reader probably will share it with others before making a decision concerning the writer's recommendation.
4. It is organized clearly, moving from data to recommendations and including headings.
5. It provides limited data to describe the features of the printer.

Although technical communication plays a key role in the success of all technical professionals and managers, the amount of time you devote to it will depend on your job.

>> Culture in Organizations

The first part of this section presents three features common to the culture of any organization that may employ you. Then the second part concentrates on the larger context for corporate culture—the business climate.

Elements of an Organization's Culture

We use the term *organization* to remind you that in addition to commercial firms, there are many career opportunities in government and even in nonprofit organizations. As noted earlier, the writing you do in an organization differs greatly from the writing you do in college. The stakes on the job are much higher than a grade on your college transcript. Writing directly influences the following:

- Your performance evaluations
- Your professional reputation
- Your organization's productivity and success in the marketplace

Given these high stakes, let's look at typical features of the organizations where you may spend your career.

Organizational culture: The main features of life at a particular organization. An organization's culture is influenced by the firm's history, type of business, management style, values, attitude toward customers, and attitude toward its own employees. Taken together, all features of a particular organization's culture create a definable quality of life within the working world of that organization.

Starting a job is both exciting and, sometimes, a bit intimidating. Although you look forward to practicing skills learned in college, you also wonder just how you will fare in new surroundings. Soon you discover that any organization you join has its own personality. This personality, or culture, can be defined as follows:

Let's look more closely at three features mentioned in the preceding definition: a firm's history, its type of business, and its management style.

>> Feature 1: Organization History

A firm's origin often is central to its culture. For example, the culture of a 100-year-old steel firm depends on accumulated traditions to which most employees are accustomed; in contrast, the culture of a recently established software firm may depend more on the entrepreneurial spirit of its founders. Thus the facts, and even the mythology, of an organization's origin may be central to its culture, especially if the person starting the firm remained at the helm for a long time.

>> Feature 2: Type of Business

Culture is greatly influenced by an organization's type of business. Many computer software firms, for example, are known for their flexible, nontraditional, innovative, and sometimes chaotic culture. Some of the large computer hardware firms, however, have a culture focused more on tradition, formality, and custom.

>> Feature 3: Management Style

A major component of an organization's culture is its style of leadership. Some organizations run according to a rigid hierarchy, with all decisions coming from the top. Other organizations involve a wide range of employees in the decision-making process. As you might expect, most organizations have a decision-making culture somewhere between these two extremes.

An organization's culture influences who is hired and promoted at the firm, how decisions are made, and even how company documents are written and reviewed. Now let's examine the larger context for an organization's culture—the business climate.

Business Climate

An organization's culture is not isolated from the cultures of other organizations, or from the wider culture or cultures in which it is located. Organizations, especially businesses and corporations such as M-Global, must respond to the business climate.

To compete in today's global business climate, companies are focusing on quality and efficiency. To improve quality, companies seek to respond quickly to customer needs and to encourage employee interest in the success of the organization through an emphasis on team building and employee input. To improve efficiency, companies work to improve productivity while reducing costs. This climate has resulted in such strategies as just-in-time delivery and improved use of communication technology.

Two practices that are being used more often in the global business climate are outsourcing and offshoring. Outsourcing is the practice of purchasing goods or subcontracting services from an outside company. Both the client company and the company that is providing the goods or services may be in the same country, or they may be in different countries. Offshoring happens when a company moves some of its operations to another country. This practice is often done to reduce labor costs, but it may also help a company work more efficiently by creating offices closer to suppliers or clients. Although both practices are changing the workplace, they also offer opportunities for companies and employees who are prepared for the global marketplace.

Business climate: The economic and political factors that influence an organization's priorities, plans, and activities. These factors include competition, investor interests, regulations, and the overall health of the economy.



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>>> The Global Workplace

Very possibly, you will end up working for an organization that does some of its business beyond the borders of its home country. It may even have many international offices, as does M-Global. Such organizations face opportunities and challenges of diversity among employees or customers. They seek out employees who are able to view issues from a perspective outside their own cultural bias, which we all have. This section examines work in the global workplace, with emphasis on suggestions for writing for readers in different cultures.

Communication has entered what might be seen as its newest frontier—intercultural and international communication. More than ever before, industries that depend on good communication have moved beyond their national borders into the global community. Some people criticize internationalism and the so-called shrinking of the planet. They worry about the possible fusion of cultures and loss of national identities and uniqueness; others welcome the move toward globalism. Whatever your personal views, this phenomenon is with us for the foreseeable future. Following are some practical suggestions for dealing with it.

Understanding Cultures

In studying other cultures, we must avoid extremes of focusing exclusively on either the differences or similarities among cultures. On the one hand, emphasizing differences can lead to inaccurate stereotypes; large generalizations about people can be misinformed and thus can impede, rather than help, communication. On the other hand, emphasizing similarities can tend to mask important differences by assuming we are all alike—one big global family. The truth is somewhere in between. All cultures have both common features and distinctive differences that must be studied. Such study helps set the stage for establishing productive ties outside one's national borders, especially in fields such as technical communication.

Exactly how do we go about studying features of other cultures? Traditionally, there are two ways. One touches only the surface of cultural differences by offering simplistic dos and don'ts, such as the following:

1. In Japan, always bow as you greet people.
2. In Mexico, be sure to exchange pleasantries with your client before you begin to discuss business.
3. In Germany, do not be a minute late for an appointment.
4. In China, always bring gifts that are nicely wrapped.

These and hundreds of other such suggestions may be useful in daily interactions, but they do not create cultural understanding and often present inaccurate stereotypes of the way people operate.

The other, more desirable, approach goes below the surface to the deeper structure of culture. It requires that we understand not only what people do, but also why they do

it. Although learning another language certainly enhances one's ability to learn about another culture, linguistic fluency alone does not in and of itself produce cultural fluency. One must go beyond language to grasp one essential point:

People in different cultures have different ways of thinking, different ways of acting, and different expectations in communication.

To be sure, there are a few basic ethical guidelines evident in most cultures with which you will do business, but other than these core values, differences abound that should be studied by employees of multinational firms. These differences must be reflected in communication with colleagues, vendors, and customers.

One of the ways that differences between cultures can be understood is through the concepts of high-context cultures and low-context cultures. *High-context cultures* are fairly homogeneous, with the culture providing a high degree of context for communication. Thus, communications may be less explicit because members of the culture share characteristics such as religion, ethnic background, and education. Think about the way that you communicate with members of your family. With a few words, you can tell a whole story, for example: "It's just like Uncle Bill's first car." To outsiders, this means nothing, but members of your family immediately understand the situation. Important characteristics of high-context cultures include

- Clear distinctions between insiders and outsiders
- A focus on maintaining relationships, on saving face, and on helping others save face
- A dependence on internalized cultural norms to govern behavior

Low-context cultures consist of diverse religions, ethnic backgrounds, and educational levels; as a result, communication must be explicit, because members of a group cannot assume that they share knowledge or attitudes. The culture provides a low degree of context for communication. The United States is an example of a low-context culture. Important characteristics that affect communication in low-context cultures include

- Openness to outsiders
- A focus on actions and solving problems, with a willingness to disagree openly
- A dependence on formally established rules to govern behavior

Although these concepts provide a starting point for learning about other cultures, interactions between cultures in the global marketplace can be very complex, as suggested by Nancy Settle-Murphy, a cross-cultural consultant, and summarized by Jan Pejovic in Table 1–2.

The concept of low-context and high-context cultures offers a general way of thinking about how to relate to clients and colleagues in other cultures and countries, but if you find yourself working in a global, intercultural setting, you should understand the specific cultural practices of those you are working with. Companies in the United States can get information about the cultures and business practices of other countries from the U.S. Commercial Service of the Department of Commerce, as well as from organizations

■ **Table 1–2** ■ Cultural differences. Table by Nancy Settle-Murphy of Guided Insights.

Source: Pejovic, J. (2006, May). Trans-Atlantic Roundtable. *Intercom*, 53, 12.

Category	Cultural differences
Big picture vs. details	<p>People from “high-context” cultures tend to derive their most valuable information from the context that surrounds words rather than the actual words. Precise details may be less important than the broader context.</p> <p>People from “low-context” cultures pay more attention to the words and details than to the overall context. They see the trees but may not always see the forest.</p>
Order vs. chaos	<p>“Monochronic” cultures are more comfortable taking one thing at a time. Following the correct order or using the right process can seem almost as important as achieving the desired outcome. Unstructured conversations and interruptions can be unsettling.</p> <p>“Polychronic” cultures cope well with simultaneous activities and see interruptions as a necessary and natural way of doing business.</p>
Formal vs. informal	<p>Some cultures have a more compartmentalized communications flow, where information is parceled out on a need-to-know basis, usually top-down.</p> <p>In other cultures, people share information more freely among all levels, back and forth and up and down, and maintain multiple channels of communications, both formal and informal.</p>
Motivations and rewards	<p>In some cultures, achieving personal recognition or widespread popularity may be the chief motivators.</p> <p>People from other cultures may be more motivated by their contributions toward building a stronger company or a more harmonious organization. Financial rewards are less important to some than to others.</p>
Quality vs. quantity of decisions	<p>People from certain cultures like to make decisions only after they have carefully solicited input and gained buy-in from multiple perspectives. Such a methodical process may take more time up front, but once decisions are made, results are usually achieved quickly.</p> <p>For others, speed trumps quality, even if it means that hurried decisions are eventually revisited and work must be redone.</p>
Giving and receiving feedback	<p>People from some cultures seek constant validation for the quality of their work, and may assume that the absence of feedback signals at least mild disappointment. These same people tend to provide frequent unsolicited feedback.</p> <p>Others assume that unless they hear otherwise, the quality of their work is just fine. Some feel a need to lead with the positive before delving into the negative when giving feedback, while others regard “sugarcoating” as confusing and unnecessary.</p>
Expressing opinions	<p>In some cultures, people tend to break in frequently to ask questions, pose challenges, or openly disagree, while others prefer to maintain group harmony by never openly disagreeing, especially in front of a group.</p> <p>Some tend to allow others to speak before voicing their own opinions, while others speak over others’ voices if that’s what it takes to get heard.</p> <p>Some need silence to think (and to translate into their native language and back again), and others are uncomfortable with silence, rushing in to fill a pause.</p>
Role of managers	<p>In cultures where egalitarianism is prized, team members tend to have equal say when making decisions and setting priorities, regardless of seniority. Managers are seen as organizers and enablers, helping to set strategy, remove roadblocks, and otherwise grease the skids for moving in the right direction.</p> <p>In cultures where hierarchy is important, managers typically make decisions and pass them down to team members, who implement the decisions and report back to management.</p>
Willingness to sacrifice personal time	<p>Some cultures abhor the notion of giving up personal time for work. Weeknights, weekends, holidays, and vacations are sacrosanct.</p> <p>People from other cultures quite frequently, though not necessarily happily, forgo personal time if needed.</p>

like the Society for Intercultural Education, Training, and Research (SIETAR). However, there are some general questions you can ask to prepare you to communicate with people outside your own culture.² Consider these questions to be a starting point for your journey toward understanding communication in the global workplace.³

- Question 1** *Work:* What are their views about work and work rules?
- Question 2** *Time:* What is their approach to time, especially with regard to starting and ending times for meetings, being on time for appointments, expected response time for action requests, hours of the regular workday, and so on?
- Question 3** *Beliefs:* What are the dominant religious and philosophical belief systems in the culture, and how do they affect the workplace?
- Question 4** *Gender:* What are their views of equality of men and women in the workplace, and how do these views affect their actions?
- Question 5** *Personal Relationships:* What degree of value is placed on close personal relationships among people doing business with each other?
- Question 6** *Teams:* What part does teamwork have in their business, and, accordingly, how is individual initiative viewed?
- Question 7** *Communication Preferences:* What types of business communication are valued most—formal writing, informal writing, formal presentations, casual meetings, e-mail, phone conversations?
- Question 8** *Negotiating:* What are their expectations for the negotiation process, and, more specifically, how do they convey negative information?
- Question 9** *Body Language:* What types of body language are most common in the culture, and how do they differ from your own?
- Question 10** *Writing Options:* What writing conventions are most important to them, especially in prose style and the organization of information? How important is the design of the document in relationship to content and organization?

To be sure, asking these questions does not mean we bow to attitudes that conflict with our own ethical values, as in the equal treatment of women in the workplace. It only means that we first seek to comprehend cultures with which we are dealing before we operate within them. Intercultural knowledge translates into power in the international workplace. If we are aware of diversity, then we are best prepared to act.

It might help to see how some of these issues were addressed by Sarah Logan, a marketing specialist who transferred to M-Global's Tokyo office three years ago. In her effort to find new clients for M-Global's services, she discovered much about the

²A good overview of this subject can be found in E. A. Thrush. (2001). High-context and low-context cultures: How much communication is too much? In D. S. Bosley (ed.), *Global contexts: Case studies in international communication* (pp. 27–41). Boston, MA: Allyn & Bacon.

³The questions in this section are drawn from information in two excellent sources for the student of international communication: I. Varner & L. Beamer. (1995). *Intercultural communication in the global workplace*. Chicago; and D. P. Victor. (1992). *International business communication*. New York, NY: HarperCollins.

Japanese culture that helped her and her colleagues do business in Japan. For example, she learned that Japanese workers at all levels depend more on their identification with a group than on their individual identity. Thus Sarah's marketing prospects in Japan felt most comfortable discussing their work as a corporate department or team, rather than their individual interests or accomplishments—at least until a personal relationship was established.

Sarah learned that an essential goal of Japanese employees is what they call *wa*—harmony among members of a group and, for that matter, between the firm and those doing business with it. Accordingly, her negotiations with the Japanese often took an indirect path. Personal relationships usually were established and social customs usually observed before any sign of business occurred. A notable exception, she discovered, occurred among the smaller, more entrepreneurial Japanese firms, where employees often displayed a more Western predisposition toward getting right down to business.

She also discovered that Japanese business is dominated by men more than in her own culture, and that there tends to be more separation of men and women in social contexts. Although this cultural feature occasionally frustrated her, she tried to focus on understanding behavior rather than judging it from her own perspective. Moreover, she knew Japan is making changes in the role of women. Indeed, her own considerable success in getting business for M-Global suggested that Japanese value ability and hard work most of all.

Like Sarah Logan, you should enter every intercultural experience with a mind open to learning about those with whom you will work. Adjust your communication

strategies so that you have the best chance of succeeding in the international marketplace. Intercultural awareness does not require that you jettison your own ethics, customs, or standards; instead, it provides you with a wonderful opportunity to learn about, empathize with, and show respect for the views of others.



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Communicating Internationally

This section includes guidelines for writing and designing English-language documents so that multinational readers can understand and translate them more easily.

When writing documents for other cultures, remember that your work will not be read in the cultural context in which it was written. For that matter, you may lose control of the document altogether if it is translated into a language that you do not know. In order to help solve this problem, organizations such as Intecom and the AeroSpace and Defence Industries Association of Europe have worked to develop and promote Simplified English, also known as Controlled English. (See Chapter 17 for more information about Simplified English style.) The goal of Simplified English is to eliminate ambiguity, improve translation, and make reading English easier

for nonnative English speakers. Following are some basic guidelines to reduce the risk of misunderstanding:

1. **Simplify grammar and style rules.** It is best to write in clear language—with relatively simple syntax and short sentences—so that ideas cannot be misunderstood.
2. **Use simple verb tenses and verb constructions.** For example, constructions like gerunds and the progressive can have multiple meanings, and some languages don't have an equivalent to the passive voice.
3. **Limit vocabulary to words with clear meanings.** Compound words or phrases used as subjects of sentences can be confusing and difficult to translate. The European Association of Aerospace Industries (AECMA) identifies a list of approved words. AECMA's guidelines can be found at <http://www.techscribe.co.uk/ta/aecma-simplified-english.pdf>.
4. **Use language and terminology consistently.** Texts are easier to read and translate if they follow this rule: “one meaning per word and one word per meaning.”
5. **Define technical terms.** All good technical writing includes well-defined terminology, but this feature is especially important in international writing. A glossary remains an effective tool for helping international readers.
6. **Avoid slang terms and idioms.** A nonnative speaker or someone from outside the United States may be unfamiliar with phrases you use every day. The ever-popular sports metaphors such as “ballpark estimate,” “hitting a home run,” and “let's punt on this” present obvious obstacles for some readers. Use phrasing that requires little cultural context.
7. **Include visuals.** Graphics are a universal language that allows readers entry into the meaning of your document, even if they have difficulty with the text.

>>> Ethics in the Workplace

This section outlines the ethical context in which all workers do their jobs. The goals are (1) to present six related guidelines for the workplace, and (2) to show how ethical guidelines can be applied to a specific activity—writing. At the end of this chapter and throughout the book are assignments in which your own ethical decisions play an important role.

Ethical Guidelines for Work

As in your personal life, your professional life holds many opportunities for demonstrating your views of what is right or wrong. There is no way to escape these ethical challenges. Most occur daily and without much fanfare, but cumulatively they compose our personal approach to morality. Thus our belief systems, or lack thereof, are revealed by how we respond to this continuous barrage of ethical dilemmas.

Obviously, not everyone in the same organization—let alone the same industry or profession—has the same ethical beliefs, nor should they. After all, each person’s understanding of right and wrong flows from individual experiences, upbringing, religious beliefs, and cultural values. Some ethical relativists even argue that ethics only makes sense as a descriptive study of what people do believe, not a prescriptive study of what they should believe. Yet there are some basic ethical guidelines that, in our view, should be part of the decision-making process in every organization. These guidelines apply to small employers, just as they apply to large multinational organizations. Although they may be displayed in different ways in different cultures, they should transcend national identity, cultural background, and family beliefs. In other words, these guidelines represent what, ideally, should be the core values for employees at international companies.

The guidelines in this section are common in many professional codes of ethics. These are general guidelines and provide a good foundation for ethical behavior in the workplace. However, you should also become familiar with the ethical guidelines specific to your employer and professional organizations.

>> Ethics Guideline 1: Be Honest

First, you should relate information accurately and on time—to your colleagues, to customers, and to outside parties, such as government regulators. This guideline also means you should not mislead listeners or readers by leaving out important information that relates to a situation, product, or service, including information about any conflicts of interest. You should interpret data carefully and present estimates as accurately as possible. In other words, give those with whom you communicate the same information that you would want presented to you.

>> Ethics Guideline 2: Be Fair

You should treat those around you fairly, regardless of differences in race, religion, disability, age, or gender. You should also be aware of, and respect, differences in culture. This is especially important as business becomes more global.

>> Ethics Guideline 3: Be Professional

When you are working, you represent your profession. Therefore, you should act in an honorable manner and meet deadlines with quality work. You also should keep current on developments in your field, join a professional organization like the Association of Computing Machinery’s Special Interest Group on the Design of Communication (ACM SIGDOC), read journal and magazine articles in your field, and participate in continuing-education activities.

>> Ethics Guideline 4: Honor Intellectual Property Rights

Of course you should follow copyright and patent laws, but you should also respect the work that others have put into developing and presenting their ideas. Credit others for ideas, text, or images that you have used. When collaborating with others, show appreciation for their contributions, and welcome their input. Offer and accept feedback that will make the final product stronger.

>> Ethics Guideline 5: Respect Confidentiality

Remember that you are acting on the part of both your employer and your clients. Disclose sensitive information only with permission, and obtain written releases before you share materials. This guideline is especially important for contract and freelance workers, who must have a portfolio of accomplishments to share with prospective clients. If you share confidential information with a prospective client, you show that you cannot be trusted with sensitive material.



rgerhardt/Shutterstock

>> Ethics Guideline 6: Do No Harm

Technical communicators often work in fields that affect public health and safety. You should avoid practices, inaccuracies, or mistakes that can harm people or property. You should also support a positive and constructive work atmosphere. One way to achieve such a working environment is to avoid words or actions calculated to harm others. For example, avoid negative, rumor-laden conversations that hurt feelings, spread unsupported information, or waste time.

Now let's examine the manner in which ethical considerations play a part in the writing responsibilities in organizations.

Ethics and Legal Issues in Writing

In your career, you should develop and apply your own code of ethics, making certain it follows the six guidelines already noted. Writing—whether on paper, audiotape, videotape, or computer screen—presents a special ethical challenge for demonstrating your personal code of ethics. Along with speaking, there may be no more important way you display your beliefs during your career. The following section (1) lists some ethical questions related to specific documents and (2) provides responses based on the ethical guidelines noted earlier.

Being honest, fair, and professional; honoring intellectual property; respecting confidentiality; and doing no harm—all six of these ethical guidelines apply to written communication. Following are some typical examples from the working world, followed by some discussion of your legal obligations in writing.

>> Sample Ethics Questions in the Workplace

Each of the six situations that follow presents an ethical dilemma regarding a specific document, followed by an answer to each problem.

Lab report: Should you mention a small, possibly insignificant percentage of the data that was collected but that doesn't support your conclusions?

Answer: Yes. Readers deserve to see all the data, even (and perhaps especially) any information that doesn't support your conclusion. They need a true picture of the lab study so that they can draw their own conclusions.

Trip report: Should you mention the fact that one client you visited expressed dissatisfaction with the service he received from your team?

Answer: Yes. Assuming that your report is supposed to present an accurate reflection of your activities, your reader deserves to hear about all your client contacts—good news and bad news. You can counter any critical comments by indicating how your team plans to remedy the problem.

Proposal: Should you include cost information, even though cost is not a strong point in your proposal?

Answer: Yes. Most clients expect complete and clear cost data in a proposal. It is best to be forthright about costs, even if they are not your selling point. Then you can highlight features that are exemplary about your firm so that the customer is encouraged to look beyond costs to matters of quality, qualifications, scheduling, experience, and so on.

Feasibility study: Should you list all the criteria you used in comparing three products, even though one criterion could not be applied adequately in your study?

Answer: Yes. It is unethical to adjust criteria after the fact to accommodate your inability to apply them consistently. Besides, information about a project dead end may be useful to the reader.

Technical article: Should you acknowledge ideas you derived from another article, even though you quoted no information from the piece?

Answer: Yes. Your reliance on all borrowed ideas should be noted, whether the ideas are quoted, paraphrased, or summarized. The exception is common knowledge, which is general information that is found in many sources. Such common knowledge need not be footnoted.

Statement of qualifications (SOQ): Should you feel obligated to mention technical areas in which your firm does not have extensive experience?

Answer: Probably not, as long as you believe the customer is not expecting such information in the statement of qualifications. Ethical guidelines do not require you to tell everything about your firm, especially in a marketing document like an SOQ (Statement of Qualifications). They require only that you provide the information that the client requests or expects.

Of course, many other types of technical writing require careful ethical evaluation. You might even consider performing an ethical review during the final process of drafting a document. Other parts of this book cover topics that apply to specific stages of such an

ethical review, as well as to ethics in spoken communication. For ethics in definition and description, see Chapter 7; for ethics in instructions and process explanations, see Chapter 8; for ethics in the research process, see Chapter 9; for ethics in the use of graphics, see Chapter 13; and for ethics in negotiation, see Chapter 16.

>> Legal Issues in Writing

Some countries, such as the United States, have a fairly well-developed legal context for writing, which means you must pay great attention to detail as you apply ethical principles to the writing process. This section highlights some common guidelines.

■ Acknowledge Sources for Information Other Than Common Knowledge

As noted in the technical article example in the previous section, you are obligated to provide sources for any information other than common knowledge. Common knowledge is usually considered to be factual and nonjudgmental information that could be found in general sources about a subject. The sources for any other types of information beyond this definition must be cited in your document. Chapter 9 offers more detail about avoiding plagiarism and the format for citing sources.

■ Seek Written Permission Before Borrowing Extensive Text

Generally, it is best to seek written permission for borrowing more than a few hundred words from a source, especially if the purpose of your document is profit. This so-called fair use is, unfortunately, not clearly defined and subject to varying interpretations. It is best (1) to consult a reference librarian or other expert for an up-to-date interpretation of the application of fair use to your situation, and (2) to err on the side of conservatism by asking permission to use information, if you have any doubt. This probably hasn't been an issue in papers you have written for school because they were for educational use and were not going to be published. However, this issue should be addressed in any writing you do outside of school.

■ Seek Written Permission Before Borrowing Graphics

Again, you probably haven't been concerned about this issue in projects you have created in school, but you must seek permission for any graphics you borrow for projects created outside of school. This guideline applies to any nontextual element, whether it is borrowed directly from the original or adapted by you from the source. Even if the graphic is not copyrighted, such as one appearing in an annual report from a city or county, you should seek permission for its use.

■ Seek Legal Advice When You Cannot Resolve Complex Questions

Some questions, such as the use of trademarks and copyright, fall far outside the expertise of most of us. In such cases it is best to consult an attorney who specializes in such law. Remember that the phrase "Ignorance is bliss" has led many a writer into problems that could have been prevented by seeking advice when it was relatively cheap—at the beginning. Concerning U.S. copyrights in particular, you might first want to consult free information provided by the U.S. Copyright Office at its Web site (www.copyright.gov).

In the final analysis, acting ethically on the job means thinking constantly about how other people are influenced by what you do, say, and write. Also, remember that what you write could have a very long shelf life, perhaps to be used later as a reference for legal proceedings. Always write as if your professional reputation could depend on it, because it just might.

>>> The M-Global Case

This book uses the fictional company M-Global, Inc., to provide a context for examples, models, and assignments. Even though workplace documents such as procedures or reports follow general conventions for organization, writers must also consider the context in which their documents are created and will be read. Effective writers make rhetorical choices to appeal to specific audiences, to clearly communicate information, and to present a professional image for themselves and the organizations that they represent. (Chapter 2 discusses these rhetorical concerns in greater detail.) The M-Global case provides a rich context for analyzing model documents and responding to writing assignments.

To complete the M-Global assignments, you will be asked to assume a role in the organization. The many M-Global examples and assignments give you a purpose, an audience, and an organizational context that simulate what you will face in your career. Model 1–1 (pp. 25–34) introduces the organization in a booklet that is part of new-employee orientation at M-Global. The Communication Challenges and Assignments at the end of each chapter include the additional information that you will need to analyze your rhetorical situation and create the documents that you have been assigned.

The use of M-Global, Inc., in this textbook is intended to yield two main benefits for you as a student:

- **Real-world context:** M-Global provides you with an extended case study in modern technical communication. By placing you in actual working roles, the text prepares you for writing and speaking tasks ahead in your career.
- **Continuity:** The use of M-Global material lends continuity to class assignments and discussions throughout the term. Your use of this international organization in assignments and class emphasizes the connections among all on-the-job assignments.

>>> Chapter Summary

- Technical communication refers to the many kinds of writing and speaking you will do in your career.
- In contrast to academic writing, technical communication aims to get something done (not just to demonstrate knowledge), relays information from someone more knowledgeable about a topic to a reader who is less knowledgeable about it, and presents ideas clearly and simply.
- Organizations develop their own personality, or culture, which can be influenced by many features, including their history, type of business, and management style.
- With the growth of the global economy, organizations are becoming more sensitive to differences in cultural communication practices.
- Companies and their employees should follow some basic ethical guidelines in all their work, including communication with colleagues and customers.
- This book uses the fictional firm of M-Global, Inc., to lend realism to your study of technical writing.

>>> Learning Portfolio

Communication Challenge Employee Orientation and Training: Global Dilemmas

This case study explores cultural issues faced by M-Global, Inc., as it embraces the global marketplace. It ends with questions and comments for discussion and an assignment for a written response to the Challenge. For more information about M-Global, see Model 1-1 (pp. 25–34).

Recently, M-Global's management has decided to emphasize the global nature of the organization through a change management initiative. The goal of this initiative is to create a global, yet cohesive, company culture. To help achieve this goal, Human Resources has been asked to create employee orientation and training materials to be presented at all 16 branches. These training materials could take the form of information on the company intranet, messages from M-Global executives to their employees, and PowerPoint® presentations and brochures used during training sessions conducted by Human Resources personnel for M-Global departments and branches.

Karrie Camp, the Vice-President for Human Resources, has been with M-Global for 30 years and is serious about the “resources” part of Human Resources. She believes that ensuring that employees work efficiently and effectively for the good of M-Global is an important part of her job. She believes that a clear, companywide policy guide promotes efficiency in a large organization like M-Global. The M-Global policy guide is quite specific about issues such as work hours (whether regular or flextime), vacation time, equal opportunity, office dress, required training, and safety. Karrie sees these policies as the foundation of the “new” company culture. She wants to use as much existing material as possible in creating the new orientation and training materials.

Assume the role of a new employee in the Human Resources office who has been assigned the task of gathering, comparing, and analyzing all of the current materials used for employee training. Although some branches in the United States share training materials, others—especially those in more isolated offices, such as Tokyo and Nairobi—have their own materials. Some smaller offices have no formal materials, relying instead on branch managers to design their own training programs. Your goal is to identify current materials that can be used to support M-Global's international company culture and to recommend new materials for the training and orientation sessions.

Global Issues in Human Resources Policies

Because some countries have specific laws governing vacations and holidays, some orientation materials are much more specific than others. However, some policies and practices that you might take for granted can, in fact, be problematic; for example, it is important to remember that not only is the Dammam, Saudi Arabia, office in a different time zone, but the Saudi workweek is Saturday through Wednesday. You will need to address these issues in your recommendations to Karrie.

One problem you do not have to worry about is reading the existing training materials—the organization has always had a policy that all internal documents would be written in English, and M-Global plans to keep this policy. However, some overseas branch managers have taken the opportunity presented by this new project to complain about the English-only policy. They see no reason why they cannot write internal memos, reports, procedures, and other documents in the language of the country in which the office is located. Although most M-Global employees have a fair reading and writing knowledge of English, there is the issue of pride at work, and some employees at lower levels have weak English skills. Moreover, these branch managers argue, if M-Global is going to embrace multiple cultures, why shouldn't it embrace multiple languages?

Questions and Comments for Discussion

Answer the following questions from your own point of view. Before doing so, however, make sure you have carefully considered the perspective of the home office and the branch managers.

1. Is M-Global's English-only policy justified? Is there any compromise that would satisfy the overseas branch managers and the executive management?
2. Elaborate on some of the general language problems multinational firms can face.
3. The use of English does not by itself break down communication barriers with colleagues and customers at global firms—that is, English is spoken around the world by people from many different cultures. Its use does not mean that people necessarily think, write, or speak by the same conventions. Examine this view. Think about how using the same language across an

international organization may even mask differences. How can one's culture and national background affect the use of English in writing and speaking?

4. Some of the personnel issues at M-Global are the result of having branches in both low-context and high-context cultures. What differences in work rules might you expect in each type of culture? How can the conflicting and confusing work rules be addressed? Give your opinion on the degree to which common work rules and practices are important at M-Global's domestic offices, as well as at its international branches.
5. Identify the recommendations that your supervisor, Karrie Camp, may not be enthusiastic about. Which issues would you argue strongly for, and which issues would you decide not to include in your

recommendations? How would you support your arguments for changes?

Write About It

As the new employee in Human Resources, write a memo to the Vice President of Human Resources, Karrie Camp, that identifies the key issues that you think should be addressed in the orientation and training materials. Using the Internet, see what information you can find about paid leave and holidays, management styles, and general business practices in the countries where M-Global has branches. Then identify the existing policies that must be addressed before the materials can be completed. Remember that the goal is to support the development of an international company culture for M-Global.

Collaboration at Work Outline for a Consulting Report

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Assume you and team members work for a communication consulting firm hired by your school. Your task is to improve communication at your institution—both external communication (e.g., to prospective students, prospective employees, and the community) and internal communication (e.g., between and among current students, faculty, and administrators). Before your team can begin to develop an action plan, you would like to describe the current culture of the school. (See the definition of culture on page 6 of this chapter.) When applied to a college or university, the term culture might include some of the following features:

- History of the school
- Type of institution and variety of academic programs
- Typical background of students
- Academic structure
- Types of interaction among faculty and staff
- Enrollment patterns
- Extracurricular life on campus
- Relationship with community outside the school

Team Assignment

Your team will choose one or more features of the school's culture to describe. (Alternatively, your instructor may assign specific features to each team, so that the combined descriptions of all teams present a composite of the school's culture.) The members of your team should (1) discuss a plan for developing the description, (2) collect information in the ways that seem most appropriate (e.g., through interviews, from written documents, from discussion among your team members), and (3) assemble information into a cohesive response. Your main goal is to produce an objective observation, not to argue a point.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. Your instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers, and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Features of Academic Writing

- Option A Select an example of writing that you wrote for a high school or college course other than this one. Then prepare a brief analysis in which you explain (1) the purpose of the writing sample, (2) the audience for which it was intended, and (3) the ways in which it differs from technical writing, as defined in this chapter.
- Option B As an alternative to using your own example, complete the assignment by using the following example. Assume that the passage was written as homework or as an in-class essay in an environmental science class in college.

2. Analysis: Features of Technical Communication

- Option A Locate an example of technical communication (such as a user's guide, an owner's manual, or a document borrowed from a family member or an acquaintance who works in a technical profession) and prepare a brief analysis in which you explain (1) the purpose for which the piece was written, (2) the apparent readers and their needs, (3) the way in which the example differs from typical academic writing, and (4) the relative success with which the piece satisfies this chapter's guidelines.
- Option B Using the following brief example of technical writing, prepare the analysis requested in Option A.

3. Analysis, M-Global Context: Welcome to M-Global

Read the *Welcome to M-Global* booklet in Model 1-1. This document is given to all new employees at M-Global. What have you learned about the culture in M-Global? How would you present a professional image that is consistent with M-

Many different responses are possible in the event toxic waste contamination is suspected or discovered at a site. First, you can simply monitor the site by periodically taking soil and/or water samples to check for contamination. This approach doesn't solve the problem and may not prove politically acceptable when contamination is obvious to the community, but it does help determine the extent of the problem. A second approach—useful when contamination is likely or proved—is to contain the toxic waste by sealing off the site in some fashion, such as by building barriers between it and the surrounding area or by "capping" it in some manner (as in the case of a toxic waste pit). Basically, this alternative depends on the ability to isolate the toxic substances effectively. A third strategy, useful when the contamination is liquefied (like toxic groundwater), is to pump the water from under the ground or from surface ponds and then transport it to treatment systems.

A fourth method is appropriate when toxic substances need to be treated on-site, in which case they can be incinerated or they can be solidified at the site in some way. Then they can be placed in a landfill at the site. Fifth, waste can be hauled to another location, where it can be incinerated or placed in some kind of secure landfill—when an off-site disposal approach is needed.

Global's culture? Is there additional information that you wish the booklet included? Is there additional information that you might ask your coworkers about in an informal setting such as the break room?

4. Analysis: Company Profile

Having read the information in the *Welcome to M-Global* booklet in Model 1-1, conduct your own profile of a multinational company in your region. Collect information from such sources as corporate annual reports, newspaper or magazine articles, or personal contacts. Consider some or all of the following subtopics: company history, types of projects, corporate structure, common types of writing produced, and special features of the company (such as an international market or workforce). Your instructor will indicate whether your report should be presented orally or in writing.

5. Practice: E-mail to Your Instructor

Assume that you are enrolled in a course in your major. The syllabus for the class indicates that your professor will only excuse absences for school activities, but that you are allowed three other absences during the semester. You missed two class periods earlier in the semester, when you had the flu. Next month, you will be in your best friend's wedding, in another state. You will have to miss two days of classes to be in the wedding. Write an e-mail to your instructor asking that you not be penalized for missing four class periods in the semester. As you compose your e-mail, consider the context—a majors course taught by a professor who is known for holding students to high standards and who expects school-work to take precedence over students' personal lives.

6. Practice, M-Global Context: Letter Requesting Testimonials

As a writer in M-Global's corporate marketing department, you spend a good deal of your time preparing materials to be used in sales letters, brochures, and company proposals.

DATE: June 15, 2011
TO: Pat Jones, Office Coordinator
FROM: Sean Parker
SUBJECT: New Productivity Software

Introductory Summary

As you requested, I have examined the FreeWork open source productivity suite software we are considering. On the basis of my observations, I recommend we secure one copy of FreeWork and test it in our office for two months. Then, after comparing it to the other two packages we have tested, we can choose one of the three productivity packages to use throughout the office.

Features of FreeWork

As we agreed, my quick survey of FreeWork involved reading the user's manual, completing the orientation disk, and reviewing installation options. Here are the eight features of the package that seemed most relevant to our needs:

- 1. Formatting Flexibility:** FreeWork includes diverse "style sheets" to meet our needs in producing reports, proposals, letters, memos, articles, and even brochures. By using just one command on the keyboard, the user can change style sheets—and the program will automatically place text in a specified format.
- 2. Mailers:** For large mailings, we can take advantage of FreeWork's "Mail Out" feature, which automatically places names from mailing lists on form letters.
- 3. Documentation:** To accommodate our staff's research needs, FreeWork has the capacity to renumber and rearrange footnotes as text is being edited.
- 4. Page Review:** This package's "PagePeek" feature allows users to view an entire written page on the screen without having to print the document. They can then see how every page of text will actually look on the page.
- 5. Tables of Contents:** FreeWork can create and insert page numbers in tables of contents, by using the headings and sub-headings in the text.
- 6. Spreadsheets:** FreeWork includes a powerful spreadsheet that can be integrated into documents.
- 7. Database:** FreeWork's database component can create forms and reports that can be integrated into documents.
- 8. Graphics:** FreeWork includes a basic drawing program that will probably meet our needs.

Conclusion

Though I gave FreeWork only a brief look, my survey suggests that it may be a strong contender for use in our office. If you wish to move to the next step of starting a two-month office test, just let me know.

Yesterday, you were assigned the task of asking 20 customers if they will write testimonial letters about their satisfaction with M-Global's work. In all cases, these clients used M-Global for many projects and informally expressed satisfaction with the work. Now you are going to ask them to express their satisfaction in the form of a letter, which M-Global can use as a testimonial to secure other business.

7. Practice: Memo on Inventory Control

For five years, you have supervised an equipment supply warehouse for a regional moving company. Your main job is to maintain equipment and see that it is returned after jobs are completed. When checking out equipment, each team manager is supposed to fill out part of a project equipment form that lists all equipment used on the job and the date of checkout. When returning the equipment, the team manager should complete the form by listing the date of return and any damage, no matter how small, that must be

repaired before the equipment is used again. This equipment ranges from front-end loaders and pickup trucks to simple tools like hammers, wrenches, and power drills.

Lately, you have noticed that many forms you receive are incomplete. In particular, team managers are failing to record fully any equipment damage that occurred on the job. For example, if someone fails to report that a truck's alignment is out, the truck will not be in acceptable shape for the next project for which it could be used.

Your oral comments to project managers have not done much good. Apparently, the team managers do not take the warehouse problem seriously, so you believe it is time to put your concerns in writing. The goal is to inform all technical professionals who manage projects that from now on the form must be filled out correctly. You have no authority, as such, over the managers; however, you know that their boss would be very concerned about this problem if you chose to bring it to his attention.

At this point, you have decided to ask nicely one more time—this time in writing. Write a memo to emphasize issues of safety and profitability, as well as the need to follow a procedure that has helped you maintain a first-rate warehouse.

8. Practice, M-Global Context: Memo Report on Flextime

As branch manager of the Atlanta office, you have always tried to give employees as much flexibility as possible in their jobs—as long as the jobs get done. Recently, you have had many requests to adopt flextime. In this arrangement, the office would end its standard 8:00 a.m. to 4:30 p.m. workday (with a half-hour lunch break). Instead, each employee would fit her or his eight-hour day within the following framework: 7:00 a.m. to 8:30 a.m. arrival, a half hour or full hour for lunch, and 3:30 p.m. to 5:30 p.m. departure.

Two conditions will prevail if flextime is adopted. First, each employee's supervisor must agree on the hours chosen because the supervisor must ensure that departmental responsibilities are covered. Second, each employee must "lock in" a specific flextime schedule until another is negotiated with the supervisor. In other words, an employee's hours will not change from day to day.

Before you spend any more time considering this change, you want the views of the employees. Write an e-mail that (1) explains the changes being considered and the conditions (see previous paragraph); (2) solicits their views in writing, by a certain date; and (3) asks what particular work hours they prefer, if given the choice. Also, indicate that later there may be department meetings and finally a general office meeting on the subject, depending on the degree of interest expressed by employees in their reply e-mails to you.

9. Ethics Assignment

For this assignment your instructor will place you on a team, with the goal of presenting an oral or written report.

Option A The Society for Technical Communicators (STC) is the main U.S. professional association for technical communicators. Its ethical guidelines, which follow, are intended both for those who are permanent employees of organizations and also for communicators who work as consultants and contractors. Evaluate the quality, usefulness, and appropriateness of these guidelines by answering the following questions:

- a. What do the guidelines suggest about the role of technical communicators in the workplace?

- b. How would you adjust the depth, breadth, or balance of the items presented, if at all?
- c. How does the document satisfy, or fail to satisfy, the ethical guidelines discussed in this chapter?
- d. Are all guidelines and terms clear to the reader?
- e. How might the role of the U.S. technical communication professional, as described in the guidelines, differ from the role of technical communicators in several other cultures outside the United States?

Option B

Your team is to investigate the ethical climate in one or more organizations that are in the same type of business. You may decide to (a) collect organization codes of ethics, (b) do research on ethical guidelines issued by professional associations to which the organizations belong, (c) interview employees about ethical decisions they face on the job, or (d) read any available information on ethics related to the companies or profession.

10. International Communication Assignment

Refer to the 10 questions in "The Global Workplace" section of this chapter. Using them as the basis for your investigation, conduct your own research project on the cultural features of employees of a specific country. Consider using some or all of the following sources: campus library, travel agencies, consulate offices, international students' office on your campus, or individuals who have worked in or visited the country. Your instructor will indicate whether your report should be presented orally or in writing.

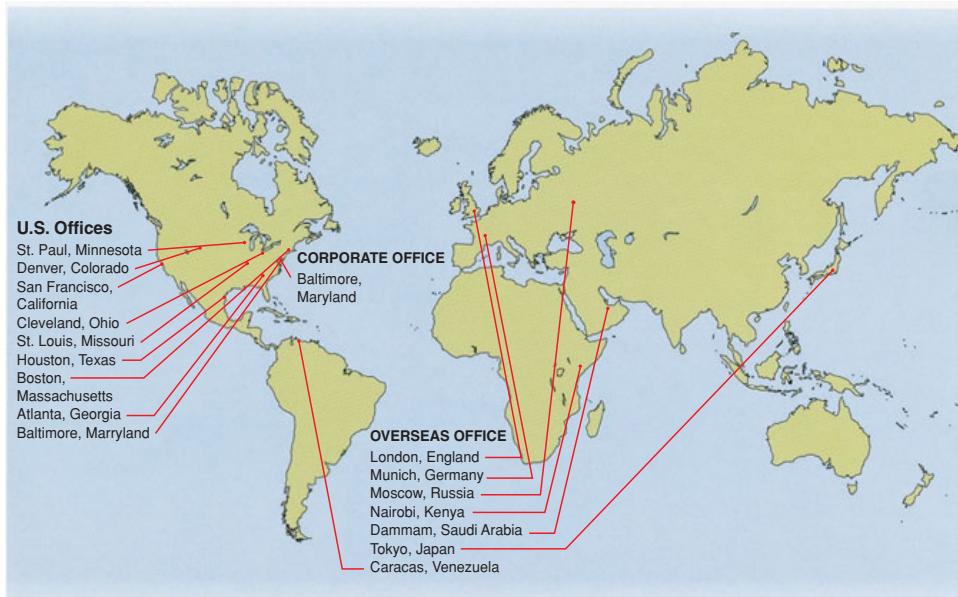


11. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Select an issue of importance to the local or regional community where you live or attend college. The issue should be one that aims to improve the culture, environment, or general livability of the area. In addition, the topic must be one about which you will be able to gather facts or opinions with relative ease from a newspaper or local library. After some preliminary research, interview two individuals to solicit their views on the topic, and then write an essay in which you (1) objectively describe the two points of view of the individuals you interviewed, (2) analyze the degree to which you believe the two opinions satisfy the Ethical Guidelines in this chapter, and (3) give your own opinion on the topic.



Worldwide Locations of M-Global, Inc., Offices



U.S. Locations

1. Corporate headquarters—
Baltimore, Maryland
2. Baltimore, Maryland
3. Boston, Massachusetts
4. Atlanta, Georgia
5. Houston, Texas
6. Cleveland, Ohio
7. St. Paul, Minnesota
8. St. Louis, Missouri
9. Denver, Colorado
10. San Francisco, California

Non-U.S. Locations

1. Caracas, Venezuela
2. London, England
3. Moscow, Russia
4. Munich, Germany
5. Nairobi, Kenya
6. Dammam, Saudi Arabia
7. Tokyo, Japan



M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

Welcome to M-Global! Although we are an international organization, we never forget that we started as a small family business. As an organization, we strive to provide the highest-quality services and equipment to our clients. We want our employees to be of the highest quality, as well. Thus, we will do all we can to help you grow your abilities, gain education for career advancement, and support the high ethical standards held by our organization.

WHO WE ARE

M-Global, Inc., was founded in 1963 as McDuff, Inc., by Rob McDuff, as a firm that specialized in soils analysis. From its founding in 1963 until about 1967, the company worked mostly for construction firms in the Baltimore area. By the late 1960s, the firm enjoyed a first-rate reputation. It had offices in Baltimore and Boston and about 80 employees.

McDuff, Inc., kept growing steadily, with a large spurt in the mid-1970s and another in the 1980s. The first growth period was tied to increased oil exploration in all parts of the world. Oil firms needed experts to test soils, especially in offshore areas. The results of these projects were used to position oil rigs at locations where they could withstand rough seas. The second growth period was tied to environmental work required by the federal government, state agencies, and private firms. McDuff became a major player in the waste-management business, consulting with clients about ways to store or clean up hazardous waste. The third growth period has moved the firm into diverse service industries, such as security systems, hotel management, and landscaping.

In 2008, Rob McDuff announced his retirement and turned the company over to his son, Jim. With the change in management, McDuff announced a



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name change to reflect its more diversified and global scope, becoming M-Global. Although engineering and environmental services still remain important to the company, it has expanded its activities in equipment development and business services. Today, after 50 years of business, M-Global, Inc., has about 2,500 employees. There are nine offices in the United States and six overseas, as well as a corporate headquarters in Baltimore. M-Global performs a wide variety of work. What started as a technical consulting engineering firm has expanded into a firm that does both technical and nontechnical work for a variety of customers.

WHAT WE DO

Today, M-Global has grown to be a diversified company, with offices all over the world and a wide range of projects. M-Global in-house and client services generally fit into one of the following project areas:

Soils work on land and at sea:

These projects involve making design recommendations for foundations and other parts of office buildings, dams, factories, subdivisions, reservoirs, and mass-transit systems. M-Global is also hired by countries and states that want to preserve the ecologically sensitive offshore environment. By collecting and analyzing data from its ship, the *Dolphin*, M-Global helps clients decide whether an offshore area should be preserved or developed.

Construction monitoring and management: M-Global monitors construction projects for quality



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and compliance with building codes and other regulations. About 15 years ago, M-Global got into the business of actually supervising projects other than its own jobs. Large construction companies hire M-Global to orchestrate all parts of a project so that it is completed on time. The work involves creating schedules, monitoring the work of subcontractors, and creating regular progress reports for clients.

Environmental management: In the late 1970s, Rob McDuff began to realize that garbage—all kinds of it—could mean big business for his firm. Suddenly, the United States and other countries faced major problems caused by the volume of current wastes and by improper disposal of wastes. As M-Global's fastest-growing market, environmental management work can involve one or more of these tasks:

- Testing surface soil and water for toxic wastes
- Drilling borings to see if surface pollution has filtered into the groundwater
- Designing cleanup plans
- Predicting the impact of proposed projects on the environment
- Analyzing the current environmental health of wetlands, beaches, national forests, lakes, and other areas

Equipment design: The Equipment Design Lab was originally created for in-house development of equipment for M-Global's own use. Today, the EDL team, as it is



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known, designs and builds specialized equipment both for M-Global's own project needs and for its clients.

Document development: To support its equipment development, M-Global has put together a Publications Development team (known in-house as The Pub). This team was originally established to create documentation for the equipment designed by the EDL team, but it grew to house the writing of proposals and RFPs (Requests for Proposals). Members of The Pub are assigned to project teams throughout the company, often participating in the earliest stages of development of project design. Recently, the Publications Development team began offering documentation services to clients, creating online and print documentation and helping clients set up content management systems.

Training: M-Global entered the training business about five years ago, when it realized that there was a good market for technical training in skills represented by the firm. Recently, the Training Department also started offering nontechnical training in areas such as report writing, because the company employs several writers who are excellent trainers.

Miscellaneous service industries: Once it had achieved growth in fields clearly related to its original mission, M-Global began seeing opportunities for starting or buying out companies that provide services related only indirectly to civil engineering. The three most prominent examples are corporate and residential landscaping, security (both systems and staff), and hotel management. These businesses have grown rapidly and created a more diverse group of employees at M-Global.



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WHERE TO FIND US

Headquarters

M-Global, Inc., has 16 branch offices and a corporate headquarters. Although not a large company by international standards, it has become well known within its own fields. The company operates as a kind of loose confederation. Each branch office enjoys a good measure of independence, yet some corporate structure is required for these purposes:

1. To coordinate projects that involve employees from several offices
2. To prevent duplication of the same work at different offices
3. To ensure fairness, consistency, and quality in the handling of human resources issues throughout the firm (salaries, benefits, workload, etc.)

The corporate office gives special attention to problems related to international communications. Among its non-U.S. clients and employees, it must respond to differences in cultures and ways of doing business. This effort can mean the difference between success and failure in negotiating deals, completing projects, hiring employees, and so forth.

The corporate headquarters in Baltimore is housed in a building across the street from the Baltimore branch office.

Branches

Each M-Global branch is unique in its particular combination of technical and non-technical positions, but all 16 branches include a common management structure, as shown below: a branch manager, who reports to one of two corporate vice



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presidents and supervises a team of four or more department managers; these managers, in turn, supervise the technical and nontechnical employees at the branch.

YOUR FUTURE AT M-GLOBAL

M-Global encourages employees to develop professionally. We reimburse employees for dues for professional organizations and conference registration. M-Global is a leader in its fields, so we encourage employees to present at national and international conferences, as well as to publish articles in professional journals. Because we want our employees to grow in their careers, we support continuing education through tuition reimbursement and by covering costs for professional seminars, workshops, and certifications.

The following table will help you understand what your coworkers' duties are, as well as show you the opportunities at M-Global.

<i>Position</i>	<i>Minimum Education</i>	<i>Main Duties</i>
Department Manager	Bachelor's degree and experience Master's degree	Oversees entire department, including budgets and personnel
Human Resources Manager	Bachelor's degree	Oversees benefits, safety, employment, compensation
Project Manager	Bachelor's degree	Oversees projects in fields of expertise
Research Engineer	B.S. in engineering or design	Designs new tools, mechanisms, or other equipment at EDL
Computing Engineer	B.S. in Computer Science	Develops and maintains hardware and software
Technical Communicator	B.S. or B.A. in technical communication	Helps write and edit reports, proposals, and other branch documents
Training Specialist	B.S. or B.A. in education or in liberal arts	Works with corporate office to plan in-house training and external training for clients
Marketing Specialist	B.S. or B.A. in business	Writes to and visits potential clients, helps with proposals



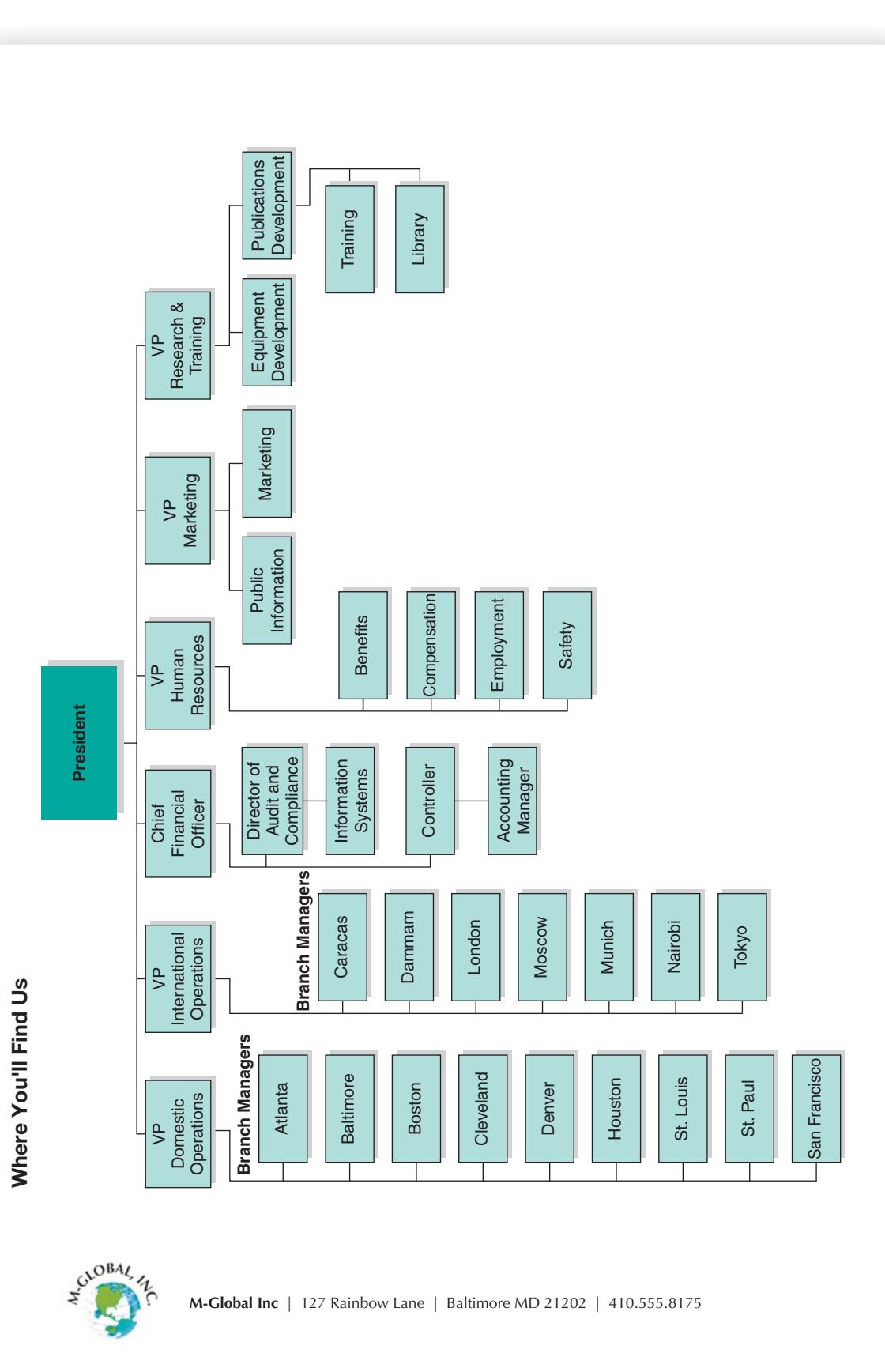
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Field Engineer	B.S. in engineering or engineering technology	Completes site work for projects
Field Scientist	B.S. in biology, chemistry, environmental science, etc.	Completes site work for hazardous waste projects
Landscape Architect	B.A. or B.S. in landscape architecture	Designs and oversees construction of landscape plans
Office Services Manager	B.S. or B.A. in business	Oversees accounting, purchasing, physical plant, etc.
Research Technician	Vo-tech or associate's degree	Assists research engineers in the EDL
Field/Lab Technician	Vo-tech or associate's degree	Recovers samples from site, completes lab tests
Field Hand	High school diploma	Operates and maintains equipment orders and picks up supplies
Secretary	Associate's degree	Handles paperwork for professional workers, has some client contact
Training Assistant	High school diploma	Helps orchestrate training activities of all kinds
Receptionist	High school diploma	Greets visitors and directs them to offices
Library Assistant	High school diploma	Helps librarian with cataloging, ordering books, etc.

So welcome to the M-Global family! We hope this booklet starts you on a rewarding career with us. This is just a starting place, however. Your supervisor and fellow employees are happy to help you learn “who's who” at your branch. It is important that our new employees learn how to find what they need to complete their job assignments with quality and efficiency. On the back of this booklet, you will also find a list of some of the valuable resources that are available on M-Global-Net, our company intranet system.



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Find it on M-Global-Net

Many resources are accessible from all over the world through M-Global's intranet. Use your e-mail and computer login name and password to access these useful resources.

From Human Resources

- Forms for insurance, reimbursement
- M-Global Employee Policy Guide
- M-Global Employee Directory
- Guidelines for global business

From the Publications Department (The Pub)

- A Guide to M-Global Style
- FAQs about writing at M-Global
- Templates for memos, letters, proposals, and reports
- Digital letterhead

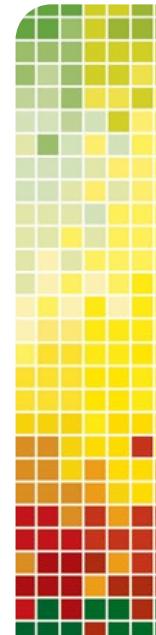
Blogs

- From the President's Office
- Branch news

Folders for Work Groups and Project Teams



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>>> Chapter Objectives

In this chapter, students will

- Be introduced to the Planning Form, which will help them prepare to write effective documents
- Learn to identify the purpose of their technical communication
- Learn to identify the characteristics of their audience
- Learn how to collect and organize information for their audience
- Learn how good planning can make the drafting process easier
- Learn the importance of revision and editing

Kate Paulsen works as a training supervisor for the Boston office of M-Global, Inc., a firm described in more detail in Chapter 1. As a member of a professional training organization, Kate subscribes to an electronic discussion list. One day, she reads an announcement of a workshop sponsored by the organization. M-Global company is growing so quickly that the hiring, training, and retraining of employees have become major goals. Kate decides that the workshop could be helpful to M-Global, so she writes a memo to her supervisor. Kate plans carefully. She knows that to convince her supervisor to pay for the workshop, she must clearly explain its value to M-Global, and to her department, so she gathers as much information as she can about the workshop and about the recent changes

at M-Global. She must organize her memo so that her supervisor will easily be able to find the information he needs. Finally, she must make sure that the memo is well written and projects a professional image, suggesting that she will present a professional image when she represents M-Global at the workshop.

Technical communication, like academic writing, is composed of three main steps: planning, drafting, and revising. These are steps you are probably familiar with from your academic writing. As shown on the Figure 2-1 flowchart, these main steps are further divided into eleven substeps that you follow in completing most technical communication. This chapter will explain the steps of the writing process in technical communication.

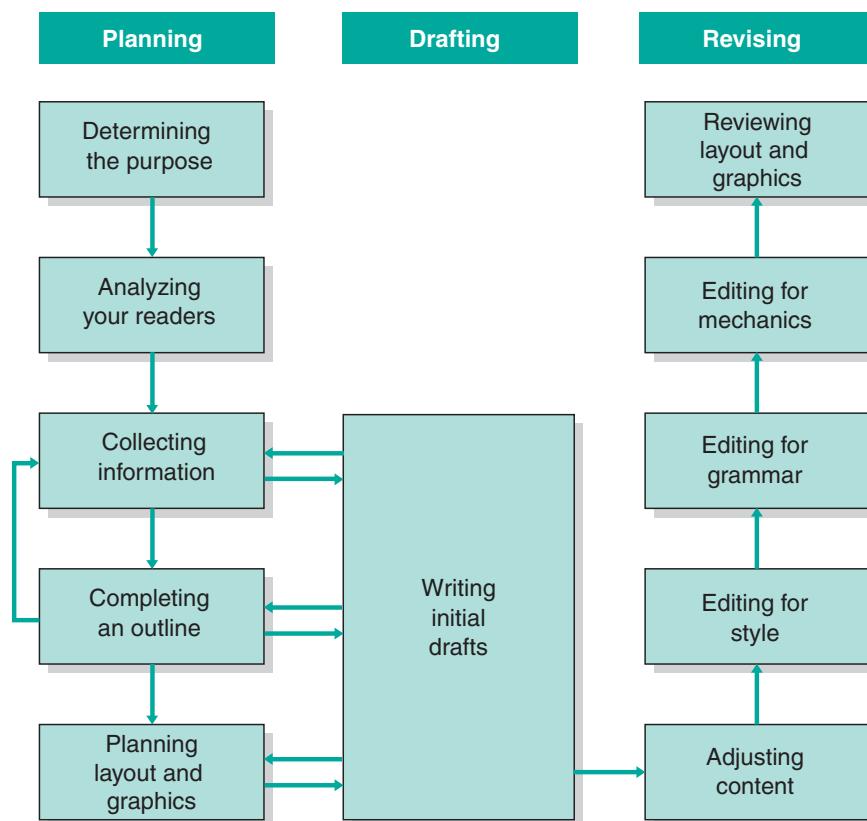


Figure 2–1 ■ Flowchart for the technical communication process

>>> Determining the Purpose

If you have already taken a basic composition course, you will see similarities between rhetorical aims studied in that course and those in technical communication. Writing assignments you have had in school have probably asked you to *inform* your reader about an event or object, to *analyze* a process or idea, or to *argue* the strength or weakness of an interpretation or theory. Technical communication has the same rhetorical aims as all other good writing.

Information: When readers pick up a technical communication document, they may want to know how to perform an operation or follow an established procedure. They may want to make an informed decision. Clear, reliable information is the basis of analysis and argument.

Analysis: At first, it may not seem that analysis is an important purpose of workplace writing, but it is essential to problem solving and decision making. You may be asked to analyze options for a supervisor who will make a recommendation to a client, or you may be asked to use analysis to make your own recommendation.

Argument: Good argument forms the basis for all technical communication. Some people have the mistaken impression that only recommendation reports and proposals argue their case to the reader, and that all other writing should be objective rather than argumentative. Even something as neutral as a set of instructions is implicitly arguing that it is presenting the safest, most effective way of accomplishing a task.

Kate Paulsen's supervisor approved her trip to Cleveland to attend the professional workshop. The workshop emphasized a new in-house procedure for surveying the training needs of a company's employees. After returning to Boston, Kate must write her manager a trip report that describes the survey technique. She ponders three different approaches to the report:

- **Giving an overview** of the survey procedure she studied during the three-day workshop, stressing a few key points so that her manager can decide whether to inquire further (*informing*)
- **Providing details** of exactly how the survey procedure can be applied to her firm, with enough specifics for her manager to see exactly how the survey can be used at M-Global (*analyzing*)
- **Proposing** that the procedure for conducting the needs survey be used at M-Global, in language that argues strongly for adoption (*arguing*)

For Kate, the first step is to decide what she wants to accomplish. Likewise, every piece of *your* writing should have a specific reason for being. The purpose may be dictated by someone else or selected by you. In either case, it must be firmly understood *before* you start writing. Purpose statements guide every decision you make while you plan, draft, and revise.



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Kate Paulsen's three choices indicate some of your options, but there are others. Your choice of purpose will fall somewhere within this continuum:

Neutral, objective statement  **Persuasive, subjective statement**

For example, when reporting to your boss on the feasibility of adding a new wing to your office building, you should use objective language. You must provide facts that can lead to an informed decision by someone else. If you are an outside contractor proposing to construct such a wing, however, your purpose is more persuasive. You will be trying to convince readers that your firm should receive the construction contract.

When preparing to write, therefore, you must ask yourself two related questions about your purpose.

>> Question 1: Why Am I Writing This Document?

This question should be answered in a purpose statement of just one or two sentences, even in complicated projects. Purpose statements guide every decision you make while you plan, draft, and revise. Often the resulting purpose statement can be moved, as is, to the beginning of your outline and later to the first draft.

For example, Kate Paulsen finally decides on the following purpose statement, which becomes the first passage in her trip report:

This memo will highlight main features of the training needs survey introduced at the workshop I attended in Cleveland. I will focus on several possible applications you might want to consider for our office training.

Note that Kate's purpose rests about halfway across the persuasive continuum shown earlier. She will be giving information that suggests the company might benefit by using the survey, rather than strongly advocating its use.

>> Question 2: What Response Do I Want from Readers?

The first question, about purpose, leads inevitably to the second, about results. Again, your response should be only one or two sentences long. Although brief, it should pinpoint exactly what you want to happen as a result of your document. Are you just giving data for the file? Will information you provide help others do their jobs? Will your document recommend a major change?

In Kate Paulsen's case, she decides on this results statement:

Although I'm not yet sure if this training survey is worth purchasing for M-Global, I want my boss to consider it.

Unlike the purpose statement, the results statement may not go directly into your document. Kate's statement hints at a desired outcome that may be implicit in her trip report but will not be stated explicitly. This statement, written for her own use, becomes an essential part of her planning. It is a concrete goal for her to keep in mind as she writes.

These two questions about purpose and results are included on the Planning Form your instructor may ask you to use for assignments. Figure 2–2 on pages 39 and 40 includes

PLANNING FORM

Name: _____ Assignment _____

I. Purpose: Answer each question in one or two sentences.

- A. Why are you writing this document?
- B. What response do you want from readers?

II. Audience

- A. Reader Matrix: Fill in names and positions of people who may read the document

	Decision Makers	Advisers	Receivers
Managers			
Experts			
Operators			
General Readers			

- B. Information on individual readers: Answer these questions about the primary audience for this document.
If the primary audience includes more than one reader (or type of reader) and there are significant differences between the readers, answer the questions for each (type of) reader. Attach additional sheets as necessary.

C. Primary audience

1. What is this reader's technical or educational background?
2. What main question does this person need answered?
3. What main action do you want this person to take?
4. What features of this person's personality might affect his or her reading?

III. Document

- A. What information do I need to include in the

1. Abstract?
2. Body?
3. Conclusion?

- B. What organizational patterns are appropriate to the subject and purpose?

- C. What style choices will present a professional image for me and the organization I represent?

Instructions for Completing the Planning Form

The Planning Form is for your use in preparing assignments in your technical communication course. It focuses only on the planning stage of writing. Complete it before you begin your first draft.

1. Use the Planning Form to help plan your strategy for all writing assignments. Your instructor may or may not require that it be submitted with assignments.
2. Photocopy the form on the back page of this book or write the answers to questions on separate sheets of paper, whatever option your instructor prefers. (Your instructor may ask you to use an electronic version or enlarged, letter-sized copies of the form that are included in the Instructor's Resource Manual.)
3. Answer the two purpose questions in one or two sentences each. Be as specific as possible about the purpose of the documents and the response you want—especially from the decision makers.
4. Note that the reader matrix classifies each reader by two criteria: (a) technical levels (shown on the vertical axis) and (b) relationship to the decision-making process (shown on the horizontal axis). Some of the boxes will be filled with one or more names, whereas others may be blank. How you fill out the form depends on the complexity of your audience and, of course, on the directions of your instructor.
5. If your document is based on a simulated case from M-Global, Inc., refer to Model 1–1 for any M-Global positions and titles you may want to use in the reader matrix.
6. Note that the section Information on Individual Readers can be filled out for one or more readers, depending on what your instructor requires.
7. Answer the document questions in one or two sentences each. Refer to Chapter 4 for information about the ABC format and organizing patterns that can be used in documents. Refer to Chapter 17 for information about style.

■ **Figure 2–2** ■ continued

a copy of the form, along with instructions for using it. The last page of this book contains another copy you can duplicate for use with assignments.

Having established your purpose, you are now ready to consider the next part of the writing process: audience analysis.

>>> Analyzing Your Readers

One cardinal rule governs all on-the-job writing:

Write for your reader, not for yourself.

This rule especially applies to science and technology because many readers may know little about those subjects. In fact, experts on writing agree that most technical communication assumes too much knowledge on the part of the reader. The key to avoiding this problem is to examine the main obstacles readers face and to adopt a strategy for overcoming them.

This section (1) highlights problems that readers have understanding technical communication, (2) suggests techniques to prevent these problems, and (3) describes some main classifications of technical readers. At first, analyzing your audience might seem awkward and even unproductive. You are forced out of your own world to consider that of your reader before you even begin drafting. The payoff, however, is a document that has clear direction and gives the audience what it wants.

Obstacles for Readers

As purchasing agent for M-Global, Inc., Charles Blair must recommend one automobile sedan for fleet purchase by the firm's sales force and executives. First, he will conduct research—interviewing car firm representatives, reading car evaluations in consumer magazines, and inquiring about the needs of his firm's salespeople. Then he will submit a recommendation report to a selection committee consisting of the company president, the accounting manager, several salespeople, and the supervisor of company maintenance. As Charles will discover, readers of all backgrounds often have these four problems when reading any technical document:

1. Constant interruptions
2. Impatience finding information they need
3. A different technical background from the writer
4. Shared decision-making authority with others

If you think about these obstacles every time you write, you will be better able to understand and respond to your readers.

>> Obstacle 1: Readers Are Always Interrupted

As a professional, how often will you have the chance to read a report or other document without interruption? Such times are rare. Your reading time will be interrupted by

meetings and phone calls, so a report often gets read in several sittings. Aggravating this problem is the fact that readers may have forgotten details of the project.

>> Obstacle 2: Readers Are Impatient

Many readers lose patience with vague or unorganized writing. They think, “What’s the point?” or “So what?” as they plod through memos, letters, reports, and proposals. They want to know the significance of the document right away.

>> Obstacle 3: Readers Lack Your Technical Knowledge

In college courses, the readers of your writing are professors, who usually have knowledge of the subject on which you are writing. In your career, however, you will write to readers who lack the information and background you have. They expect a technically sophisticated response, but in language they can understand. If you write over their heads, you will not accomplish your purpose. Think of yourself as an educator; if readers do not learn from your documents, you have failed in your objective.

>> Obstacle 4: Most Documents Have More than One Reader

If you always wrote to only one person, technical communication would be much easier than it is. Each document could be tailored to the background, interests, and technical education of just that individual. However, this is not the case in the actual world of business and industry. Readers usually share decision-making authority with others who may read all or just part of the text. Thus you must respond to the needs of many individuals—most of whom have a hectic schedule, are impatient, and have a technical background different from yours.

Ways to Understand Readers

Obstacles to communication can be frustrating, yet there are techniques for overcoming them. First, you must try to find out exactly what information each reader needs. Think of the problem this way: Would you give a speech without learning about the background of your audience? Writing depends just as much, if not more, on such analysis. Follow these four steps to determine your readers’ needs:

>> Audience Analysis Step 1: Write Down What You Know about Your Reader

To build a framework for analyzing your audience, you need to write down—not just casually think about—the answers to these questions for each reader:

1. What is this reader’s technical or educational background?
2. What main question does this person need answered?
3. What main action do you want this person to take?
4. What features of this person’s personality might affect his or her reading?

The Planning Form in Figure 2–2 includes these four questions.

>> Audience Analysis Step 2: Talk with Colleagues Who Have Written to the Same Readers

Often your best source of information about your readers is a colleague where you work. Ask around the office or check company files to discover who else may have written to the same audience. Useful information could be as close as the next office.

>> Audience Analysis Step 3: Find Out Who Makes Decisions

Almost every document requires action of some kind. Identify decision makers ahead of time so that you can design the document with them in mind. Know the needs of your *most important* reader.

>> Audience Analysis Step 4: Remember That All Readers Prefer Simplicity

Occasionally, you could be in the unenviable position of knowing little or nothing about your readers. Despite your best efforts, you either cannot find information about them or may be prohibited from doing so. For example, a proposal writer sometimes is not permitted to contact the intended reader of the proposal, for legal reasons. Even if you uncover little specific information about your readers, however, you can always rely on one basic fact: Readers of all technical backgrounds prefer concise and simple writing. The popular KISS principle (Keep It Short and Simple) is a worthy goal.

Types of Readers

You have learned some typical problems readers face and some general solutions to these problems. To complete the audience-analysis stage, this section shows you how to classify readers by two main criteria: knowledge and influence. Specifically, you must answer two questions about every potential reader:

1. How much does this reader already know about the subject?
2. What part will this reader play in making decisions?

Then use the answers to these questions to plan your document. Figure 2–3 (adapted from the Planning Form in Figure 2–2) provides a reader matrix by which you can quickly view the technical levels and decision-making roles of all your readers. For complex documents, your audience may include many of the 12 categories shown on the matrix. Also, you may have more than one person in each box; that is, there may be more than one reader with the same background and decision-making role.

Technical Levels

On-the-job writing requires that you translate technical ideas into language that non-technical people can understand. This task can be very complicated because you often have several readers, each with a different level of knowledge about the topic. If you are to “write for your reader, not for yourself,” you must identify the technical background of each reader. Four categories help you classify each reader’s knowledge of the topic.

Figure 2–3

Reader matrix

Technical Level	Decision-Making Level		
	Decision Makers	Advisers	Receivers
Managers			
Experts			
Operators			
General Readers			

>> Reader Group 1: Managers

Many technical professionals aspire to become managers. Once into management, they may be removed from hands-on technical details of their profession. Instead, they manage people, set budgets, and make decisions of all kinds. Thus you should assume that management readers are not familiar with fine technical points, have forgotten details of your project, or both. These managers often need

- Background information
- Definitions of technical terms
- Lists and other format devices that highlight points
- Clear statements about what is supposed to happen next

In Chapter 4, we discuss an all-purpose ABC format for organization that responds to the needs of managers.

>> Reader Group 2: Experts

Experts include anyone with a good understanding of your topic. They may be well educated—like engineers and scientists—but that is not necessarily the case. In the example mentioned earlier, the maintenance supervisor with no college training could be considered an expert about selecting a new automobile for fleet purchase. That supervisor understands the technical information about car models and features. Whatever their educational levels, most experts in your audience need

- Thorough explanations of technical details
- Data placed in tables and figures
- References to outside sources used in writing the report
- Clearly labeled appendixes for supporting information

>> Reader Group 3: Operators

Because decision makers are often managers or technical experts, these two groups tend to get most of the attention. However, many documents also have readers who are

operators. They may be technicians in a field crew, workers on an assembly line, salespeople in a department store, or drivers for a trucking firm—anyone who puts the ideas in your document into practice. These readers expect

- A clear table of contents for locating sections that relate to them
- Easy-to-read listings for procedures or instructions
- Definitions of technical terms
- A clear statement of exactly how the document affects their jobs

>> Reader Group 4: General Readers

General readers often have the least amount of information about your topic or field. For example, a report on the environmental impact of a toxic waste dump might be read by general readers who are homeowners in the surrounding area. Most will have little technical understanding of toxic wastes and the associated environmental hazards. Do not assume that general readers are not well educated. They may be engineers or research chemists who are unfamiliar with the topic about which you are writing. These general readers often need

- Definitions of technical terms
- Frequent use of graphics, such as charts and photographs
- A clear distinction between facts and opinions

Like managers, general readers must be assured that (1) all implications of the document have been put down on paper, and (2) important information has not been buried in overly technical language.

Decision-Making Levels

Figure 2–3 shows that your readers, whatever their technical level, can also be classified by the degree to which they will make decisions based on your document. Pay special attention to those most likely to use your report to create change. Use the following three levels to classify your audience during the planning process:

>> First-Level Audience: Decision Makers

The first-level audience, the *decision makers*, must act on the information. If you are proposing a new fax machine for your office, first-level readers will decide whether to accept or reject the idea. If you are comparing two computer systems for storing records at a hospital, the first-level audience will decide which unit to purchase. If you are describing electrical work your firm completed in a new office building, the first-level audience will decide whether the project has fulfilled the agreed-on guidelines.

In other words, decision makers translate information into action. They are usually, but not always, managers within the organization. One exception occurs in highly technical companies, where decision makers may be technical experts with advanced degrees in science or engineering. Another exception occurs when decision-making committees consist of a combined audience. For example, the directors of a homeless shelter may be charged with the task of choosing a firm to bring a donated building up to code.

>> Second-Level Audience: Advisers

This second group could be called *influencers*. Although they don't make decisions themselves, they read the document and give advice to those who make the decisions. Often, the second-level audience is composed of experts, such as engineers and accountants, who are asked to comment on technical matters. One increasingly important type of second-level audience is regulators and auditors, who evaluate procedural documents to ensure compliance with laws and best practices. After reading the summary, a decision-making manager may refer the rest of the document to advisers for their comments.

>> Third-Level Audience: Receivers

Some readers do not take part in the decision-making process but only receive information contained in the document. For example, a report recommending changes in the hiring of fast-food workers may go to the store managers after it has been approved, just so they can put the changes into effect. This third-level audience usually includes readers defined as *operators* in the previous section—that is, those who may be asked to follow guidelines or instructions contained in a report.



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>>> Collecting Information

Having established a clear sense of purpose and your readers' needs, you're ready to collect information for writing. Although you may want to use a scratch outline to guide the research process, a detailed outline is normally written after you have collected the necessary research to support the document.

This section lays out a general strategy for research. Details about research are included in Chapter 9 ("Technical Research").

>> Research Step 1: Decide What Kind of Information You Need

There are two types of research—primary and secondary. *Primary research* is what you collect on your own, whereas *secondary information* is generated by others and found in books, periodicals, or other sources. Figure 2–4 gives examples of both types. Use the kind of research that will be most helpful in supporting the goals of your project. Following are two examples:

- **Report context for using primary research:** A recommendation report to purchase new CAD (Computer-Assisted Design) software for the design department is supported by your survey of the designers, who will be using the software that you recommend.

Primary	Secondary
1. Interviews 2. Surveys 3. Laboratory Work 4. Field Work 5. Personal Observation	1. Bibliographies (lists of possible sources—in print or on computer data bases) 2. Periodical Indexes (lists of journal and magazine articles, by subject) 3. Newspaper Indexes 4. Books 5. Journals 6. Newspapers 7. Reference Books (encyclopedias, dictionaries, directories, etc.) 8. Government Reports 9. Company Reports

■ **Figure 2–4 ■**
Research sources

■ **Report context for using secondary research:** Your report on CAD software depends on data found in several written sources, such as an article in a mechanical engineering journal that contrasts features of three programs. On the basis of this article, you recommend a particular software package.

>> Research Step 2: Devise a Research Strategy

Before you start surfing the Internet or searching through libraries, you need a plan. In its simplest form, this plan may list the questions that you expect to answer in your quest for information. For example, a research strategy for a report on office chairs might pose these questions:

- What kind of chair design do experts in the field of workplace environment recommend?
- Are there any data that connect the design of chairs with the efficiency of office workers?
- Have any specific chair brands been recommended by experts?
- Is there information that suggests a connection between poor chair design and specific health problems?

>> Research Step 3: Record Notes Carefully

See Chapter 9 for the variety of resources available to you at a well-stocked library. Once you have located the information you need in these sources, you must be very careful incorporating it into your own document. As Chapter 9 points out, you must clearly distinguish direct quotations, paraphrasing, and summaries in your notes. Then, when you are ready to translate these notes into a first draft, you know exactly how much borrowed information you used and in what form.

>> Research Step 4: Acknowledge Your Sources

The care that you took in Step 3 must be accompanied by thorough acknowledgment of your specific sources. Chapter 9 explains how to use several citation systems.

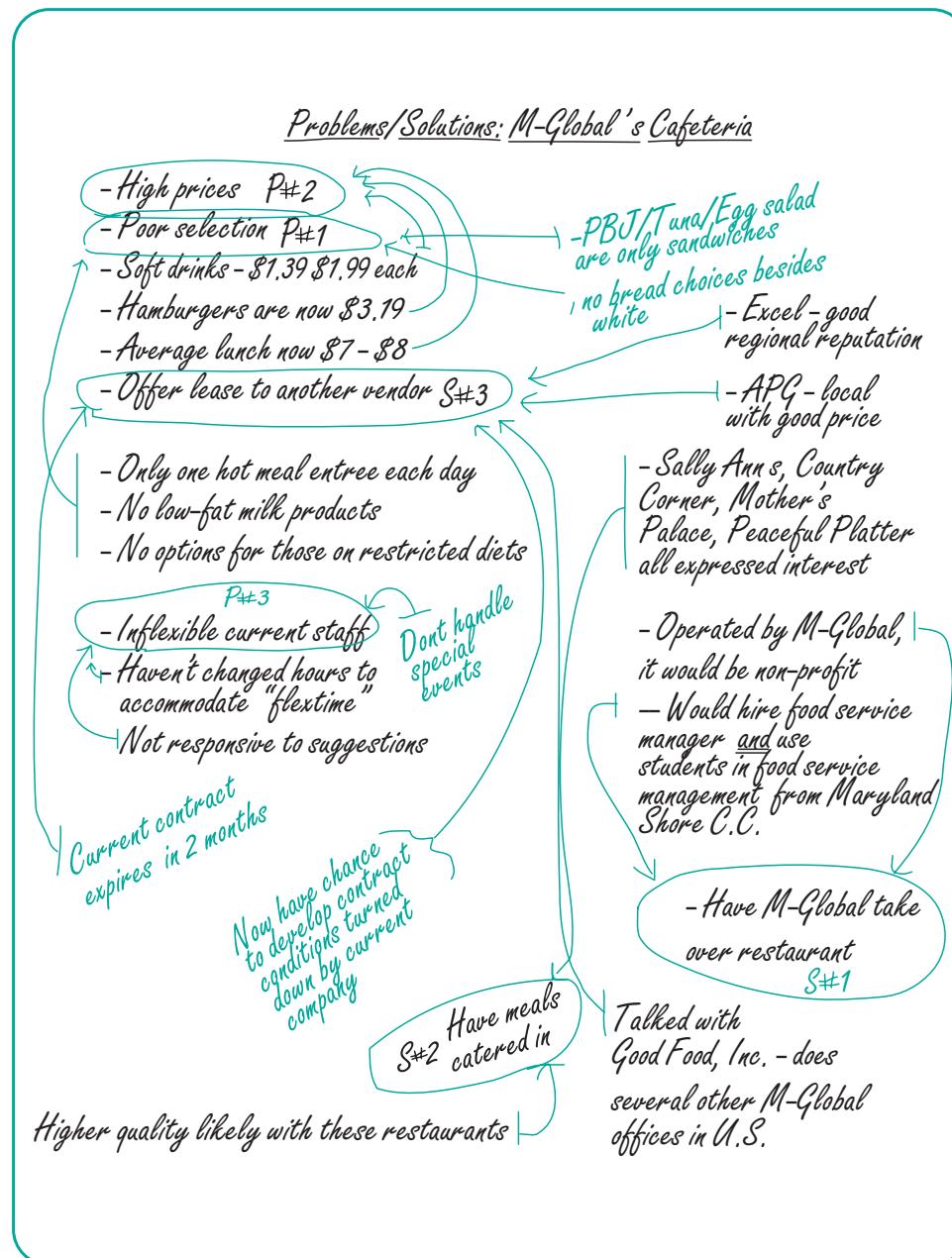
>> Research Step 5: Keep a Bibliography for Future Use

Consider any research you do for a writing project to be an investment in later efforts. Even after your research for a project is complete and you have submitted the report, keep active files on any subjects that relate to your work. Update these files every time

you complete a research-related project, such as the two mentioned previously on CAD software and chair design. If you or a colleague wants to examine the subject later, you have developed your own database from which to start.

>>> Completing an Outline

After determining purpose and audience and completing your research, you are ready to write an outline. Outlines are one method for planning a piece of writing, especially long documents. They do not have to be pretty; they just have to guide your writing of the draft. If you conscientiously use outlines now, you will find it easier to organize and write documents of all kinds throughout your career. Figures 2–5 and 2–6 show the outline process in action. Refer to the following steps in preparing functional outlines:



■ **Figure 2–5** ■ The outlining process:
Early stage

■ **Figure 2–6** ■ The outlining process:
Later stage

PROBLEMS AND SOLUTIONS: CURRENT CAFETERIA IN BUILDING

- I. Problem #1: Poor selection
 - A. Only one hot-meal entree each day
 - B. Only three sandwiches—PBJ, egg salad, and tuna
 - C. Only one bread—white
 - D. No low-fat milk products (milk, yogurt, LF cheeses, etc.)
 - E. No options for those with restricted diets
- II. Problem #2: High prices
 - A. Soft drinks from \$1.39 to \$1.99 each
 - B. Hamburgers now \$3.19
 - C. Average lunch now \$7–\$8
- III. Problem #3: Inflexible staff
 - A. Unwilling to change hours to meet M-Global's flexible work schedule
 - B. Have not acted on suggestions
 - C. Not willing to cater special events in building
- IV. Solution #1: End lease and make food service an M-Global department
 - A. Hire food service manager
 - B. Use students enrolled in food service management program at Maryland Shore Community College
 - C. Operate as nonprofit operation—just cover expenses
- V. Solution #2: Hire outside restaurant to cater meals in the building
 - A. Higher quality likely
 - B. Initial interest by four nearby restaurants
 - 1. Sally Ann's
 - 2. Country Corner
 - 3. Mother's Palace
 - 4. Peaceful Platter
- VI. Solution #3: Continue leasing space but change companies
 - A. Initial interest by three vendors
 - 1. Excel—good regional reputation for quality
 - 2. APG—close by and local, with best price
 - 3. Good Food, Inc.—used by two other M-Global offices with good results
 - B. Current contract over in two months
 - C. Chance to develop contract not acceptable to current company

>> Outline Step 1: Record Your Random Ideas Quickly

At first, ideas need not be placed in a pattern. Just jot down as many major and minor points as possible. For this exercise, try to use only one piece of paper, even if it is oversized. Putting points on one page helps prepare the way for the next step, in which you begin to make connections among points.

>> Outline Step 2: Show Relationships

Next, connect related ideas. Using your brainstorming sheet, follow these three steps:

1. Circle or otherwise mark the points that will become main sections.
2. Connect each main point with its supporting ideas, using lines or arrows.
3. Delete material that seems irrelevant to your purpose.

Figure 2–5 shows the results of applying Steps 1 and 2 to a writing project at M-Global, Inc. Diane Simmons, office services manager at the Baltimore branch, plans to recommend a change in food service. She uses the brainstorming technique to record her major and minor points. First, she circles the six main ideas. As it happens, these ideas include three main problems and three possible solutions, so she labels them P#1 through P#3 (problems) and S#1 through S#3 (solutions). Second, she draws arrows between each main point and its related minor points. In this case, there is no material to be deleted. Although the result is messy, it prepares her for the next step of writing the formal outline.

Like Diane Simmons, you face one main question as you plan your outline: What pattern of organization best serves the material? Chapter 4 presents an *ABC format* that applies to overall structure. Each document should start with an **Abstract** (summary), move to the **Body** (discussion), and end with a **Conclusion**.

>> Outline Step 3: Draft a Final Outline

Once related points are clustered, it is time to transform what you have done into a somewhat ordered outline (Figure 2–6). This step allows you to (1) refine the wording of your points and (2) organize them in preparation for writing the draft. Although you need not produce the traditional outline with Roman numerals and so on, some structure is definitely needed. Your main points and subpoints may help you identify sections of your document that will be identified by headings and subheadings. Abide by these basic rules when outlining your project:

- **Depth:** Make sure every main point has enough subpoints so that it can be developed thoroughly in your draft.
- **Balance:** When you decide to subdivide a point, break it down into at least two subheadings (because any object that is divided has at least two parts). This same rule applies to headings and subheadings in the final document. In fact, a good outline provides you with the wording for headings and subheadings. The outline even becomes the basis for a table of contents in formal documents.
- **Parallel Form:** For the sake of consistency, phrase your points in either topic or sentence form. Sentences give you a head start on the draft, but they may lock you into wording that needs revision later. Most writers prefer the topic approach; topics take up less space on the page and are easier to revise as you proceed through the draft.

>> Outline Step 4: Consider Where to Use Graphics

The time to consider using graphics in your document is at the planning stage of the writing process, not at the drafting or revising stage. Graphic communication thus

becomes an integral part of the document. Too often, graphics such as charts, pictures, and tables appear to be a mere afterthought—because they probably were. Instead, you should use the outline stage to plan a strategy for developing graphics that complement your text.

In the final outline in Figure 2–6, for example, the writer might discover several opportunities for reinforcing textual information with visual language. Following are a few possibilities:

- Chart showing the increase in cafeteria prices over the last three years
- Table contrasting prices for a few lunch items at the current cafeteria and at the four restaurants mentioned in section V. B of the outline
- Map showing the location of the four nearby restaurants
- Chart showing the relative costs for the contract with the vendors listed in section VI. A of the outline

As a side benefit, the exercise of planning graphics at the outline stage may uncover weaknesses in your argument—that is, places where you need to develop further statistical support. Chapter 12 covers the use of graphics in more detail.

>> Writing Initial Drafts

With your research and outline completed, you are ready to begin the draft. This stage in the writing process should go quickly if you have planned well. Yet many writers have trouble getting started. The problem is so widespread that it has its own name—“writer’s block.” If you suffer from it, you are in good company; some of the best and most productive writers often face writer’s block.

In business and industry, the worst result of writer’s block is a tendency to delay the start of writing projects, especially proposals; these delays can lead to rushed final drafts and editing errors. Outlining and other planning steps are wasted if you fail to complete drafting on time. The suggestions that follow can help you start writing and then keep the words flowing.

>> Drafting Step 1: Schedule at Least a One-Hour Block of Drafting Time

Most writers can keep the creative juices flowing for at least an hour if distractions are removed. Rather than writing for three or four hours with your door open and thus with constant interruptions, schedule an hour or two of uninterrupted writing time. Most other business can wait an hour, especially considering the importance of good writing to your success. Colleagues and staff members will adjust to your new strategy for drafting reports. They may even adopt it themselves.



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>> Drafting Step 2: Do Not Stop to Edit

Later, you will have time to revise your writing; that time is not now. Instead, force yourself to get ideas from the outline to paper or computer screen as quickly as possible. Most writers have trouble getting back into their writing pace once they have switched gears from drafting to revising.

>> Drafting Step 3: Begin with the Easiest Section

In writing the body of the document, it isn't necessary that you move chronologically from beginning to end. Because the goal is to write the first draft quickly, you may want to start with the section that flows best for you. Later, you can piece together sections and adjust content.

>> Drafting Step 4: Write Summaries Last

As already noted, the outline used for drafting covers just the body of the document. Only after you have drafted the body should you write overview sections, such as summaries. You cannot summarize a report until you have actually completed it. Because most writers have trouble with the summary—a section that is geared mainly to decision makers in the audience—they may get bogged down if they begin writing it prematurely.

>>> Revising Drafts

You may have heard the old saw “There is no writing, only rewriting.” In technical communication, as in other types of writing, careful revision breeds success. The term *revision* encompasses five tasks that transform early drafts into final copy:

1. Adjusting content
2. Editing for style
3. Editing for grammar
4. Editing for mechanics
5. Reviewing layout and graphics

Following are some broad-based suggestions for revising your technical prose. For more details, consult Chapter 17, “Style in Technical Writing,” or the Handbook at the end of the book.

>> Revision Step 1: Adjust Content

In this step, go back through your draft to (1) expand sections that deserve more attention; (2) shorten sections that deserve less attention; and (3) change the location of sentences, paragraphs, or entire sections. The use of word processing has made this step considerably easier than it used to be.

>> Revision Step 2: Edit for Style

The term *style* refers to changes that make writing more engaging, more interesting, and more readable. Such changes are usually matters of choice, not correctness. For example, you might want to

- Shorten paragraphs
- Rearrange a paragraph to place the main point first
- Change sentences written in the passive voice to the active voice
- Shorten sentences
- Define technical terms
- Add headings, lists, or graphics

One stylistic error deserves special mention because of its frequency: long, convoluted sentences. As a rule, simplify a sentence if its meaning cannot be understood easily the first time it is read. One easy way to do this is to make sure that actions are expressed in verbs, not hidden in nouns. Also, be wary of sentences that are so long you must take a breath before you complete reading them out loud. (See Chapter 17 for more on clear style.)

>> Revision Step 3: Edit for Grammar

You probably know your main grammatical weaknesses. Perhaps comma placement or subject–verb agreement gives you problems. Or maybe you confuse words like *imply/infer*, *effect/affect*, or *complementary/complimentary*. In editing the document for grammar, focus on the particular errors that have given you problems in the past.

>> Revision Step 4: Edit for Mechanics

Your last revision of text should be for mechanical errors, such as misspelled words, misplaced pages, incorrect page numbers, missing illustrations, and errors in numbers (especially cost figures). Word-processing software can help prevent some of these errors, such as most misspellings, but computer technology has not eliminated the need for at least one final proofing check.

>> Revision Step 5: Review Layout and Graphics

Finally, you should review the visual elements of your document. Be sure that all illustrations are referred to in the text and that they are placed appropriately. You should also check for consistency in layout and design elements such as headings, list formats, fonts, and use of white space. For more about using layout and graphics correctly and consistently, see Chapter 13. This five-stage revision process produces final drafts that reflect well on you, the writer.



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Next are three final suggestions that apply to all stages of the process:

1. **Use computer tools to make the process easier.** Some word-processing programs allow you to reformat an outline as a document. You can also use the computer to track the changes you have made during revision and to store and manage multiple versions of your documents. If you change your mind about a revision, you can retrieve an earlier version of your document.
2. **Depend on another set of eyes besides your own.** One strategy is to form a partnership with another colleague, whether in a technical writing class or on the job. In this arrangement, you both agree that you will carefully review each other's writing. This buddy system works better than simply asking favors of friends and colleagues. Choose a colleague in whom you have some confidence and from whom you can expect consistent editing quality. However, never make changes suggested by another person unless you fully understand the reason for doing so. After all, it is your writing.
3. **Remember the importance of completing each step separately.** Revising in stages yields the best results.

The writing process discussed in this chapter is the same for all kinds of technical communication—from the simplest correspondence to formal reports to Web site content. You may find that you are not working through this process alone. Much workplace writing is done collaboratively. Chapter 3 explains the process when writing is done in teams.

>>> Chapter Summary

- Technical communication aims to inform readers about a subject, analyze a subject to help the readers understand it and make decisions about it, and persuade readers about the appropriateness of a recommendation.
- Readers of technical communication are often busy and appreciate documents that are clear and easy to follow.
- Audiences for technical communication differ in their levels of expertise and their influence over decision making within an organization.
- Writers should keep their audience's needs and interest in mind when collecting and organizing information.
- Thorough planning can make the drafting process easier.
- Revising and editing will produce a clean document that projects a professional image.
- This chapter introduces the Planning Form, which will help students prepare to write effective documents for their class and in the workplace.

>>> Learning Portfolio

Communication Challenge Bad Chairs, Bad Backs

The engineers, programmers, scientists, and other employees in M-Global's Boston branch spend a lot of time in their chairs. Although all the office furniture is new and expensive, employees have experienced regular back pain since the new chairs arrived. Unfortunately, the furniture was ordered through the corporate office, so complaints cannot be handled in a routine and informal way in the Boston office. The branch manager, Richard DeLorio, mentioned the problem to his boss, Jeannie McDuff, Vice President for Domestic Operations. Predictably, Jeannie asked Richard to "put it in writing."

This case study explains Richard's approach, presents the analysis of the memo that is part of the proposed strategy, and ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Gathering Evidence

Richard knows that he must thoroughly and objectively document the problems associated with the arrival of the new chairs. He asks one of the engineers to gather information that supports his memo. The engineer creates an elaborate spreadsheet with accompanying charts that identifies the employees who have received the new chairs, as well as the frequency, types, and timing of specific complaints about back pain.

Richard knows that Jeannie does not have the time or interest to work her way through all the data. What is more, as he looks at it, he realizes that he can't draw a direct correlation between the data and the back pain that he and his fellow employees have been experiencing. He asks the engineer to revise the information and to write a discussion of the data so that Jeannie can quickly and easily see the point being made. At the same time, Richard researches information about office chairs and back pain.

Writing the Memo

Richard creates the following analysis to help him plan his memo:

Purpose: This memo will review the problems that have been observed since the arrival of the chairs, including the costs in lost time and medical treatment. It will also recommend chairs that meet ergonomic recommendations.

Results: My boss, Jeannie McDuff, will authorize the purchase of new chairs for the Boston branch.

Readers: Jeannie McDuff is the primary reader and decision maker. Other readers may include the purchasing

officer, who can use this information to select chairs (assuming Jeannie agrees to replace them).

Information About Jeannie McDuff: Jeannie joined M-Global as a civil engineer. Even though her grandfather founded the company, she has been expected to work her way up through the ranks. However, as VP for Domestic Operations, she doesn't have much to do with the day-to-day branch operations and probably didn't have much to do with actually selecting the chairs that we have been given. The most important point to make to her is that these chairs are hurting our productivity (through absences and distraction as a result of the discomfort) and could cost M-Global money (through increased use of medical insurance—which could lead to increased insurance premiums).

Jeannie prefers clean, clear documents—as elaborate as necessary, but following the guidelines for Plain English style recommended by the federal government. (See Chapter 17 for more on Plain English.)

Questions and Comments for Discussion

1. How could Richard have helped the engineer create usable information when he first assigned the writing task?
2. From Richard's planning sheet, what strategies do you think will help him convince Jeannie to replace the chairs? What information should he emphasize? How should he organize his points?
3. What other information could have been useful to help Richard make his case?
4. Even though the document written by the engineer and the document that Richard wrote include some of the same information, the documents are different because they have different purposes and audiences. How are they different? How do purpose and audience contribute to those differences?

Write About It

You are one of the employees who has had back problems because of the new chairs, and Richard has asked you to create a document of no more than one page that identifies the most important concerns for safe, comfortable, and ergonomically correct computer stations. Research the recommendations for workplace health and computer use, and write your recommendation in a memo of one page. Include a list of your sources so that Richard can find additional information, if he wants to.

Collaboration at Work Outline for a Consulting Report

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) use team time inside or outside class to complete the case, and (3) produce an oral or written response. For guidelines about writing in teams, see Chapter 3.

Background for Assignment

Assume you and your team members comprise one of several teams from a private consulting firm. The firm has been hired to help plan a hotel/conference center to be built on your campus. Although the center will cater to some private clients, most customers will be associated with your institution—for example, parents of students, candidates for teaching or administrative positions, and participants in academic conferences.

Obviously, a project of this sort requires careful planning. One step in the process is to assess the needs of various people and groups that will use the center.

Following are listed just a few of the many groups or departments whose needs should be considered:

Accounting	Landscaping	Registration
Catering	Maintenance	Sales and marketing
Computing	Procurement	Security
Housekeeping	Recreation	Training

The range of topics is broad because the facility will have multiple purposes for a diverse audience.

Team Assignment

The consulting firm—of which your team is a part—will issue a joint report that describes the needs of all groups who will work in the new hotel/conference center. Assume that your team’s task is to produce just a portion of the outline—not the text—of the report. Your outline will address one or more of the needs reflected in the previous list or other needs of your choosing that have not been listed.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class.

Analyze the context of each assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

Assignment 8 is an ongoing assignment.

excerpt was written and the technical level of the intended readers.

A. You can determine the magnitude of current flowing through a resistor by use of this process:

- Connect the circuit (power supply, resistor, ammeter, voltmeter).
- Set the resistor knob to a setting of “1.”
- Turn the voltage-adjusting knob to the left until it stops rotating.
- Switch the voltmeter to “On” and make sure it reads “0.00 volts.”
- Switch the power supply to “On.”
- Slowly increase the voltage on the voltmeter from 0 to 10 volts.
- Take the reading from the ammeter to determine the amount of current flowing through the resistor.

B. After careful evaluation of several testers, I strongly recommend that Langston Electronics Institute purchase 100 Mantra Multitesters for use in our laboratories in Buffalo, Albany, and Syracuse.

1. Analysis: Purpose and Audience

The following examples deal with the same topic in four different ways. Using this chapter’s guidelines on purpose and audience, determine the main reason for which each

C. Selected specifications for the Ames Multitester are as follows:

- Rangers..... 43
- DC Voltage 0–125–250mV 1.25–2.5–10–5–125–500–1000V
- AC Voltage 0–5–25–125–250–500–1000V
- DC Current..... 0–25–50 μ A–2.5–5–25–50–250–500mA–10amperes
- Resistance 0–2K–20K–200K–20 Mega ohms
- Decibels –20 to +62 in db 8 ranges
- Accuracy $\pm 3\%$ on DC measurements
 $\pm 4\%$ on AC measurements
 $\pm 3\%$ on scale length on resistance
- Batteries one type AA penlight cell
- Fuse..... 0.75A at 250V

Note that the accuracy rate for the Ames is within our requirements of $\pm 6\%$ and is considerably lower than the three other types of testers currently used by our staff.

D. Having used the Ames Multitester in my own home laboratory for the last few months, I found it extremely reliable during every experiment. In addition, it is quite simple to operate and includes clear instructions. As a demonstration of this operational ease, my 10-year-old son was able to follow the instructions that came with the device to set up a functioning circuit.

2. Analysis: Audience

Find a commercial Web site (the Web site of a manufacturer or retailer) designed for children. Sites that promote cereal, toys, or snack foods are good choices.

- Is the site designed to inform, provide analysis, or persuade? How do you know?
- What have the designers of the Web site done to appeal to their audience? What do their choices tell you about the results of their audience analysis?
- Is there a section on the Web site specifically targeted to parents? How does it differ from the Web pages for children? How is it similar to the pages for children?

3. Analysis: Contrasting Styles

Find two articles on the same topic in a professional field that interests you. One article should be taken from a newspaper or magazine of general interest, such as one you would find on a newsstand; the other should be from a magazine or journal written mainly for professionals in the field you have chosen. Now contrast the two articles according to purpose, intended audience, and level of technicality.

4. Analysis, M-Global Context: Diverse Audiences

Carefully examine the employee orientation guide in Model 1–1 in Chapter 1. This guide is to be given to all new employees at M-Global, so it has been created for readers of various technical and educational backgrounds. Consider the strategies that a writer might use to create a document for such a diverse audience. Explain why you think the author of the orientation guide has been successful or unsuccessful in designing a document that is appropriate to its audience.

5. Practice, M-Global Context: Audience Analysis

Review the information on pages 48–50 in this chapter about Diane Simmons' project proposing solutions to the problems related to the cafeteria at the M-Global branch in Baltimore. Because the Baltimore branch is also the home office, Diane will submit her proposal to Karrie Camp, Vice President for Human Resources. Karrie has been with M-Global for 30 years and is serious about the "resources" part of human resources. She believes that ensuring that employees work efficiently and effectively for the good of M-Global is an important part of her job. Because Karrie started as a secretary at M-Global, and has worked her way up to her current position, she likes to think of herself as "just another employee." However, she can be intimidating, and she brags that she "won't put up with any nonsense."

Assume the role of Diane, and complete a Planning Form, assuming that Karrie Camp is your primary audience. See page 39 or the inside back cover for the Planning Form.

6. Practice: Rewrite for a Different Audience

Locate an excerpt from a technical article or textbook, preferably on a topic that interests you because of your background or college major. Rewrite all or part of the selection so that it can be understood by readers who have no previous knowledge of the topic.

7. Practice: Collecting and Organizing Information

Most word-processing programs include a feature that allows users to track the changes that are made to documents, as well as insert questions, comments, and advice for revision. This feature is especially useful for collaborative projects because it allows team members to see who recommended various changes, as well as allowing several people to comment on drafts.

- A. Identify the reviewing features that are available in your word-processing program and how they are accessed.

Create a list of the features that you believe would be most useful for students working on team projects.

- B. Organize the information you have collected into a single-page reference for students who want to use the reviewing features in your word-processing program.

8. Practice: Revision

As noted in the chapter, it is helpful to become aware of the problems that occur most frequently in your writing. One way to do this is to keep a record, or log, of the problems that appear most often. Create a log by listing the most common broad categories of errors:

- Sentence boundary errors (fragments, run-ons, comma splices)
- Agreement (subject/verb, pronoun/reference, changes in tense)
- Word choice
- Punctuation
- Spelling

To begin collecting information about your most common problems, look at papers that your teachers have returned to you. In your log, record problems that have been marked on these papers. After you have recorded information from four or five papers, you may be able to see patterns developing. For example, are most of your entries “sentence boundary errors”? If so, are they all similar—maybe run-on sentences? Once you have identified your common problems, develop strategies for proofreading for them. To find run-on sentences, for example, try looking for sentences with two verbs. If you often have problems with punctuation—commas, for example—make sure you look them up in the handbook in the back of this book, learn the rules, and check them when you proofread your papers.

9. Ethics Assignment

In college, you are encouraged to create new material for each class and every assignment. In fact, turning in the same material for more than one class is considered unethi-

cal. In the workplace, you may find that attitudes about the reuse of text are quite different. Search the Internet for information on “boilerplate” text, “single sourcing,” and text “reuse” in technical communication. With this background information, interview a friend, relative, or recent college graduate who works as a technical professional or manager to ask about the reuse of text in his or her organization. Prepare to share your results with the class.



10. International Communication Assignment

World cultures differ in the way they organize information and in the visual cues they use for readers. Using a resource like <http://newspapers.com>, find Web sites for newspapers from three different countries and analyze each Web site for the way information is presented. If possible, analyze the Web site that is in the language in which the newspaper is published. (For example, use the Japanese language site for a Japanese newspaper.) Do you notice any differences in how information is arranged on the pages of the site? For example, are the Web site’s topics arranged vertically on the left of the page, as they are on most English-language Web sites? How are graphics treated? What other differences do you see? Write a brief essay about what you have learned about how these Web sites present information, and what issues companies that are creating Web sites for global audiences need to be aware of.



11. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

As part of the annual Earth Day celebration (April 22), you and several classmates have been asked to propose an event to the Student Affairs Office on your campus. It is supposed to be an “environmentally friendly” activity conducted on campus by campus staff, students, faculty, or individuals from outside the campus community. Following the guidelines in this chapter, develop an outline of the project you plan to propose.



Chapter | 3 | Collaboration and Writing



>>> Chapter Objectives

In this chapter, students will

- Learn different approaches to collaborative writing
- Be introduced to guidelines for successful writing teams
- Learn the importance of planning for collaborative projects
- Be introduced to the roles that individual team members can play
- Learn techniques for effective meetings
- Be introduced to guidelines for effective collaboration between writers and subject matter experts
- Learn about planning software for managing projects
- Learn about electronic tools for easy communication among team members
- Learn about electronic tools for the collaborative writing process

As the leader of an engineering team in M-Global's Equipment Design Lab (also known as EDL), Scott Montgomery guided the design of a new sensor that generates quicker and more accurate results from on-site tests for soil contamination. Now, he has been asked to write a white paper about the new sensor. In some industries, white papers are a common way to share information about new developments as well as to publicize the organization. Scott is preparing to write such a paper.¹ (For more on white papers, see Chapter 12.)

Scott begins by gathering documents that have already been written about the sensor. The Equipment Design Lab team has kept meticulous records during the development and testing of the sensor, and now that M-Global is preparing to offer the new sensor to its clients, the marketing team has created additional documents that Scott has access to through the company intranet. He gathers the written materials, creates a framework, and decides how the existing text will fit into his plan. He writes some new sections himself, connecting the existing text and revising it for a unified voice and purpose. Scott then asks two of his team members, engineers who have written much of the documentation for the sensor, to serve as co-authors. The three of them review and revise drafts until they are satisfied and are ready to pass the paper along to the vice president for research and training and to the legal department to ensure that the paper does not make any unsubstantiated claims.

By the time it is presented at a conference and published on the M-Global Web site, the white paper will include the work of dozens of people, even though only three will be listed as authors.

Your writing experience in school may reinforce the image of the solitary writer—with sweat on brow—toiling away on research, outlines, and drafts. In fact, this description does not typify much writing in the working world outside college. In many professions and organizations, writing in teams is the rule rather than the exception.

In the workplace, correspondence and some short documents may be written by a single author, but most documents are the result of some kind of collaboration between writers. In one study, technical communication managers listed collaboration with subject matter experts and collaboration with co-workers as the two most important competencies for technical communicators.² This collaboration may be as simple as asking a co-worker to read through a report before turning it in to a supervisor, or as complex as being part of a standing team that creates multiple documents. You may collaborate with others in the development and delivery of products or services, in the marketing of those products or services, or in creating documentation to support those products or services. *Collaborative writing* (also called *team writing*) can be defined as follows:

Collaborative writing: The creation of a document by two or more people. Documents are created collaboratively to meet the common purposes and goals of a community of writers, editors, and readers.

This chapter focuses on collaboration strategies as they are used in the writing process, but many of these strategies can contribute to the success of any team project.

¹This scenario draws on a case study published by D. A. Winsor. (1989). An engineer's writing and the corporate construction of knowledge. *Written Communication*, 6, 270–285.

²K. T. Rainey, R. K. Turner, & D. Dayton. (2005). Do curricula correspond to managerial expectations? Core competencies for technical communicators. *Technical Communication*, 52 (3), 323–352.

>>> Approaches to Collaboration

The scope of the writing project, the setting in which it is written, and the number of people involved can all influence the form that collaborative writing takes. There are five common approaches to writing collaboratively.

■ **Divide and conquer:** When the writing project is large and has clearly defined sections, it may be helpful to assign individual sections of the document to specific writers. Later in the process, the parts of the document are brought together and combined. Many documents today are produced with a version of this approach that depends on modular writing, discussed later in this chapter.

■ **Specialization:** Often referred to as “writing in cross-functional teams,” this is a version of divide and conquer in which parts of the project are assigned to team members because of their specialty. On a proposal-writing team, for example, an engineer might write the technical descriptions and specifications; an accountant might write up the budget projections; someone from marketing who is familiar with the potential client might write the final sections of the proposal; and a technical communicator might develop the overall plan for the document, assemble the parts, and provide the document design and final editing work.

■ **Sequence:** In this approach, several people are involved in creating a document, but instead of working on it at the same time, they pass it from one person to the next. An engineer may write a description of a new product and then pass that along to a documentation specialist, who revises the description for readers who don’t have the engineer’s expertise. The documentation specialist may then pass the document along to a marketing communication writer, who uses it to create a description of the product for the company’s Web site.

■ **Dialogue:** When two writers are working together on a project, they may work best by sending drafts back and forth to each other, commenting and revising until they are both pleased with the final draft. This is a common practice in settings where supervisors suggest revisions in the documents that their employees write, or when a writer is collaborating with an editor. When writing in this back-and-forth dialogue, it is important to keep versions of each draft separate, in case the writers decide that an earlier version was more appropriate for the document’s purpose.

■ **Synthesis:** This approach to team writing works best with two or three writers, and with shorter documents. The team sits together and writes together, adding ideas and commenting on the work as it progresses. This is the most seamlessly collaborative approach to writing, and it is most successful when the members of the team have worked together long enough to know each other well.

No matter which of these approaches you use, some common practices will improve any collaborative writing project and will produce a document with a unified voice. The next section describes these practices.



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>> Collaboration and the Writing Process

Writing collaboratively uses the same steps in the writing process as those introduced in Chapter 2. The team must identify the purpose of the document and the needs of its audience. It must collect information, plan the document, draft it, and revise it. And the team must do this task together, creating a cohesive and useful document. The following guidelines for successful team writing can be used in this course and throughout your career.

Guidelines for Team Writing

>> Team Guideline 1: Get to Know Your Team

Most people are sensitive about strangers evaluating their writing. Before collaborating on a writing project, learn as much as you can about those with whom you will be working. Drop by their offices before your first meeting, or talk informally as a group before the writing process begins. In other words, establish a personal relationship first. This familiarity helps set the stage for the spirited dialogue, group criticism, and collaborative writing to follow.

>> Team Guideline 2: Set Clear Goals and Ground Rules

Every writing team needs a common understanding of its objectives and procedures for doing business. Either before or during the first meeting, the following questions should be answered:

1. What is the team's main objective?
2. Who will serve as team leader?
3. What exactly will be the leader's role in the group?
4. How will the team's activities be recorded?
5. How will responsibilities be distributed?
6. How will conflicts be resolved?
7. What will the schedule be?
8. What procedures will be followed for planning, drafting, and revising?

The guidelines that follow offer suggestions for answering the preceding questions.

>> Team Guideline 3: Use Brainstorming Techniques for Planning

The term *brainstorming* means to develop ideas in a nonjudgmental fashion. In this early stage, participants should feel free to suggest ideas without criticism by colleagues in the

group. The most important rule for effective brainstorming is that there are no bad ideas in the first stages of the process. Later, the team can sift through the results of a brainstorming session to identify the best ideas for the project. This nonjudgmental approach does not come naturally to most people; therefore, the leader may have to establish ground rules for brainstorming before the team proceeds.

Following is one sample approach to brainstorming:

- Step 1:** The team recorder takes down ideas as quickly as possible.
- Step 2:** Ideas are written on large pieces of paper affixed to walls around the meeting room so all participants can see how major ideas fit together.
- Step 3:** Members use ideas as springboards for suggesting other ideas.
- Step 4:** Before meeting again, the team takes some time to digest ideas generated during the first session.

Results of a brainstorming session might look much like a nonlinear outline produced during a solo writing project. The goal of both is to generate as many ideas as possible; these ideas can be culled and organized later.

>> Team Guideline 4: Use Storyboarding Techniques for Drafting

Storyboarding helps propel participants from the brainstorming stage toward completion of a first draft. It also makes visuals an integral part of the document. Originating in the screenwriting trade in Hollywood, the storyboard process can take many forms, depending on the profession and individual organization. In its simplest form, a *Storyboard* can be a sheet of paper or an electronic template that contains (1) one draft-quality illustration and (2) a series of sentences about one topic (Figure 3–1). As applied to technical writing, the technique involves six main steps:

- Step 1:** The team or its leader assembles a topic outline from the ideas suggested in the brainstorming session.
- Step 2:** All team members are given one or more topics to develop on storyboard forms.
- Step 3:** Each member works independently on the boards, creating an illustration and a series of subtopics for each main topic (see Figure 3–1).
- Step 4:** Members meet again to review all completed storyboards, modifying them where necessary and agreeing on key sentences.
- Step 5:** Individual members develop draft text and related graphics from their own storyboards.
- Step 6:** The team leader or the entire group assembles the draft from the various storyboards.

DOCUMENT TITLE: M-Global's Training Needs

STORYBOARD TOPIC: Results of employee survey

STORYBOARD WRITER: Susan Hernandez

1. In one sentence, summarize this section of the document.

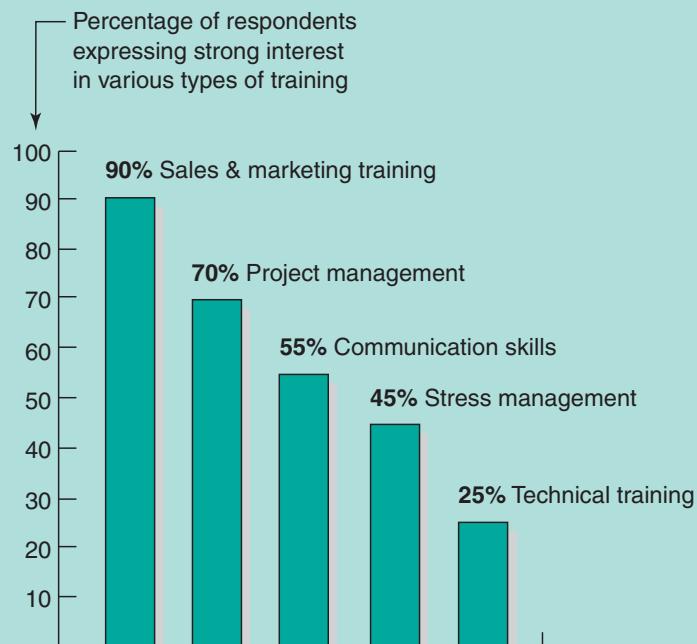
The recent survey of employees showed a strong preference for nontechnical over technical training.

2. In sentence form, include the key points to be developed in this document section. Put the points in the same order in which they will appear in the document.

- A. The greatest interest was in the area of sales and marketing training—engineers, in particular, feel deficient here.
- B. Many employees also wanted further training in project management—with an emphasis on scheduling, accounting practices, and basic management.
- C. The third-most-called-for training area was communication skills—that is, report writing, grammar, and oral presentations.
- D. Many employees want training in stress management to reduce or manage on-the-job pressures and make work more enjoyable.

E. The fifth area of interest was technical training in the respondents' own area of expertise.

3. Include an illustration that supports the text in this document section.



Caption: Training Interests of M-Global Employees

(The five most popular training topics, according to company-wide employee survey.)

■ **Figure 3-1** ■ Completed storyboard

>> Team Guideline 5: Agree on a Thorough Revision Process

As with drafting, all members usually help with revision. Team editing can be difficult, however, as members strive to reach consensus on matters of style. Following are some suggestions for keeping the editing process on track:

- Avoid making changes simply for the sake of individual preference.
- Search for areas of agreement among team members, rather than areas of disagreement.
- Make only those changes that can be supported by accepted rules of style, grammar, and use.
- Ask the team's best all-round stylist to do a final edit.

This review will help produce a uniform document, no matter how many people work on the draft.

>> Team Guideline 6: Use Computers to Communicate

When team members are at different locations, computer technology can be used to complete part of the project or even the entire project. Team members must have personal computers and the software to connect their machines to a network, which allows members to send and receive information online. See pages 75–76 in this chapter for information about tools for communication among teams.

Team Writing Guidelines

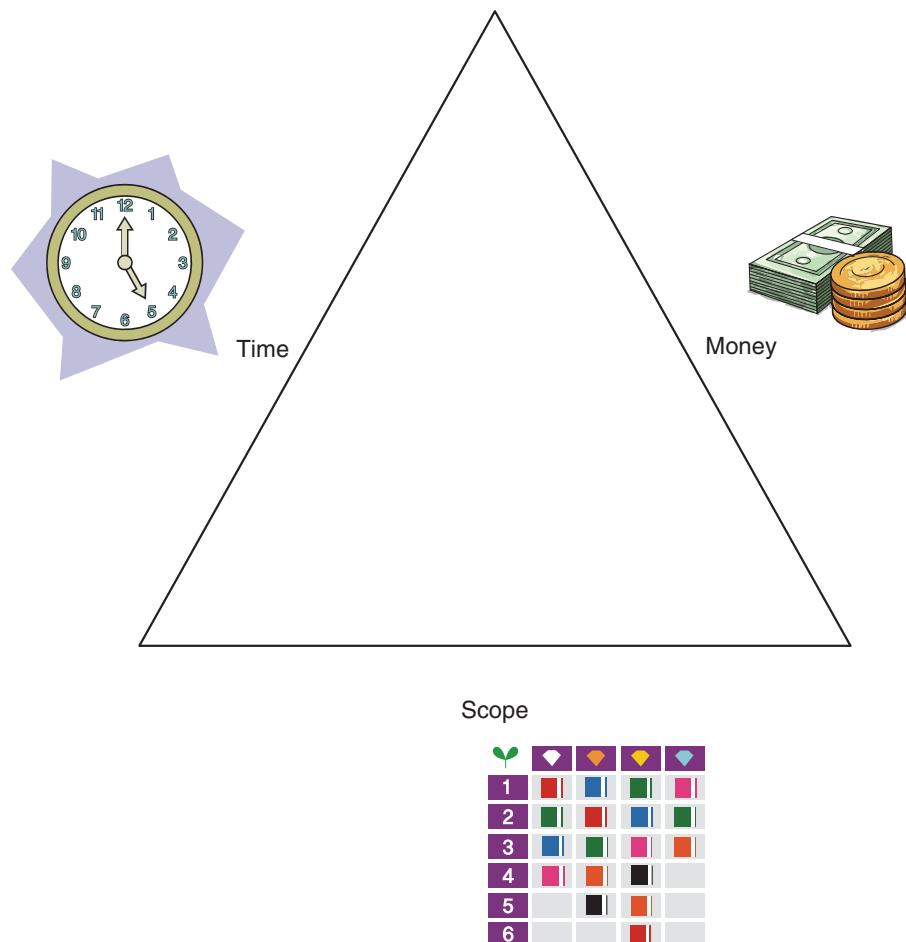
- Get to know your team
- Set clear goals and ground rules
- Use brainstorming techniques for planning
- Use storyboarding techniques for drafting
- Agree on a thorough revision process

Planning

Like any writing project, team projects must be planned carefully. The classic project triangle includes three elements: time, money, and scope (see Figure 3–2). The triangle shows how elements of a project are connected. If one of the elements changes, the others must change as well. For example, if the time allotted to a project is shortened, but the scope of the project is to remain the same, then the money spent on the project will have to increase, as more team members are brought in to complete the project in the new, shorter time frame.

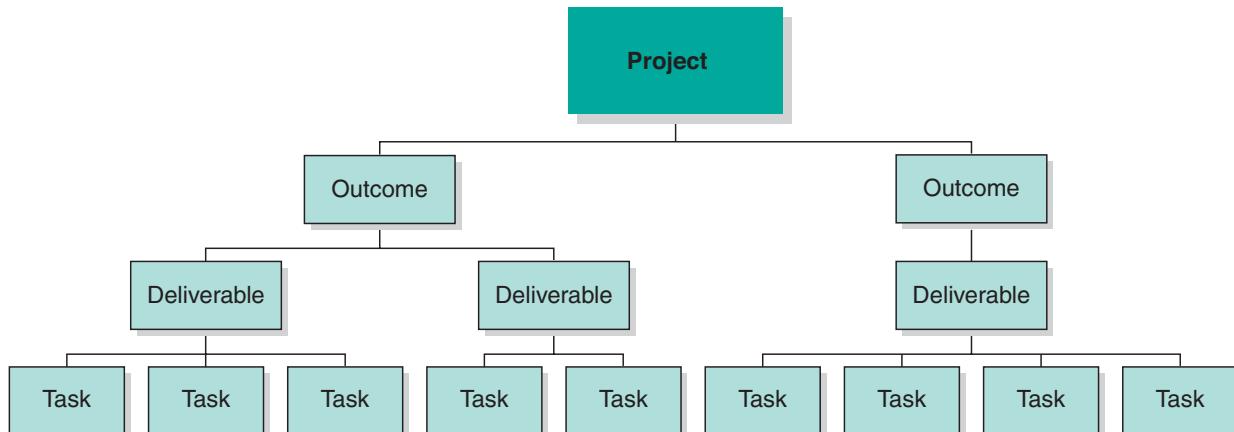
The scope of the project includes its quality, as well as its size. As part of the planning process, you must state clearly the desired outcome of the project. How will you know if you have completed it successfully? Your team's goal should be more than simply producing the required *deliverables*, or products to be submitted at the end of the project. You should decide which outcomes will measure the success of the project, how best to create deliverables that have the characteristics of the successful project, and which tasks are necessary to complete each deliverable. Figure 3–3 illustrates how these elements of a project are related.

The Planning Form in the back of this book can be used for team writing in the same way that you use it for individual writing projects. Begin by identifying your audience. Who will be reading this document? What will they expect to learn from it? You should



■ **Figure 3–2** ■ The Project Triangle

also identify the stakeholders in your team project. Obviously, the team members themselves have a stake in the success of the project, but there are others who will be interested in its success as well. They may include members of management, employees in other departments, and the organization as a whole. Clients are important stakeholders, especially if they have hired your organization for the project that your team is working



■ **Figure 3–3** ■ Elements of a successful project

on. If a client hired your organization for a project such as creating a Web site or training materials, you should work closely with the client and consider the client's representative a member of your team.

Budgeting Time and Money

Once the team has identified the tasks to be accomplished, it should identify *benchmarks*—the deadlines for specific tasks that keep the project focused and on schedule. These benchmarks vary from project to project, but common benchmarks for writing projects include the following:

- Completion of preliminary research
- Organization of collected information
- Planning of graphics
- Completion of first draft
- Editing of late draft
- Document design
- Publication of document

After identifying the benchmarks, your team can plan the calendar for the project. It is rare for a team to be able to set its own deadline. The deadline for a team project has usually been imposed from outside, so it is helpful to *backplan* the schedule for the project. Backplanning begins with the due date and works backward. For example, if a project is due July 1, the project coordinator may ask how long it will take to complete the final edit on your document. If the final edit will take two days, then the benchmark to have the draft ready is June 28. Working backward through the benchmarks that the team has identified, the project manager plans the rest of the schedule.

A team may also have to work within a monetary budget. From the beginning of the project, it should know how much it has to spend on its project. If team members must travel to collect information, the project manager must make sure that the needed funds are available. Team members should also be familiar with their organization's policies concerning copying expenses, meals, and so on. A team may have to work within a budget for publication of the final document, especially if the document is being created for a client. From the early stages of planning the project, the document's format and use of color should be planned with the budget in mind.

>>> Teamwork

Some organizations have standing teams for common types of projects such as proposal writing, or for ongoing projects such as compliance with regulations. Teams may also be temporary, coming together for one project and then separating, each member moving on to another project. Whether you are an engineer creating a document with other engineers, a technical communicator assigned to a company branch, or a documentation

specialist on a *cross-functional team* (a team that includes people from different departments, each contributing his or her own expertise to the project), you should understand and stay focused on the project goals.

Roles for Team Members

Whether the team is a permanent (or standing) team or one that has been brought together for a single project, it is important to be aware of the roles that team members play. Begin by identifying the skills that each member can contribute to the project and assign tasks based on those skills. Don't just assume that skills are limited to the team members' job titles. In the example at the beginning of this chapter, Scott is an engineer, but he has moved into a supervisory position in Research and Development because of his creativity and his communication skills. Effective teams include the following roles:

■ **The team leader** is the central contact person for team members and is also the contact for people who aren't on the team. This person may also be working as the manager for the project.

■ **The planning coordinator** is responsible for managing communication among team members, for keeping track of benchmarks and deadlines, and for preparing for meetings. On small teams, the team leader may serve as the planning coordinator.

■ **The archivist** keeps minutes of meetings, copies of all written communication, and copies of all written material related to the project. At the end of the project, the archivist creates the material that is stored in the organization's library or archives.

■ **Devil's advocate** is a role that often occurs spontaneously, as one member of a team raises concerns or points out problems. This is an important role, and the devil's advocate helps prevent *groupthink*, which occurs when the members of a group stop looking critically at the work they are doing and begin to echo each other. Some teams formally assign this role, rotating it from meeting to meeting. If you find yourself raising concerns about a project during a meeting, it is helpful to announce, "I'm just playing devil's advocate here, but . . ." as a way to keep the focus on the project and avoid making disagreements personal.



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Running Effective Meetings

Like formal presentations, meetings are a form of spoken communication that go hand in hand with written work. Important reports and proposals—even many routine ones—are often followed or preceded by a meeting. For example, you may meet with your colleagues to prepare a team-written report, with your clients to discuss a proposal, or with your department staff to outline recommendations to appear in a yearly report to management. This section will make you a first-class meeting leader by (1) highlighting some

common problems with meetings, along with their associated costs to organizations, and (2) describing guidelines for overcoming these problems.

Common Problems With Meetings

Following are six major complaints about meetings held in all types of organizations:

1. They start and end too late.
2. Their purpose is unclear.
3. Not everyone in the meeting really needs to be there.
4. Conversations get off the track.
5. Some people dominate, and others do not contribute at all.
6. Meetings end with no sense of accomplishment.

As a result of these frustrations, career professionals waste much of their time in poorly run meetings.

Because they waste participants' time, bad meetings also waste a lot of money. To find out what meetings cost an organization, do this rough calculation. Use information about an organization for which you work or for which a friend or family member works.

1. Take the average weekly number of meetings in an office.
2. Multiply that number by the average length of each meeting, in hours.
3. Multiply the result of Step 2 by the average number of participants in each meeting.
4. Multiply the result of Step 3 by the average hourly salary of the participants or the amount billable for their time.

The result, which may surprise you, is the average weekly cost of meetings in the office that you investigated. With these heavy costs in mind, the next section presents some simple guidelines for running good meetings.

Guidelines for Good Meetings

When you choose (or are chosen) to run a meeting, your professional reputation is at stake—as are the costs just mentioned. Therefore, it is in your own best interests to make sure meetings run well. When you are a meeting participant, you also have an obligation to speak up and help accomplish the goals of the meeting.

The guidelines that follow help create successful meetings. They fall into three main stages:

Stage 1: Before the meeting (Guidelines 1–4)

Stage 2: During the meeting (Guidelines 5–9)

Stage 3: After the meeting (Guideline 10)

These 10 guidelines apply to *working* meetings—that is, those in which participants use their talents to accomplish specific objectives. Such meetings usually involve a lot



StockLite/Shutterstock

of conversation. The guidelines do not apply as well to *informational* meetings, where a large number of people are assembled primarily to listen to announcements.

>> Meeting Guideline 1: Involve Only Necessary People

Necessary means those people who, because of their position or knowledge, can contribute to the meeting. Your goal should be a small working group; an ideal size is four to six people. If others must know what occurs, send them a copy of the minutes after the meeting.

>> Meeting Guideline 2: Distribute an Agenda Before the Meeting

A meeting agenda should identify the objectives of the session (Model 3–1, on page 85) clearly and should include a report by each team member, sharing what he or she has accomplished since the last meeting. The agenda also gives you, as leader, a way to keep the meeting on schedule. If you are worried about having time to cover the agenda items, consider attaching time limits to each item. This technique helps the meeting leader keep the discussion moving.

>> Meeting Guideline 3: Distribute Readings Before the Meeting

Jealously guard time at a meeting, making sure to use it for productive discussion. If any member has reading materials that committee members should review as a basis for these discussions, such readings should be handed out ahead of time. Do not use meeting time for reading. Even worse, do not refer to handouts that all members have not had the opportunity to go over.

>> Meeting Guideline 4: Have Only One Meeting Leader

To prevent confusion, one person should always be in charge. The meeting leader should be able to perform the following tasks:

- **Listen carefully** so that all views get a fair hearing.
- **Generalize accurately** so that earlier points can be brought back into the discussion when appropriate.
- **Give credit to participants** so that they receive reinforcement for their efforts.
- **Move toward consensus** so that the meeting does not involve endless discussion.

>> Meeting Guideline 5: Start and End on Time

Nothing deadens a meeting more than a late start, particularly when it is caused by people arriving late. Tardy participants are given no incentive to arrive on time when a meeting leader waits for them. Even worse, prompt members become demoralized by

such delays. Latecomers will mend their ways if you make a practice of starting right on time.

It is also important to set an ending time for meetings so the members have a clear view of the time available. Most people do their best work in the first hour of a meeting. After that, productive discussion reaches a point of diminishing returns. If working meetings must last longer than an hour, make sure to build in short breaks and stay on the agenda.

>> Meeting Guideline 6: Keep Meetings on Track

By far, the biggest challenge for a meeting leader is to encourage open discussion while still moving toward the resolution of agenda items. As a leader, you must be assertive yet tactful in your efforts to discourage the following three main time wasters:

- Long-winded digressions by the entire committee
- Domination by one or two outspoken participants
- Interruptions from outside the meeting

>> Meeting Guideline 7: Strive for Consensus

Consensus means agreement by all those present. Your goal should be to orchestrate a meeting in which all members, after a bit of compromise, feel comfortable with a decision. Such a compromise, when it flows from healthy discussion, is far preferable to a decision generated by voting on alternatives. After all, you are trying to reach a conclusion that everyone helps produce, rather than one only part of the committee embraces.

>> Meeting Guideline 8: Use Visuals

Graphics help make points more vivid at a meeting. They are especially useful for recording ideas that are being generated rapidly during a discussion. To this end, you may want someone from outside the discussion to write important points on a flip chart, a whiteboard, or an overhead transparency.

>> Meeting Guideline 9: End With a Summary

Before the meeting adjourns, take a few minutes to summarize what items have been discussed and agreed to. Review the team's progress toward benchmarks and project outcomes. This wrap-up gives everyone the opportunity to clarify any point brought up during the meeting. Also, identify clearly what each team member is responsible for accomplishing before the next meeting.

>> Meeting Guideline 10: Distribute Minutes Soon

Write and send out minutes within 48 hours of the meeting (Model 3–2, on page 86). It is important that there be a record of the meeting's accomplishments, even if it is a routine meeting. Meeting minutes should include the date and location of the meeting, list attendees and absences, and summarize

Meeting Guidelines

- Involve only necessary people
- Distribute an agenda before the meeting
- Distribute readings before the meeting
- Have only one meeting leader
- Start and end on time
- Keep meetings on track
- Strive for consensus
- Use visuals
- End with a summary
- Distribute minutes soon

discussions and decisions. If any discussion items are particularly controversial, consider having committee members approve the minutes with their signature and return them to you before final distribution.

Writers and Subject Matter Experts

Many articles have been written about the importance of collaboration between technical communicators and the engineers, programmers, scientists, and other specialists that they work with. These *subject matter experts (SMEs*, often pronounced “smees”) often contribute the technical content of documents, just as technical communicators contribute their expertise in document design, writing, and editing. Good communication is important from the beginning of any project on which technical communicators and SMEs are collaborating. A SME’s misunderstanding of what technical communicators contribute to a project is one common cause of frustration for documentation specialists. However, a lack of technical knowledge on the part of the technical communicators can frustrate the SMEs. By keeping a few important guidelines in mind, technical communicators and SMEs can collaborate more effectively.

Guidelines for Collaborating With SMEs

>> Technical Communicator Guideline 1: Use the SME’s Time Wisely

Guidelines for Collaborating With Subject Matter Experts (SMEs)

- Use the SME’s time wisely
- Put questions in writing when possible
- Prepare for interviews and meetings
- Treat the SME with respect

Do your background research before contacting the SME. Don’t waste the specialist’s time with questions that can be answered through other sources.

>> Technical Communicator Guideline 2: Put Questions in Writing When Possible

Make sure that e-mail questions are clear. You won’t get useful answers if your questions are ambiguous or confusing.

>> Technical Communicator Guideline 3: Prepare for Interviews and Meetings

Have clear goals. If you want to ask for feedback on documentation, send it to the SME beforehand and bring a copy with you.

>> Technical Communicator Guideline 4: Treat the SME With Respect

When you are making changes in text that has been supplied by a technical specialist, remember that you are reading a draft, not a polished document. Never make negative comments to other employees (including fellow writers) about the writing ability of SMEs.



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Guidelines for Being a Collaborative SME

>> SME Guideline 1: Keep Technical Communicators Informed

Provide technical communicators with the information they need, even if they don't ask for it. This includes keeping them informed of changes or updates of products or projects that they are documenting.

>> SME Guideline 2: Respond to E-mails and Phone Calls Promptly

If you aren't sure what is being requested, ask for clarification. If you are being asked to a meeting or an interview, make time for it. Delays in providing necessary information to a documentation specialist can delay an entire project.

>> SME Guideline 3: Prepare for Interviews and Meetings

Find out ahead of time what you are going to be asked to explain or provide. Have all appropriate prototypes, samples, or products on hand, if possible. If something comes up that you can't answer right away, make a note of it and respond as soon as possible.

>> SME Guideline 4: Treat the Technical Communicator With Respect

A technical communicator's revision of text that you provided is not a criticism of your writing ability. The changes were probably made to shift the focus of the text to the users' needs. Clearly written documentation is an important part of a well-run organization, as well as of the products or services that your organization provides to its clients.

The principles discussed in this section of the chapter will help your team work smoothly to achieve its goals. The next section of the chapter explains how your team can use technology to make collaboration easier.

Guidelines for Being a Collaborative Subject Matter Expert

- Keep technical communicators informed
- Respond to e-mails and phone calls promptly
- Prepare for interviews and meetings
- Treat the technical communicator with respect

>>> Tools for Collaboration

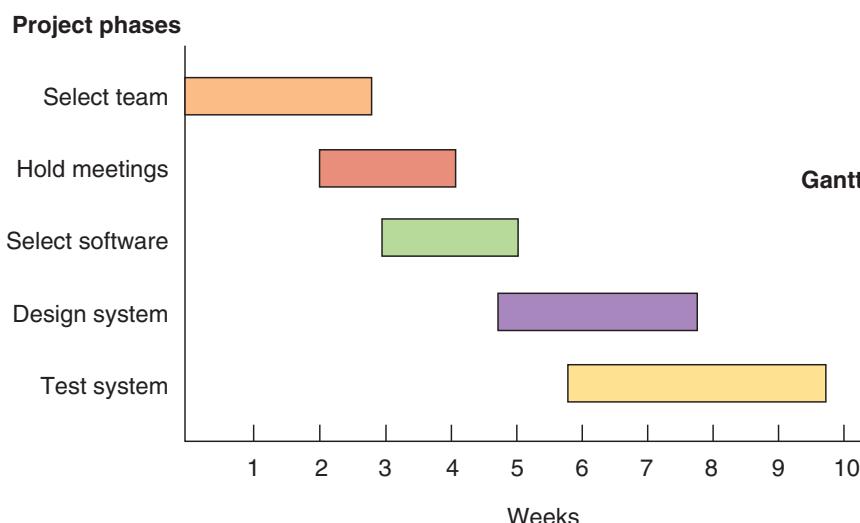
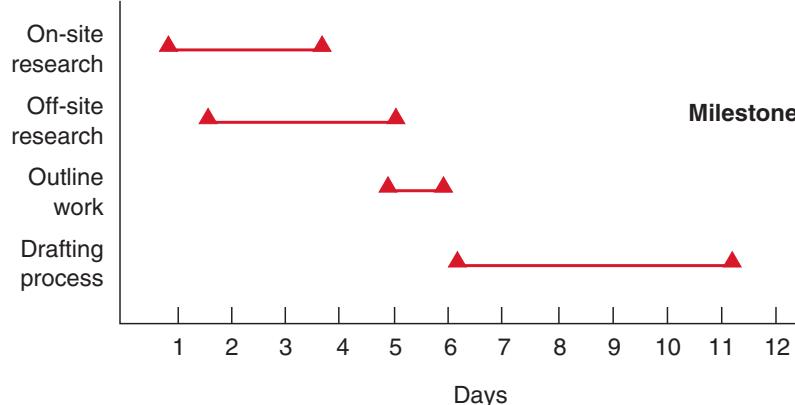
Technology for collaboration is changing rapidly. It seems as if new ways to communicate and collaborate are being introduced every week. Whatever tools your team is using, the principles of good collaboration remain the same. This section explains technology tools for planning, communicating, and writing in teams.

Planning Tools

Project coordinators have long used schedule charts to check team progress on tasks, benchmarks, and outcomes. They have also tracked budgets and recorded activities of team members. Today, you can use project management software to help you plan your

Figure 3–4

Gantt and
milestone schedule
charts

**Project parts**

project, create schedule charts, and keep track of the progress toward the benchmarks that your team has set.

Schedule charts provide a graphic representation of a project plan. Many documents, especially proposals and feasibility studies, include schedule charts to show readers when specific activities will be accomplished. Often called a milestone or Gantt chart (after Henry Laurence Gantt, 1861–1919), the schedule chart usually includes these parts (Figure 3–4):

- **Vertical axis**, which lists the various parts of the project, in sequential order
- **Horizontal axis**, which registers the appropriate time units
- **Horizontal bar lines** (Gantt) or separate markers (milestone), which show the starting and ending times for each task

Follow these basic guidelines for constructing effective schedule charts for your projects:

>> Schedule Chart Guideline 1: Include Only Main Activities

Keep readers focused on no more than 10 or 15 main activities. If more detail is needed, construct a series of schedule charts linked to the main “overview” chart.

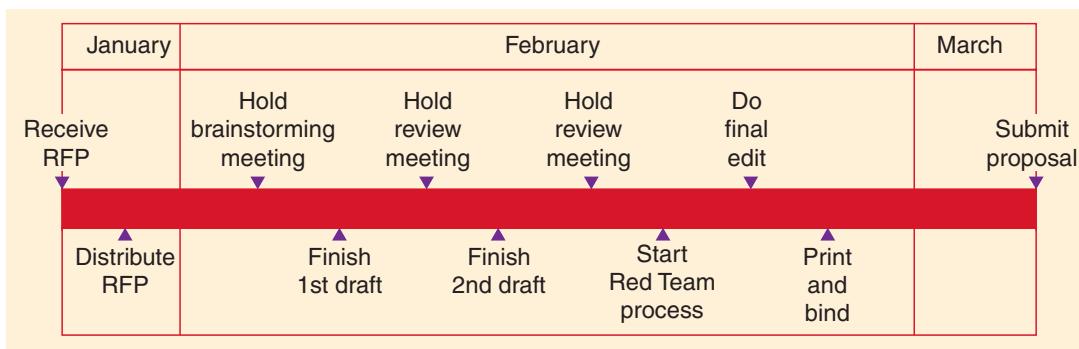


Figure 3-5
Schedule chart variation

>> Schedule Chart Guideline 2: List Activities in Sequence, Starting at the Top of the Chart

As shown in Figure 3–4, the convention is to list activities from the top to the bottom of the vertical axis. Thus the readers’ eyes move from the top left to the bottom right of the page, the most natural flow for most readers of English.

>> Schedule Chart Guideline 3: Create New Formats When Needed

Figure 3–4 shows only two common types of schedule charts; you should devise your own hybrid form when it suits your purposes. Your goal is to find the simplest format for helping team members know when a task will be completed, when a product will be delivered, and so forth. Figure 3–5 includes one such variation.

>> Schedule Chart Guideline 4: Be Realistic About the Schedule

Schedule charts can come back to haunt you if you do not include feasible deadlines. As you set dates for activities, be realistic about the likely time in which something can be accomplished. Your managers and clients understand delays caused by weather, equipment breakdowns, and other unforeseen events. However, they will be less charitable about schedule errors that result from sloppy planning.

Schedule Chart Guidelines

- Include only main activities
- List activities in sequence, starting at the top of the chart
- Create new formats when needed
- Be realistic about the schedule

Communication Tools

Face-to-face meetings are the best way to keep a team running smoothly. Today, however, many teams are spread across different company branches and even different countries, so face-to-face meetings aren’t always possible. However, it is beneficial if teams can meet in person at least once at the beginning of a project and once near the end of a project. This section describes three specific computer applications that can improve communication among the members of a team-writing project: e-mail, computer conferences, and groupware.

Computers can be used to overcome many obstacles for writers and editors in different locations. Indeed, electronic communication can help accomplish all the guidelines in

this chapter. Specifically, (1) e-mail can be used by group members to get to know each other; (2) e-mail or a computer conference can be used to establish goals and ground rules; and (3) computer conferences, combined with groupware, can approximate the storyboard process.

■ **Electronic mail (e-mail):** Team members can send and receive messages from their office computers or from remote locations. They can also attach documents in a variety of forms. When attaching a document to an e-mail, you should identify it by file name and type of document (e.g., as a PDF) in the e-mail.

■ **Computer conference:** Members of a team can make their own comments and respond to comments of others on a specific topic or project. Computer conferences may be conducted through text (instant messaging or discussion group), audio, video, or a combination of these. They may be open to all interested users or open only to a particular group. For the purposes of collaborative writing, the conference will probably be open only to members of the writing team. A leader may be chosen to monitor the contributions and keep the discussion focused. Contributions through a discussion list may be made over a long period, as opposed to a conventional face-to-face meeting, where all team members are present at the same time. Comments accumulated in the conference can be organized or indexed by topic. The conference may be used to brainstorm and thus to generate ideas for a project, or it may be used for comments at a later stage of the writing project.

■ **Groupware:** Computer conferences may take place with the help of groupware, or software programs that create an electronic space where members can communicate, and where all communications are recorded for future reference. Groupware may provide access to e-mail, electronic announcements, calendars, discussion lists, and chat rooms with electronic whiteboards where participants can write and sketch together.

Granted, such techniques lack the body language used in face-to-face meetings. Yet when personal meetings are not possible, computerized communication allow writers in different locations to work together to meet their deadline.

Writing Tools

Although it may be useful for all members of a writing team to meet together to review drafts, technology makes it possible for members of a team to work on the same copy of a document. Thus keeping track of changes and ensuring that everyone has the most recent version of a document (*version control*) become much easier. This section describes four specific computer applications that can improve communication among members of a team writing project: reviewing tools, wikis, groupware, and modular writing.

■ **Reviewing tools:** Chapter 2 describes how writers can use the reviewing tools in most word-processing programs to track the changes during the editing process. Teams can use the same tools in their collaborative projects. These tools can be used in a sequential approach to writing, as one writer passes the document along to another, or they

Converting to a partial solar heating and cooling system would upgrade the hospital building considerably. In fact, using modern solar equipment could decrease your utility bills by up to 50%, applying the formula explained in Appendix B. As you may know, state-of-the-art solar systems are much more efficient than earlier models. In addition, equipment now being installed around the country is much more pleasing to the eye than was the equipment of ten years ago.

The overall effect will be to enhance the appearance of the building.

We also believe that changes in landscaping would improve the hospital's physical plant. Specifically, planting shade trees in front of the windows on the eastern side of the complex would block sun and wind. The result would be a decrease in utility costs and enhancement of the appearance of the building. Your employees, visitors, and patients alike will notice the way that trees cut down on glare from the building walls and add "green space" to the hospital grounds.

Comment [ME1]: Mention utility savings—We want them to see that the system will pay for itself.
Comment [AP2]: Add an estimation before this effect will be felt. Five years? Maybe address maintenance concerns?
Comment [ME3]: Transition here, from the information about tree growth.

■ **Figure 3–6** ■ Text showing team members' markups and comments

can be used on documents that are stored in a common space, such as a shared folder on a company intranet, or stored offsite through a cloud computing service. When writers set their user information in their word-processing program, the reviewing tools will tag changes and comments with each writer's identification. Figure 3–6 shows two writers' changes and comments in the same document.

■ **Groupware:** In addition to being useful for communication, groupware can provide a space for creating documents. Team members using this software can work at the same time, or different times, on any part of a specific document. Groupware that permits contributions at the same time is called *synchronous*; groupware that permits contributions at different times is called *asynchronous*. Because team members are at different locations, they may also be speaking on the phone at the same time they are writing or editing with synchronous groupware. Such sophisticated software gives writers a much greater capability than simply sending a document over a network for editing or comment. They can collaborate with team members on a document at the same time, almost as if they were in the same room. With several windows on the screen, they can view the document itself on one window and make comments and changes in another window.

■ **Wikis:** Wikis allow multiple users access to text through a Web site. Wikis can include a single document with multiple sections or multiple related documents. These are seen by readers as pages on a Web site. Wikis may have open access, or access may be restricted for editing, or even for reading the contents of the Web site. Wikis can be used for drafting a document that will eventually be published in another form, or they can be used for information that is constantly being updated. Wiki sites can be set up with some of the same project management tools found in groupware: schedules, meeting minutes, and working drafts. Some organizations even use wikis as a sort of off-site intranet, storing data, reports,

resources, and document templates. This type of storage can be especially useful when several loosely joined local organizations work together on regional or national projects.

■ **Modular Writing:** In the past, team members of a collaborative writing project could assume that before the final version of the document was released, they would have a chance to review the entire document. Today, however, the writing process in organizations is changing. Documents are broken into small sections, with different people responsible for each section. Variations of this practice go by many names: single sourcing, structured authoring, or content management. In this book we refer to the general process as *modular writing*.

Modular writing: A process in which large documents are broken down into smaller elements, and different people are given responsibility for each element. These smaller elements are usually stored electronically so that they can be retrieved and edited or assembled into larger documents, help files, or Web pages as they are needed.

technical descriptions and another for instructions. An engineer may be responsible for technical specifications and a graphic artist may be responsible for schematics and illustrations. Each person saves his or her work in a database where it can be accessed by anyone who uses it in a document. If the company sells its products overseas, translators in other countries can begin working on sections of a user's manual as soon as the individual sections are saved to the server, instead of waiting to receive the whole document before translation begins.

These modules are then assembled into final, polished documents. The Web master may use modules to create product descriptions, "About us" pages, and a list of Frequently Asked Questions. Someone writing a proposal to sell the equipment to a client may use the technical description and specifications. A user's manual can be assembled from the elements that are specific to the equipment and to the user's needs.

In its simplest form, modular text is *boilerplate*, text that can be reused in a number of contexts and applications. Organizations have long used boilerplate text to make the creation of documents efficient and to ensure consistency in all documents. Model 3–3, on page 87 is an example of modular writing at M-Global. The information about the

For example, in a company that produces a number of owner's manuals for maintenance equipment, several people may share responsibility for all of the documents at once. Figure 3–7 is a representation of how topics are moved into the content database, extracted from the database, and assembled into the final product. One writer may be responsible for

About Us

M-Global, Inc., was founded in 1963 as McDuff, Inc., by Rob McDuff, as a firm that specialized in soils analysis. Since then, [we have][M-Global has] added hazardous waste management and cleanup, equipment development, business services, and documentation services.

[Our][M-Global's] teams [ensure][have ensured] compliance with construction codes and quality of materials in road, dam, and building construction projects such as the Nevada Gold Dome, with a savings to[our][the] client of \$100,000.

[We protect][M-Global has protected] threatened and endangered ecosystems by conducting rigorous environmental impact studies. [We help][M-Global's consultants have helped] organizations improve their internal operations and client services—in 2008, Kansans for Security and Privacy awarded [us][M-Global] the Peace of Mind Award for [our][its] work with the Kansas Department of Social and Health Services security protocols.

Today, after 50 years of business, M-Global, Inc., has about 2,500 employees. There are nine offices in the United States and six overseas, as well as a corporate headquarters in Baltimore. What started as a technical consulting engineering firm has expanded into a firm that does [quality][both] technical and nontechnical work for a variety of customers.

■ **Figure 3–8** ■ Example of a module with conditional text

organization's history is used in sales brochures, proposals, and annual reports, and on the company Web site.

Modules can also be created with *conditional text*, text that is tagged for specific contexts. Figure 3–8 is an example of modular writing with conditional text. This introduction to the company includes conditional text that is coded for use in different types of documents. The information that appears in blue can be used in marketing materials like sales brochures or the company Web site. The information that appears in red is used in more formal documents like reports and proposals.

Modular writing requires careful planning. The writing team must identify all the elements needed in the final project and must assign those elements to different writers. Individual writers may never see a draft of the complete document. In order to ensure consistency throughout all documents created from the separate elements, the writing team must create a thorough style guide and adhere to it, even if the team includes an editor whose job is to check all documents for consistency.

Although organizations that begin using modular writing face many challenges, it has benefits that make the effort worthwhile. If a product is improved, the elements that are affected by the change can be updated easily. Then, any documentation about the product includes accurate information automatically. In the M-Global history in Model 3–3, new information about the organization's accomplishments can be added to the source element, and then all documents that use this history are automatically updated before they

are printed or published electronically. Because all the updates are kept in one file, no one can miss an important update.

Of course, if you are not careful, computers can create problems during a collaborative writing project. When different parts of a document have been written and stored by different writers, your team must be vigilant during the final editing and proofreading stages. Before submitting the document, review it for consistency and correctness.

>>> Chapter Summary

- Team members may choose from various approaches to writing collaboratively, including divide and conquer, specialization, sequential writing, writing in dialogue, or using synthesis. The choice depends on the number of team members, the working style of the team members, and how much experience a team has together.
- To be effective, teams should get to know each other; set clear goals and ground rules; agree on the prewriting, drafting, and revising processes; and use electronic tools for communication.
- Collaborative projects require thorough planning to identify the goals of the project and the tasks necessary to reach those goals. Time and money should be carefully budgeted as part of the planning process.
- Every project needs an effective team leader, as well as a planning coordinator, an archivist, and a devil's advocate. One team member may take on multiple roles.
- Effective meetings are essential to successful team projects. The goal of each meeting should be clear beforehand, meetings should be organized and focused on specific tasks, and meeting minutes should be distributed to all team members as soon as possible following the meeting.
- Writers and subject matter experts (SMEs) can improve their collaboration by treating each other with respect and understanding each other's needs for completion of their project.
- Software for project planning includes tools for creating, following, and revising schedules and calendars quickly and easily.
- E-mail, computer conferences, and groupware can make communication among team members easier and can provide a record of all communications.
- Reviewing tools, groupware, wikis, and modular writing provide new ways for writers to collaborate throughout the writing process.

>>> Learning Portfolio

Communication Challenge A Field Guide: Planning a User's Manual

The Research and Training Division of M-Global is responsible for all in-house documentation, especially documentation of new equipment that has been created by the Equipment Design Lab teams. This documentation is usually written by cross-functional teams that are brought together for a specific project. (A cross-functional team includes people from different departments, each contributing his or her own expertise to the project.) A documentation team has been assembled to create a user's manual for a new Lab-in-A-Box. This case provides background about the equipment, information about the team members, and information from the team's first meeting. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Background on Soils LABs

The new Lab-in-A-Box (LAB) improves field testing for contaminated soils. The Soils LAB includes equipment for collecting soil samples and analyzing them chemically, a new sensor for measuring for volatile organic compounds (VOCs) at and below the surface (see page 60 at the beginning of this chapter), and a notebook computer equipped with GPS and satellite communication capabilities so that the data gathered in the field can be analyzed and reports can be easily sent to M-Global labs, government agencies, and clients.

Documentation Team

The documentation team consists of team leader Rob McCulley, a documentation specialist; Mike Sealy, an engineer who helped develop the new sensor and who is the coauthor of a white paper about the sensor; Shauna Hill, an M-Global chemist; and Joe Freeman, an editor from the Publications Development Department.

The First Meeting

After all the team members have introduced themselves at the first meeting, they begin brainstorming about what should be included in the manual. Mike wants to include detailed descriptions of the equipment in the Soils LAB. He argues that the people using it in the field must have a thorough understanding of the new sensor, including how it was developed and its improvements over older equipment. With this information, Mike argues, the users will understand how to take care of the equipment, how to use it, and how to fix it if something goes wrong. Shauna ar-

gues that because the Soils LAB will be used in the field, a complete user's manual isn't necessary. All that is needed is a sort of quick reference to remind people what steps to take to make sure that the tests are accurate and the results are reliable. After all, she argues, the technicians using the LAB will have been trained on it, and with the notebook computer, it will be easy to contact a specialist for troubleshooting help. Joe agrees with Shauna that a large user's manual doesn't make much sense, and he suggests that they begin by deciding what format they will use for the information in the manual. He suggests a booklet, or maybe a quick reference sheet attached to the lid of the box. He adds that a help file can be installed on the notebook computer for more complete information about topics such as maintenance and troubleshooting. Mike likes the help file idea because it doesn't have the size limitations of a printed manual.

After an hour of discussion, Rob hands out assignments for the next meeting. Joe will create a framework for the help files, Mike will draft information about the sensor, and Shauna will draft instructions for the gathering and analysis of data. After a little more discussion, the team decides that it would be helpful to watch the Soils LAB used on-site and to be able to use it themselves. Rob knows that he has a limited budget for this project, but he might be able to argue that one or two people should be sent to a brownfield or other site with known soil contamination to try out the Soils LAB themselves.

Questions and Comments for Discussion

As Rob sits down to read through his notes and write up the minutes of the first meeting, he thinks about the discussion during the meeting. Although the members of the team have very different backgrounds (and priorities), they seem to get along well, and they respect each other. They even built on each other's ideas during the brainstorming. However, he wonders if he should have started the meeting by discussing the contents of the manual, as the team hasn't discussed that issue yet.

Consider the following questions, questions that Rob begins asking himself as he prepares his minutes and the agenda for the next meeting:

1. What should the team focus on first as they are planning this project? The users? The equipment? The physical context in which the Soils LAB will be used?

- The format that the manual will take? The timeline and budget? Whichever focus you choose, explain why it should be the first step in planning the user's manual.
2. What should the team know about the people who will be using the Soils LAB, and where they will be using it, in order to decide what should go in the user's guide?
 3. What is each member of the team advocating for? What does this reveal about each person's interest in the project? How should the team leader deal with the competing interests?
 4. Identify all of the stakeholders in this project. Think about everyone who will have an interest in the successful use of the Soils LABs. Which of these

stakeholders is most important to the documentation team? Why?

5. Think about user's guides that you have seen for portable equipment. How and where were they meant to be used? What was the effect on the content and design of the guide? How might lessons from the guides you have seen be applied to the M-Global situation?

Write About It

Assume the role of Rob McCulley. Write minutes for the meeting that your team has just finished, and write an agenda for your next team meeting.

Collaboration at Work Advice About Advising

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Academic advising can be one of the most important, as well as the most confusing, activities for college students, especially for students who are going through the process for the first time. Students depend on advice from other students, from seminars and workshops, and from teachers. This advice may not always fit the student's situation, or the steps for advising and enrollment may change. This assignment asks you to create a document or Web page to help your fellow students get the most out of advising.

Team Assignment

In your teams, brainstorm the questions that you have had about advising and enrollment. What advice would

you give to fellow students? Identify what the steps are in the process, where information is currently available, and what the other sources of information are (such as faculty members, the Registrar's Office, or Student Services). Your instructor may assign a team leader or ask each team to choose its own leader. Decide what information you must gather, how you will gather it, and how you are going to make it available to fellow students. Your team should also decide what approach it will take to gathering and writing the information—divide and conquer, writing in sequence, or working at the same time (see page 61).

Your instructor may decide to make this an assignment in modular writing. If so, the class can brainstorm about the content and sources of information, and then teams will be assigned specific tasks. One team will be responsible for creating style guidelines and a document template to ensure a uniform voice and appearance throughout the document. This team, or another team (depending on how large the class is), will also have responsibility for the final editing on the project. Other teams will be assigned to gather information from various sources and to write specific sections of the document. Your instructor will help you decide how your project will be made available to students.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. Your instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Survey—Your Experience With Teams

Answer the following questions about your experience collaborating on projects, either in school or at work. In teams of five or more, compile and present information in a meaningful way. Discuss the responses.

A. Briefly describe your experiences with the following:

- **Divide and conquer:** The team planned the project together and randomly assigned tasks to each member.
- **Specialization:** The team planned the project together and assigned tasks according to each person's expertise.
- **Sequence:** One person drafted the project, passed it along to the next person who revised the project, who passed it along to the next person, and so on.
- **Dialogue:** Two people worked on the project; one drafted it and gave it to the other, who revised it and returned it for more revisions, until both partners were happy with the result (or until the deadline).
- **Synthesis:** Two or three people created the project together, working side by side. Every responsibility in the project was shared completely.

B. What makes a good member of a project team?

C. What problems have you encountered in collaborative projects?

2. Analysis: Boilerplate Text

This book uses boilerplate text in multiple passages in each Learning Portfolio. Analyze the material in the Learning Portfolio sections of several chapters to identify the boilerplate. Why do you think the authors chose to reuse these passages in each chapter?

3. Analysis: Wiki Rules for Contributors

Find and read the rules for contributors for a popular wiki Web site like Wikipedia or Wiki How. These wiki Web sites have been criticized for unreliable content. How do the creators of the wiki Web site try to respond to the criticisms that the material is not trustworthy?

4. Practice: Schedule Charts

Using any options discussed in this chapter, draw a schedule chart that reflects your work on one of the following:

- A project at work
- A laboratory course at school
- A lengthy project in a course such as this one

All of the following assignments should be completed in teams of four or five students:

5. Practice: Short Report

In teams, write a brief evaluation of the teaching effectiveness of either the room in which your class is held or some other room or building of your instructor's choice. In following the tasks listed in this chapter, the team must establish criteria for the evaluation, apply these criteria, and report on the results.

Your brief report should have three parts: (1) a one-paragraph summary of the room's effectiveness, (2) a list of the criteria used for evaluation, and (3) details of how the room met or did not meet the criteria you established.

Besides preparing the written report, be prepared to discuss the relative effectiveness with which the team followed this chapter's guidelines for collaborative writing. What problems were encountered? How did you overcome them? How would you do things differently next time?

6. Practice, M-Global Context: Computer Communication

For this assignment you will (a) work in teams established by your instructor, (b) use the materials in the Welcome to M-Global booklet in Model 1-1 on pages 25–34 to write a one-page background information document (*a backgrounder*) that will be placed in the "Press Room" section of the M-Global Web site.

In addition, you are to conduct at least part of your team business by e-mail. The degree to which your team uses e-mail depends on the technical resources of the team members and the campus. At a minimum, you should plan for each member to send a message to every other member concerning, for example, the drafting or editing process. At a maximum, and if computer resources permit, you may develop on-screen windows where you conduct a conversation with each fellow member in one window and make changes in text in another window. The point of this assignment, in other words, is for team members to use e-mail substantively to communicate with each other during the completion of team projects.

7. Practice: Computer Communication

If your campus computer facilities permit, set up a groupware folder with members of a writing team to which you have been assigned by your instructor. Decide on a topic on which you and your team members will write. Each team member should post one short document to the folder, and each team member should contribute to the other documents in the folder. Print the contents of the team's folder and submit it to your instructor. Depending on the

instructions you have been given, this assignment may be independent or it may be related to a larger collaborative writing assignment.

8. Practice: Research and Presentation

Using the working teams your instructor has established, collect information on collaborative learning and then make a brief oral presentation on your findings to the entire class. Your sources may involve print media or Internet sources.

9. Ethics Assignment

Create an evaluation sheet that could be used for any collaborative projects that your instructor assigns. Decide if the whole team should sign one document or if individuals should write their own. Explain your decision in a cover memo to your instructor.

10. International Communication Assignment

This chapter offers guidelines on team writing because collaborative communication is essential for success in most careers. However, world cultures differ in the degree to which they use and require collaboration on the job. For this assignment, interview someone who is from a culture

different from your own. Using information supplied by this informant, write a brief essay in which you (1) describe the importance of collaboration in the individual's home culture and workplace, (2) give specific examples of how and when collaborative strategies are used, and (3) modify or expand this chapter's "Guidelines for Team Writing" to suit the culture you are describing, on the basis of suggestions provided by the person you interviewed.



11. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Find out what resources your campus offers to help students find opportunities for community service. Does the student employment office or another office on campus keep a list of organizations that are looking for help? Is there an office in student government that helps campus and community organizations connect? If so, working with the campus office, develop materials that help publicize the student government's services. If the office hosts a campuswide initiative, such as a weekend of cleaning up area parks, create materials to help publicize the event. If your campus does not have such a resource, create a proposal for such an office, using the guidelines in Chapter 12.

Slide Presentation Software Training Team
Meeting Agenda

To Attend: Sally Harkin, Bill Samuelson, Jody Simmons

From: Jody Simmons

Meeting Date: May 8, 2012

Time: 2:00 p.m.

Place: Conference Room 2

Objective: Compile results of research

Reports: Sally—results of library research
Bill—examples of current M-Global PowerPoint presentations
Jody—results of survey

Action: Begin preparing material for slide presentation workshops

■ **Model 3-1** ■ Meeting agenda

M-Global Slide Presentation Software Training Team

Meeting Minutes

Thursday, May 10, 2012

2:00–3:00 Conference Room 2

Attendees: Sally Harkin, Bill Samuelson, Jody Simmons
(All members of the M-Global Training Group)

Absentees: —

Objective: Compile results of research on effective slide presentations to begin planning of workshops

Sally reported that several published articles make suggestions for effective computer slide presentations. She handed out a summary of the main findings and a bibliography of the articles that she read. She recommended that M-Global use the sentence/graphic design described by Michael Alley and Kathryn A. Neeley in their article “Rethinking the Design of Presentation Slides: A Case for Sentence Headlines and Visual Evidence” in *Technical Communication’s* November 2005 issue.

Bill shared 10 examples of past and current slide presentations given by a variety of M-Global divisions, branches, and departments. Four were chosen to use as good examples to build on during the training workshops. It was decided that it would be more productive to focus on good examples instead of singling out bad examples.

Bill recommended that the team create an M-Global slide presentation template to be placed on the company server and made available to all employees.

Jody shared the results of a survey of M-Global managers. The survey revealed that slide presentation software was used most commonly in North America and in Europe. It was used for internal meetings about 70% of the time, and for presentations to potential or existing clients about 30% of the time. Most external presentations were made at meetings of fewer than 20 people. About 15 percent of internal presentations were made to large groups of 50 or more.

The majority of managers agreed that presentation slides were commonly bulleted lists and seemed to be used more for the reference of the speaker than to provide information for the audience.

Postmeeting actions:

Sally will begin planning activities for the workshops.

Bill will develop the presentation software template.

Jody will begin drafting an introduction to the workshops that explains why effective presentation slides are important to M-Global.

Next meeting:

Wednesday, May 16, 2012, 2:00 p.m. in Conference Room 2

History

M-Global, Inc., was founded in 1963 as McDuff, Inc., by Rob McDuff, as a firm that specialized in soils analysis. From its founding in 1963 until about 1967, the company worked mostly for construction firms in the Baltimore area. By the late 1960s, the firm enjoyed a first-rate reputation. It had offices in Baltimore and Boston and about 80 employees.

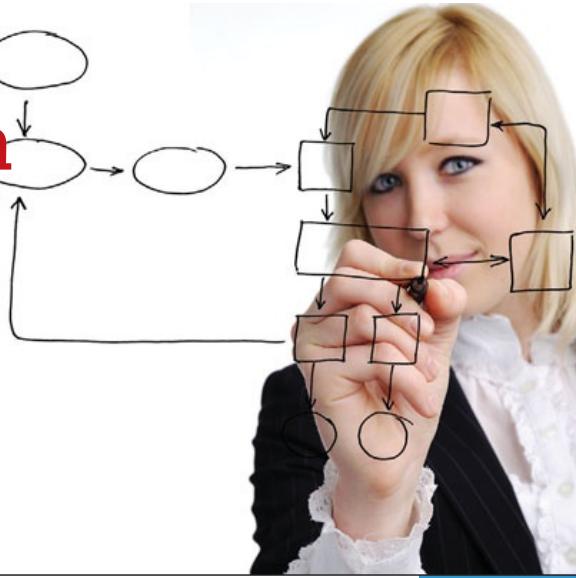
McDuff, Inc., kept growing steadily, with a large spurt in the mid-1970s and another in the 1980s. The first growth period was tied to increased oil exploration in all parts of the world. Oil firms needed experts to test soils, especially in offshore areas. The results of these projects were used to position oil rigs at locations where they could withstand rough seas. The second growth period was tied to environmental work required by the federal government, state agencies, and private firms. McDuff became a major player in the waste management business, consulting with clients about ways to store or clean up hazardous waste. The third growth period has moved the firm into diverse service industries, such as security systems, hotel management, and landscaping.

In 2008, Rob McDuff announced his retirement and turned the company over to his son Jim. With the change in management, McDuff announced a name change to reflect its more diversified and global scope, becoming M-Global. Although engineering and environmental services still remain important to the company, it has expanded its activities in equipment development and business services. Today, after 50 years of business, M-Global, Inc., has about 2,500 employees. There are nine offices in the United States and six overseas, as well as a corporate headquarters in Baltimore. M-Global performs a wide variety of work. What started as a technical consulting engineering firm has expanded into a firm that does both technical and nontechnical work for a variety of customers.

■ Model 3-3 ■ Example of M-Global Modular Writing



Chapter | 4 | Organizing Information



>>> Chapter Objectives

In this chapter, students will

- Learn how to organize documents to meet their readers' needs
- Learn principles that apply to organizing all documents
- Learn the ABC format for documents
- Learn how to use common patterns of organization in document sections
- Learn how to write cohesive, well-organized paragraphs
- Learn about the special problems of organizing digital documents
- Read and analyze model workplace correspondence

Tom Kent sets his phone to go to voice mail. Closing his door, he reaches for the report draft written by one of his staff members and sits down to read it. As an M-Global manager for 10 years, he has reviewed and signed off on every major report written by members of his department. Of all the problems that plague the drafts he reads, poor organization bothers him the most.

This problem is especially annoying at the beginning of a document and the beginning of individual sections. Sometimes he has no idea where the writer is going. His people don't seem to understand that they are supposed to be "telling a story," even in a technical report. Grammar and style errors are annoying to

him, but organization problems are much more troublesome. They require extensive rewriting and time-consuming meetings with the report writer. Reaching for his red pen, Tom hopes for the best as he begins to read yet another report.

You will face internal reviewers like Tom Kent when you write on the job. To help you avoid organization problems, this chapter offers strategies for organizing information as you plan, draft, and revise your writing. It builds on the discussion of the three stages of writing covered in Chapter 2. Then Chapter 5 completes your introduction to technical communication by showing you how to use effective page design to keep readers' attention.

>>> Importance of Organization

Poorly organized documents cost time and money at all stages of the writing process. A writer who hasn't planned the structure of a document wastes valuable time trying to decide what to include, how to divide information into meaningful sections, and how the document will focus on the readers' needs. A supervisor who receives a poorly organized document knows that he or she won't be able to send it on but must ask the writer to spend more time revising it. Finally, a poorly organized document wastes the time of readers because they must wade through pages of information, trying to make sense of what they are reading. If they can't, they will probably set the document to one side, unread, as a waste of their time.

As you learned in Chapter 2, your documents will be read by varied readers with diverse technical backgrounds. Given this reader diversity, this chapter aims to answer one essential question: How can you best organize information to satisfy so many different people?

Figure 4–1 shows you three possible options for organizing information for the technical expertise of a mixed technical audience, but only one is recommended in this book. Some writers, usually those with technical backgrounds themselves, choose Option A. They direct their writing to the most technical people. Other writers choose Option B. They respond to the dilemma of a mixed technical audience by finding the lowest common denominator—that is, they write to the level of the least technical person. Each option satisfies one segment of readers at the expense of the others.

Option C is preferred in technical writing for mixed readers. It encourages you to organize documents so that all readers—both technical and nontechnical—get what they need. The rest of this chapter provides strategies for developing this option. It describes general principles of organization and guidelines for organizing entire documents, individual document sections, and paragraphs.

Experts	Operators	Managers	General Readers
Option A Organize information for technical readers			
		Option B Organize information for less-technical readers	
	Option C Organize information for all readers		

■ **Figure 4–1** ■ Options for organizing information

>> Three Principles of Organization



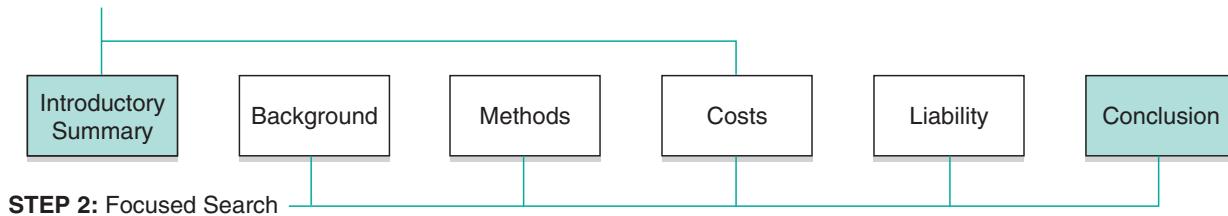
Burke/Triolo Productions

Good organization starts with careful analysis of your audience. Most readers are busy, and they skip around as they read. Think about how you examine a news organization’s Web site or read a magazine. You are likely to take a quick look at articles of special interest to you; then you might read them more thoroughly, if there is time. That approach also resembles how your audience treats technical reports and other work-related documents. If important points are buried in long paragraphs or sections, busy readers may miss them. Three principles respond realistically to the needs of your readers:

>> Principle 1: Write Different Parts for Different Readers

The longer the document, the less likely it is that anyone will read it from beginning to end. As shown in Figure 4–2, they use a *speed-read approach* that includes these steps:

- Step 1: Quick scan.** Readers scan easy-to-read sections like executive summaries, introductory summaries, introductions, tables of contents, conclusions, and recommendations. They pay special attention to beginning and ending sections, especially in documents longer than a page or two, and to illustrations.
- Step 2: Focused search.** Readers go directly to parts of the document body that give them what they need at the moment. To find information quickly, they search for navigation devices like subheadings, listings, and white space in margins to guide their reading. (See Chapter 5 for a discussion of page design.)
- Step 3: Short follow-ups.** Readers return to the document, when time permits, to read or reread important sections.

STEP 1: Quick Scan**STEP 2:** Focused Search

STEP 3: Short Follow-Ups
Can involve any section, especially the Introductory Summary

■ **Figure 4-2** ■ Sample speed-read approach to short proposal

Your job is to write in a way that responds to this nonlinear and episodic reading process of your audience. Most important, you should direct each section to those in the audience most likely to read that particular section. Shift the level of technicality as you move from section to section within the document to meet the needs of each section's specific readers. On the one hand, managers and general readers favor less technical language and depend most heavily on overviews at the beginning of documents; on the other hand, experts and operators expect more technical jargon and pay more attention than others to the body sections of documents.

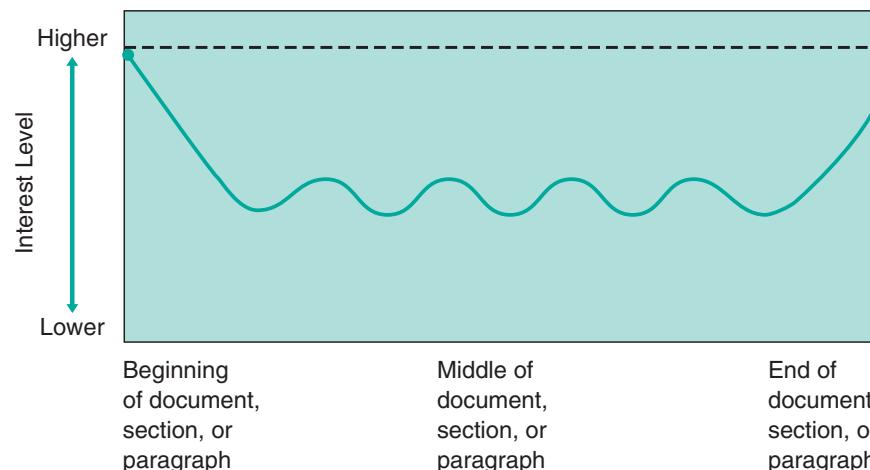
Of course, you walk a thin line in designing different parts of the document for different readers. Although technical language and other stylistic features may change from section to section, your document must cohere as one piece of work. Common threads of organization, theme, and tone must keep it from appearing fragmented or pieced together.

>> Principle 2: Emphasize Beginnings and Endings

Suspense fiction relies on the interest and patience of readers to piece together important information. The writer usually drops hints throughout the narrative before finally revealing who did what to whom. Technical writing operates differently. Busy readers expect to find information in predictable locations without having to search for it. Their first-choice locations for important information are as follows:

- The beginning of the entire document
- The beginnings of document sections
- The beginnings of paragraphs

The reader interest curve in Figure 4-3 reflects this focus on beginnings, but the curve also shows that the readers' second choice for reading is the ends of documents, sections, and paragraphs—that is, most readers tend to remember best the first and last things they read. The ending is a slightly less desirable location than the beginning because it is less accessible, especially in long sections or documents. Of course, some readers inevitably read the last part of a document first, for they may have the habit of fanning pages when first seeing a document. Thus, although there is no guarantee that the first document section will be read first, you can be fairly sure that either the beginning or the ending gets first attention.



■ **Figure 4-3** ■ Reader interest curve

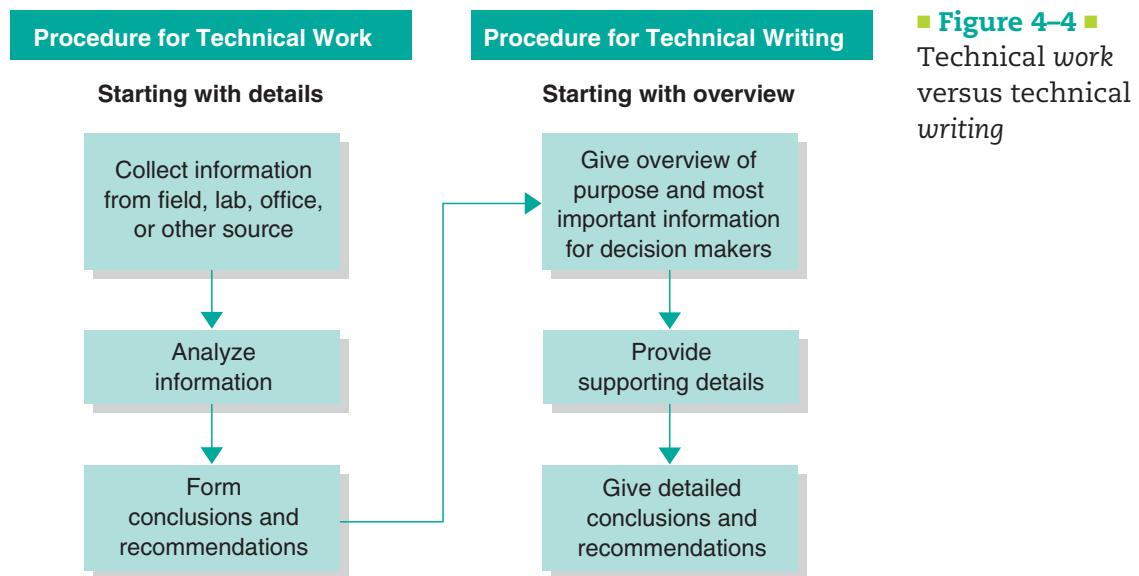
Emphasizing beginnings and endings responds to the reading habits and psychological needs of readers. At the beginning, they want to know where you’re heading. They need a simple road map for the rest of the passage. In fact, if you don’t provide something important at the beginnings of paragraphs, sections, and documents, readers will start guessing the main point themselves. It is in your best interest to direct the reader to what *you* consider most important in what they are about to read, rather than to encourage them to guess at the importance of the passage. At the ending, readers expect some sort of wrap-up or transition; your writing shouldn’t simply drop off. The following paragraph begins and ends with such information (italics added):

Forests are Missouri’s greatest renewable resource, providing many economic, environmental, and social benefits. They protect hillsides from erosion, keeping streams and rivers clean. They filter the air, soften the extremes of the weather, and add beauty to cities and towns. Much of Missouri’s recreation and tourism industry is centered in the forested regions of the state. *And forests are a diverse resource of plants, animals, birds, and other life forms.* [Missouri Department of Conservation. *Forests* | MDC. <http://mdc.mo.gov/discover-nature/habitats/forests>]

The first sentence gives readers an immediate impression of the topic to be covered in the paragraph. The paragraph body explores details of the topic. Then the last sentence flows smoothly from the paragraph body by reinforcing the main point about the value of forests.

Why is this top-down pattern, which seems so logical from the readers’ perspective, frequently ignored in technical writing? The answer comes from the difference between the way you complete your research or fieldwork and the way busy readers expect you to convey the results of your work in a report, as shown in Figure 4-4. Having moved logically from data to conclusions and recommendations in technical work, many writers assume they should take this same approach in their document. They reason that the readers want and need all the supporting details before being confronted with the conclusions and recommendations that result from these data.

Such reasoning is wrong. Readers want the results placed first, followed by details that support your main points. Of course, you must be careful not to give detailed conclusions



■ **Figure 4-4 ■**
Technical work
versus technical
writing

and recommendations at the beginning; most readers want and expect only a brief summary. This overview provides a framework within which readers can place the details presented later. In other words, readers of technical documents want the “whodunit” answer at the beginning. Recall the motto in Chapter 2: *Write for your reader, not for yourself*. Now you can see that this rule governs how you organize information in everything you write.

>> Principle 3: Repeat Key Points

You have learned that different people focus on different sections of a document. Sometimes no one carefully reads the entire document. For example, managers may have time to read only the summary, whereas technical experts may skip the leadoff sections and go directly to “meaty” technical sections with supporting information. These varied reading patterns require a *redundant* approach to organization: You must repeat important information in different sections for different readers.

For example, assume you are an M-Global employee in Denver and are writing a report to the University of Colorado on choosing sites for several athletic fields. Having examined five alternatives, you recommend in your report one site for final consideration. Your 25-page report compares and contrasts all five alternatives according to the criteria of land cost, nearness to other athletic locations, and relative difficulty of grading the site and building the required facilities. Given this context, where should your recommendation appear in the report? Following are five likely spots:

1. Executive summary
2. Cost section in the body
3. Location section in the body
4. Grading/construction section of the body
5. Concluding section

Our assumption, you recall, is that few readers move straight through a document. Because they often skip to the section most interesting to them, you must make main sections

somewhat self-contained. In the University of Colorado report, that would mean placing the main recommendation at the beginning, at the end, and at one or more points within each main section. As a result, readers of all sections will encounter your main point.

What about the occasional readers who read all the way through your document, word for word? Will they be put off by the restatement of main points? No, they won't. Your strategic repetition of a major finding, conclusion, or recommendation gives helpful reinforcement to readers, who are always searching for an answer to the "So what?" question as they read. Fiction and nonfiction may be alike in this respect: Writers of both genres are telling a story. The theme of this story must reappear periodically to keep readers on track.

Now we're ready to be more specific about how the three general principles of organization apply to documents, document sections, and paragraphs.

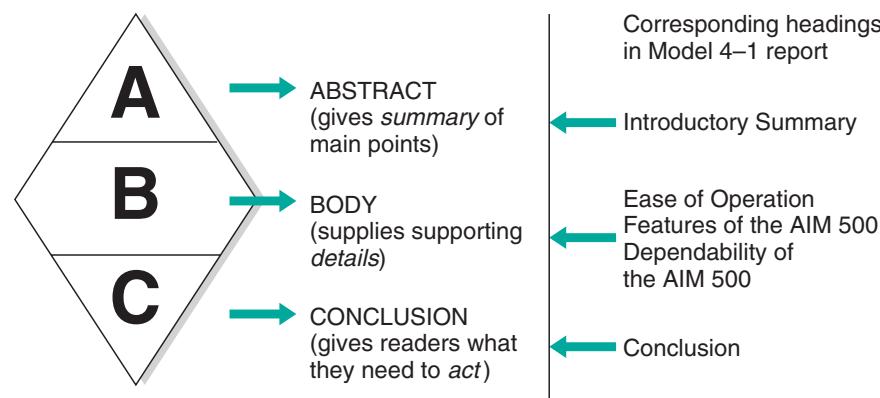
>>> ABC Format for Documents

You have learned the three principles of organization: (1) write different parts of the document for different readers, (2) emphasize beginnings and endings, and (3) repeat key points. Now let's move from principles to practice. We next develop an all-purpose pattern of organization for writing entire documents. (The next major section covers document sections and paragraphs.)

Technical documents should assume a three-part structure that consists of a beginning, a middle, and an end. This book labels this structure the *ABC format* (for Abstract, Body, and Conclusion). Visually, think of this pattern as a three-part diamond structure, as shown in Figure 4–5:

- **Abstract:** A brief beginning component is represented by the narrow top of the diamond, which leads into the body.
- **Body:** The longer middle component is represented by the broad, expansive portion of the diamond figure.
- **Conclusion:** A brief ending component is represented by the narrow bottom of the diamond, which leads away from the body.

Model 4–1 (pp. 113–114) is a memo report that conforms to this structure. The following sections discuss the three ABC components in detail.



■ **Figure 4-5 ■**
ABC format for all documents

Document Abstract: The “Big Picture” for Decision Makers

Every document should begin with an overview. As used in this text, *abstract* is defined as follows:

Abstract: Brief summary of a document’s main points. Although its makeup varies with the type and length of the document, an abstract usually includes (1) a clear purpose statement for the document, (2) the most important points for decision makers, and (3) a list or description of the main sections that follow the abstract. As a capsule version of the entire document, the abstract should answer readers’ typical mental questions, such as “How does this document concern me?” “What’s the bottom line?” “So what?”

Abstract information is given different headings, depending on the document’s length and degree of formality. Some common headings are “Summary,” “Executive Summary,” “Introductory Summary,” “Overview,” and “Introduction.” The abstract may vary in length from a short paragraph to a page or so. Its purpose, however, is always the same: to provide decision makers with the highlights of the document.

For example, assume you are an engineer who has evaluated environmental hazards for the potential purchaser of a shopping mall site. Here is how the summary (abstract) might read:

As you requested, we have examined the possibility of environmental contamination at the site being considered for the new Klinesburg Mall. Our field exploration revealed two locations with deposits of household trash, which can be easily cleaned up. Another spot has a more serious deposit problem of 10 barrels of industrial waste. However, our inspection of the containers and soil tests revealed no leaks.

Given these limited observations and tests, we conclude that the site poses no major environmental risks and recommend development of the mall. The rest of this report details our field activities, test analyses, conclusions, and recommendations.

You have provided the reader with a purpose for the document, an overview of important information for decision makers, and a reference to the four sections that follow. In so doing, you have answered the following questions for the readers:

- What are the major risks at the site?
- Are these risks great enough to warrant not buying the land?
- What major sections does the rest of the document contain?

This general abstract, or overview, is mainly for decision makers. Highlights must be brief, yet free of any possible misunderstanding. On some occasions, you may need to state that further clarification is included in the text, even though that point may seem obvious. For example, if your document concerns matters of safety, the overview may not be detailed enough to prevent or eliminate risks. In this case, state this point clearly so that the reader will not misunderstand or exaggerate the purpose of the abstract.

Document Body: Details for All Readers

The longest part of any document is the body. As used in this book, the *body* is defined as follows:

Body: The middle section(s) of the document providing supporting information to readers, especially those with a technical background. Unlike the abstract and conclusion, the body component allows you to write expansively about items such as (1) the background of the project; (2) field, lab, office, or any other work on which the document is based; and (3) details of any conclusions, recommendations, or proposals that might be highlighted at the beginning or end of the document. The body answers this main reader question: “What support is there for points put forth in the abstract at the beginning of the document?”

Managers may read much of the body, especially if they have a technical background and if the document is short. Yet the more likely readers are technical specialists who (1) verify technical information for the decision makers or (2) use your document to do their jobs. In writing the body, use the following guidelines:

- **Separate fact from opinion.** Never leave the reader confused about where opinions begin and end. Body sections usually move from facts to opinions that are based on facts. To make the distinction clear, preface opinions with phrases such as “We believe that,” “I feel that,” and “It is our opinion that.” Such wording gives a clear signal to readers that you are presenting judgments, conclusions, and other nonfactual statements. Also, you can reinforce the facts by including data in graphics.
- **Adopt a format that reveals much structure.** Use frequent headings and subheadings to help busy readers locate important information immediately. (Chapter 5 covers these and other elements of page design.)
- **Use graphics whenever possible.** Use graphics to draw attention to important points. Today more than ever, readers expect visual reinforcement of your text, particularly in more persuasive documents like proposals. (Chapter 13 deals with graphical elements in technical documents.)

By following these guidelines, which apply to any document, you will make detailed body sections as readable as possible. They keep ideas from becoming buried in text and show readers what to do with the information they find.

Document Conclusion: Wrap-Up Leading to Next Step

Your conclusion deserves special attention, for readers often recall first what they have read last. We define the *conclusion* component as follows:

Conclusion: The final section(s) of the document bringing readers—especially decision makers—back to one or more central points already mentioned in the body. Occasionally, the conclusion may include one or more points not previously mentioned. In any case, it provides closure to the document and often leads to the next step in the writer’s relationship with the reader.

The conclusion component may have any one of several headings, depending on the type and length of the document. Possibilities include “Conclusion,” “Closing,” “Closing

Remarks,” and “Conclusions and Recommendations.” Chapters 7, 8, 11, and 12 of this text describe the options for short and long documents of many kinds. In general, however, a conclusion component answers the following types of questions:

- What major points have you made?
- What problem have you tried to solve?
- What should the reader do next?
- What will you do next?
- What single idea do you want to leave with the reader?

Because readers focus on beginnings and endings of documents, you want to exploit the opportunity to drive home your message—just as you did in the abstract. Format can greatly affect the impact you make on decision makers. Although specific formats vary, most conclusions take one of these two forms:

- **Listings:** The listing format is especially useful when you are pulling together points mentioned throughout the document. Whereas the abstract often gives readers the big picture in narrative format, the conclusion may instead depend on listings of findings, conclusions, or recommendations. (Chapter 5 gives suggestions on using bulleted and numbered listings.)
- **Summary paragraph(s):** When a listing is not appropriate, you may want to write a concluding paragraph or two. Here you can leave readers with an important piece of information and make clear the next step to be taken.

Whichever alternative you choose, your goal is to return to the main concerns of the most important readers—decision makers. Both the abstract and the conclusion, in slightly different ways, should respond to the needs of this primary audience.

>>> Tips for Organizing Sections and Paragraphs

First and foremost, the ABC format pertains to the organization of entire documents. Yet the same beginning-middle-end strategy applies to the smaller units of discourse: document sections and paragraphs. In fact, you can view the entire document as a series of interlocking units, each responding to reader expectations as viewed on the reader interest curve in Figure 4–3.

Common Patterns of Organization

As you are planning your writing projects, you may find it useful to use familiar patterns of organization to arrange the sections, and even paragraphs, of longer documents. Once you have clearly identified how information in the sections of your document will be organized, it will be easier for you to develop your ideas and to make the connections between your ideas clear. Commonly recognized patterns of organization also help your



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readers to find the information that they need and to understand that information.

There are several organizational patterns that you may already be familiar with from your previous writing classes. You should use the pattern that is most appropriate to the purpose of your document and to the topic that you are writing about.

Sequence

Documents that emphasize a sequence are usually organized chronologically or spatially. Chronological documents, such as instructions and process explanations, identify steps or stages and show how they are related in time. Documents that are organized spatially, such as technical descriptions, identify the parts of an object and show how they are related physically. For example, descriptions of machinery may be organized from front to back, top to bottom, or from the outside in. Whether a document uses time or space as an organizing principle, a sequential pattern moves from one section of the subject to the next in a clear, linear system.

Classification

Classification helps your reader make sense of diverse but related items. In technical documents, you often group lists of items into categories. For example, a report on a department's activities may group them by client or project. Even a résumé groups experience and knowledge into classifications such as *skills* and *education*.

Division

Division is often used to identify parts of an object, an organization, or a system. It begins with an entire item that must be broken down or partitioned into its components. Division is often used to describe mechanisms, but it can be applied to a variety of subjects. A company's organizational chart, like the one in Model 1–1 (pp. 25–34), is an example of division, with the company's personnel and responsibilities clearly divided into units.

Comparison/Contrast

Many writing projects obligate you to show similarities or differences between ideas or objects. (For our purposes, the word *comparison* emphasizes similarities, whereas the word *contrast* emphasizes differences.) Although you will emphasize one or the other, you will probably include both similarities and differences in your document. This technique especially applies to situations in which readers are making buying decisions.

General to Specific (or Vice Versa)

Often, documents are organized from general statements to supporting details in a process known as *deductive reasoning*. For example, a description of the function of a department may open with an overview of the department's responsibilities and then explain how individuals

in the department contribute to meeting those responsibilities. At other times, the details must be described first, before the results can be understood. This is known as *inductive reasoning*. For example, an analysis of a bridge failure may identify flaws in specific structural elements before explaining how they led to the failure of an entire section of the bridge.

Cause and Effect

Workplace writing often examines the causes of events or predicts the results of an action. For example, a report of an injury at a job site may identify unsafe practices that led to the incident and suggest changes that will prevent such incidents from happening in the future.

Problem/Solution

A large proportion of writing in organizations is designed to identify and analyze problems and offer solutions. Many companies gain clients through *proposals*, a formal way of presenting solutions to problems.

These patterns can be used in a variety of combinations within a single document. An investigative report about an accident at a plant will probably include a narrative of the accident, organized sequentially; an analysis of the reasons for the accident, with cause-and-effect connections spelled out clearly; and a recommended solution to the problem that caused the accident. Choose the patterns that help you organize information in the way that will be most useful to your readers.

Document Sections

As mentioned earlier, readers often move from the document abstract to the specific body sections they need to solve their problem or answer their immediate question. Just as they need abstracts and conclusions in the whole document, they need mini abstracts and brief wrap-ups at the start and finish of each major section.

To see how a section abstract works, we must first understand the dilemma of readers. Refer to Model 4–2 on page 115, which contains one section from a long document. Some readers may read it from beginning to end, but others might not have the time or interest to do so in one sitting. Instead, they will look to a section beginning for an abstract and then move around within that section at will. Thus the beginning must provide them with a map of what's ahead. Following are the two items that should be part of every section abstract:

1. **Attention getter:** A sentence or more that captures the attention of the reader. The attention getter may be one sentence or an entire paragraph, depending on the overall length of the document.
2. **Lead-in:** A list, in sentence or bullet format, that indicates main topics to follow in the section. If the section contains subheadings, your lead-in may include the same wording as the subheadings and may be in the same order.

The first part of the section gives readers everything they need to read on. First, you get their attention with an attention getter. Then you give them an outline of the main points to follow so that they can move to the part of the section that interests them most.

As in Model 4–2 on page 115, the section abstract immediately precedes the first subheading when subheads are used.

Sections of documents are usually clearly identified by headings, but you also ensure that your readers will recognize important relationships in sections by using cohesive elements in your text. Good cohesive texts include the following elements:

- **Key word repetition.** Often inexperienced writers believe that they should avoid using the same word repeatedly. They think that using many synonyms provides variety and interest to writing. In technical documents, synonyms can actually confuse readers. Readers look for key words to identify important issues and concepts in a document. If you are writing for international audiences, you should always use the same word for the same meaning. This makes translation easier.
- **Transitions.** Transitional words and phrases can help readers understand the connections between ideas. Remember that transitions indicate relationships between sentences and paragraphs. For a list of common transitions grouped by meaning, see the Handbook in the back of this book.
- **Pointing words.** This set of words directs the reader to a previous sentence, reinforcing the connection between the ideas. The pointing words are *this*, *that*, *these*, and *those*.
- **Given/New pattern.** In the given/new pattern, information that ends one sentence is used to start the next sentence. This is especially useful when you are introducing new concepts. A writer starts with a familiar, but related, concept in one sentence, then uses that familiar concept to start the next sentence. In the second part of the sentence, the new concept is introduced and is related to the familiar concept. The reader better understands the new concept because it has been related to one that has already been explained, or that is already familiar.

Some of these cohesive elements, especially transitions and the given/new pattern can help unify whole documents. Figure 4–6 shows a text with the cohesive elements marked.

Sections also should end with some sort of closing thought, rather than just dropping off after the last supporting point has been stated. For example, you can (1) briefly restate the importance of the information in the section or (2) provide a transition to the section that follows. Model 4–2 takes the latter approach by suggesting the main topic for the next section. Whereas the section lead-in provides a map to help readers navigate through the section, the closing gives a sense of an ending so that readers are ready to move on.

Paragraphs

Paragraphs represent the basic building blocks of any document. Organizing them is not much different in technical writing than it is in nontechnical prose. Most paragraphs contain these elements:

1. **Topic sentence:** This sentence states the main idea to be developed in the paragraph. Usually it appears first. Do not delay or bury the main point, for busy readers may read only the beginnings of paragraphs. If you fail to put the main point there, they may miss it entirely.

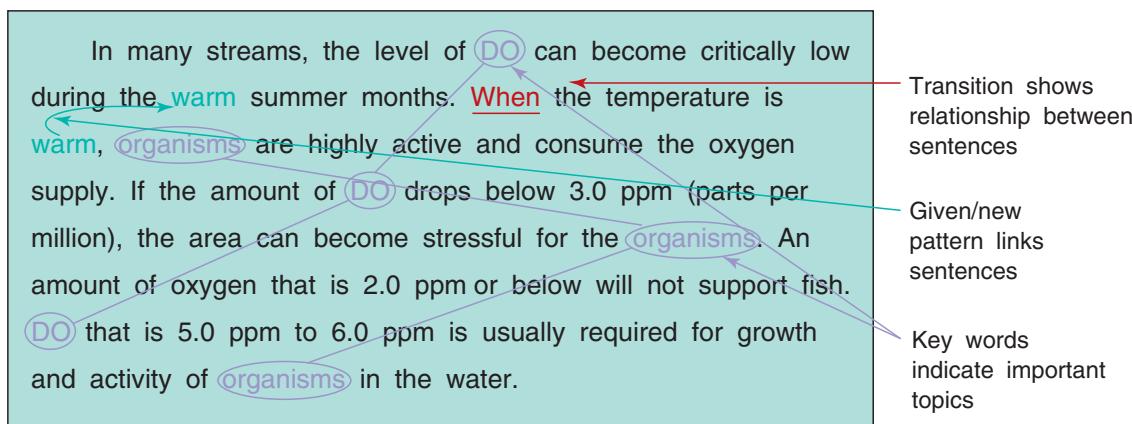


Figure 4-6
Cohesive elements in a paragraph

2. **Development of main idea:** Sentences that follow the topic sentence develop the main idea with examples, narrative, explanation, or other details. Give the reader concrete supporting details, not generalizations.
3. **Transitional elements:** Structural transitions help the paragraph flow smoothly. Use transitions in the form of repeated nouns and pronouns, contrasting conjunctions, and introductory phrases.
4. **Closing sentence:** Most paragraphs, like sections and documents, need closure. Use the last sentence for a concluding point about the topic or a transitional point that links the paragraph with the one following it.

Model 4–3 on page 116 shows two paragraphs from an M-Global recommendation report that follow this pattern of organization. M-Global was hired to suggest ways for a hospital to modernize its physical plant. Each paragraph is a self-contained unit addressing a specific topic, while being linked to surrounding paragraphs (not shown) by theme and transitional elements.

This suggested format applies to many, but not to all, paragraphs included in technical documents. In one common exception, you may choose to delay the statement of a topic sentence until you engage the readers’ attention with the first few sentences. In other cases, the paragraph may be short and may serve only as an attention grabber or a transitional device between several longer paragraphs. Yet for most paragraphs in technical communication, the beginning-middle-end model described here will serve you well. Remember these other points as well as you organize paragraphs:

- **Length:** Keep the typical length of paragraphs at around 6 to 10 lines. Many readers won’t read long blocks of text, no matter how well organized the information may be. If you see that your topic requires more than 10 lines for its development, split the topic and develop it in two or more paragraphs.
- **Listings:** Use short listings of three or four items to break up long paragraphs. Readers lose patience when they realize information could have been more clearly presented in listings. Chapter 5 offers detailed suggestions on using lists.
- **Use of numbers:** Paragraphs are the worst format for presenting technical data of any kind, especially numbers that describe costs. Readers may ignore or miss data

packed into paragraphs. Usually, tables or figures are a clearer and more appropriate format. Also, be aware that some readers may think that cost data couched in paragraph form represent an attempt to hide important information.

>>> Organizing Digital Documents



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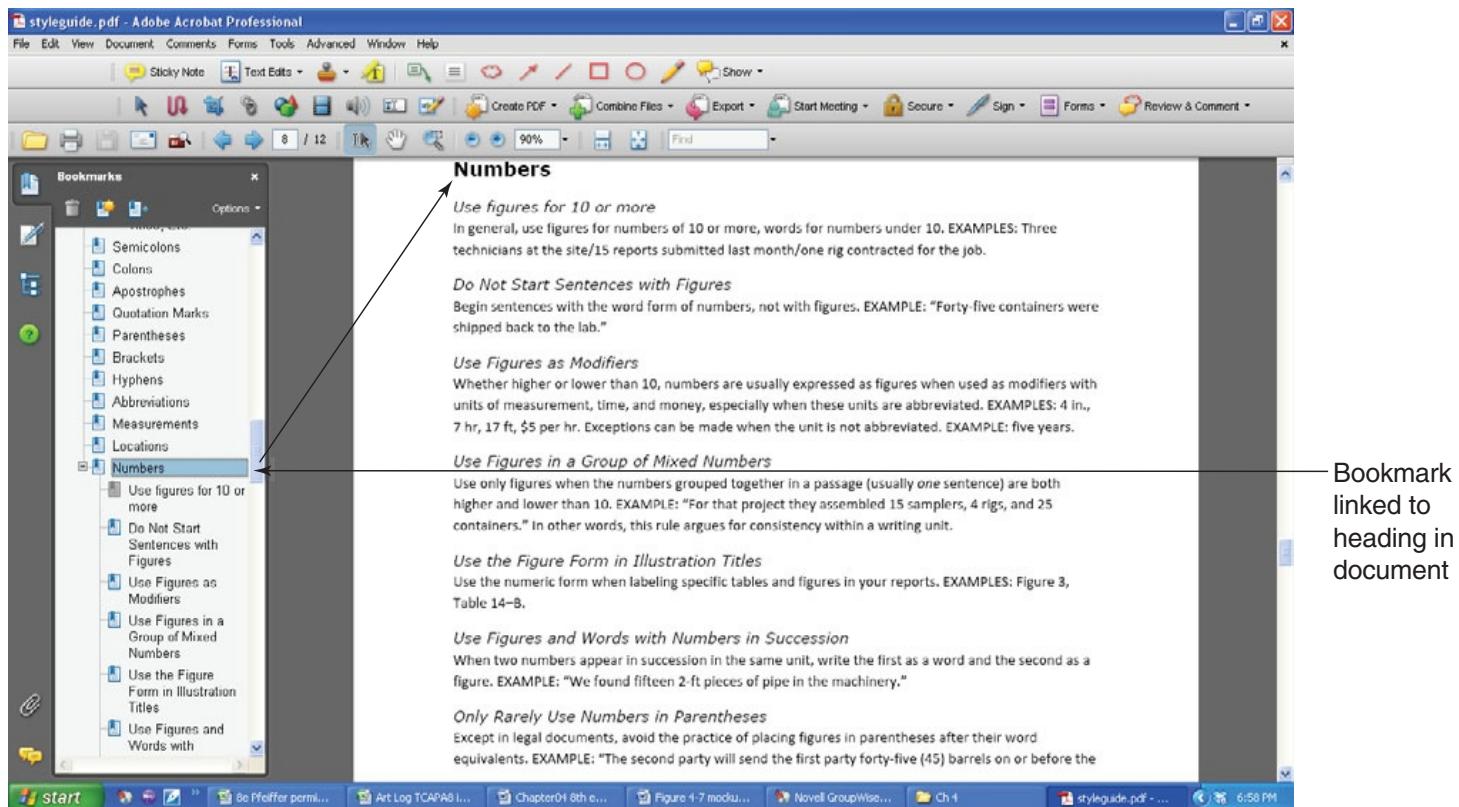
Reports, proposals, manuals, and other technical documents are published digitally for easy access through the Internet. With the growing popularity of e-books and electronic tablets, expect even more documents to be published primarily in digital form. Some of these documents look like print documents and are even published by simply “printing” them as a digital image. But digital documents should meet reader expectations for interactivity and navigability. The first step in taking advantage of the characteristics of digital documents is consistent use of style tags throughout the entire document.

The ability to use style tags well is considered by many technical communicators to be just as important as the ability to write well. Although the process for

creating, editing, and applying styles differs from one software program to the next, the basic principles are the same. Each heading should be tagged with its appropriate level (as Heading 1, Heading 2, and so on). Bulleted and numbered lists should have style tags attached to them. Some software gives you the option of creating style tags for emphasis, figures, or even specific types of text, such as definitions. Even body text should be tagged as such. (For more about using style tags, see Chapter 5.) Software programs use these tags to set up navigation tools and topics automatically.

Some digital documents, like PDFs and e-books, are basically print texts converted to digital format. The organization strategies that we have been discussing in the chapter are important in those kinds of documents, but digital documents require additional organizational strategies. Readers of digital documents want to be able to move quickly from one section to the next, they want to be able to find the information that they seek easily, and they want to see connections between sections clearly indicated. To provide these helps for readers, digital documents should include navigation tools that are clearly indicated with underlining, color, and navigation panes. Figure 4–7 shows a searchable digital document that has been bookmarked so that readers can easily find sections.

- **Search function:** Digital documents should be searchable. Some software programs require you to make a document searchable. The software program may ask you to identify key words that your reader may use for searching.
- **Navigation panel:** Some formats, especially Adobe Acrobat, allow you to set up navigation panels that show thumbnails of pages or an outline of bookmarks. Learning



■ **Figure 4-7** ■ Digital document with bookmarks.

Source: Adobe Acrobat® screen shot, reprinted with permission from Adobe Systems Incorporated.

how to use these tools will make the structure of your digital document clear and will allow your readers to quickly find the section of the document that they want.

■ **Table of Contents:** Create a Table of Contents with links to the information in the document. Some software programs use the style tags for headings to automatically create a Table of Contents. Others require you to manually bookmark sections of your document that will appear in a Bookmarks pane. When you create a Table of Contents using the tools in your software program, you will probably need to edit their appearance after you have created them.

■ **Index:** Some software programs allow you to automatically generate an index from your document. However, you will probably need to edit the index after you have created it. Indexing tools often index nearly every word in your document. You will need to ensure that the index contains all of the words that a reader might use to search for information, and only the words that a reader might look up. You will also need to add hyperlinked cross-references. If your document is book length, you should consider recommending that your organization hire a professional indexer. This is often more efficient than trying to manage a complex index in-house.

■ **Hyperlinks:** A navigable document includes internal hyperlinks, in addition to links in the Table of Contents and Index. Every cross-reference should be linked, including references to appendixes and to figures and tables. It may also be useful to link in-text reference citations to the bibliography.

Some documents, such as help files and documents published as Web pages, are designed for a digital environment. These documents are written in modules, or individual topics designed to be accessed in any order. (For more on the process of creating modular documents, see Chapter 3. For more on creating Web page content, see Chapter 14.) When creating these kinds of documents, you must begin your planning by identifying the type of information that your document will include. The most common types of modular topics are listed below:

- **Conceptual information:** This includes background information that readers may find useful, especially definitions. (See Chapter 7 for more on writing definitions and physical descriptions.) Some digital interfaces offer the option of providing this information through hyperlinks or pop-up boxes. (See Figure 4–8.) Glossaries are a collection of conceptual information.
 - **Procedural information:** This can include instructions for completing specific tasks and explanations of how processes take place. (See Chapter 8 for more on writing instructions and process explanations.)
 - **References:** A References list should include the facts that support the information in the document. This may include bibliographic references and recommendations for further reading, or it may include a page of useful links. It may also include schematics, regulations, and other material that might be found in the appendixes of print documents.
 - **Troubleshooting information:** Tables of common problems, images of error screens, and lists of Frequently Asked Questions are useful in task-focused documents like Help files.

Digital technologies have changed the way we write and read in the workplace. When readers access content on a screen, they do not read in a clearly identified sequence. Instead, they use links and tabs to pick and choose the topics that they want. Readers expect navigation tools in digital documents and will notice if they are missing or poorly done.

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Commas

We recommend that commas be used only in the following sentence constructions.

Commas in a Series

Use commas to separate words, phrases, and short clauses written in a series of three or more items. EXAMPLE: "The samples contained gray sand, sandy clay, and silty sand." Use of the final comma should follow common practice in the country in which the document was created. For example, according to current U.S. usage, a comma always comes before the "and" in a series; in the United Kingdom, the comma is left out.

Commas in Compound Sentences

Use a comma before the conjunction that joins main clauses in a [compound sentence](#). EXAMPLE: "We completed the drilling at the Smith Industries location, and then we grouted the holes with Sakrete." The comma separates two independent clauses, each with its own subject and verb (*we completed* and *we grouted*). If the sentence contains one clause containing one subject and two verbs ("we completed and grouted"), it is not a compound sentence. Instead, it is a simple sentence with a coordinating conjunction. The coordinating conjunctions are *and*, *but*, *or*, *nor*, *for*, *yet*, and *so*.

Commas with Nonessential Modifiers

Set off nonessential modifiers with commas at the beginning, middle, or end of sentences that add more information to a sentence, rather than greatly changing its meaning. This kind of modifier is the main part of the sentence, giving you a clue that a comma is needed. For example, the sentence "I report that we submitted three weeks ago, indicated that the company would not be responsible for transporting hazardous wastes" is incorrect. The word *indicated* is a nonessential modifier, would be spoken with pauses, and therefore uses separating commas. The second example includes an essential modifier, would be spoken without pauses, and therefore includes no separating commas.

Commas with Adjectives in a Series

Use a comma to separate two or more adjectives that modify the same noun at the same level of detail. To help you decide if adjectives modify the same noun equally, use this test: if you can reverse their positions and still retain the same meaning, then they are coequal adjectives and should be separated by a comma. EXAMPLE: "Aaron found the old, rotten concrete" is correct. Clicking on the link opens a pop-up window

■ **Figure 4-8** ■ Conceptual information in a pop-up window

Source: Adobe RoboHelp® screen shot, reprinted with permission from Adobe Systems Incorporated

>>> Chapter Summary

- Writers should organize documents so that the information is appropriate to all types of readers.
- Different parts of documents should be written for different readers.
- Information to be emphasized should be placed at the beginning and ending of documents, sections, and paragraphs.
- Key points should be repeated in several places in a document, since most readers read only the parts of a document that they are interested in.
- The ABC format (*Abstract, Body, Conclusion*) is a useful way to organize all documents.
- Common ways of organizing document sections include classification, division, comparison/contrast, general-to-specific, cause-and-effect, and problem/solution.
- Paragraphs in technical documents should have a clear topic. They are usually relatively short and may include lists.
- Cohesive elements that help unify paragraphs, sections, and entire documents include key word repetition, transition words, pointing words, and given/new information.
- Digital documents should be organized with interactivity in mind. They may be created as individual modules, or topics, that can be accessed in any order.

>>> Learning Portfolio

Communication Challenge Telecommuting: The Last Frontier?

Calling themselves the “Commute Group,” five managers at M-Global’s Boston office have been meeting to discuss telecommuting (i.e., permitting some or all employees to do part of their work at home). The branch manager, Richard DeLorio, expressed interest in the group’s work and suggested that group members write a report proposing a pilot project at the branch. The report will be read by Richard and by members of the M-Global corporate staff in Baltimore—especially Karrie Camp, Vice President for Human Resources. It will probably also be read by Jeannie McDuff, Vice President for Domestic Operations, Richard’s boss. Any change in branch work schedules must be approved by corporate headquarters.

The Commute Group now must decide (1) what to include in its report to Richard DeLorio and (2) how to organize its information for maximum impact. What follows are some details on the audience for the report, the group’s reasons for favoring telecommuting, some problems discussed by the group, and questions that remain about the organization of the report. Although the group has made progress in discussing telecommuting, it has been unable to decide on a structure for its report.

This case study explains the group’s approach to preparing the report. It illustrates the problems faced by the group as they try to organize the information. The case ends with questions and comments for discussion, as well as an assignment for a written response to the Challenge.

Report Audience

The group has spent much time discussing what points would be most persuasive with the primary audience, Richard DeLorio and Karrie Camp. Richard has been open to new ideas since being chosen for the manager job a year ago. He meets often with all departments in the office and shows a genuine interest in creating a more comfortable workplace. For example, he recently accepted recommendations by department managers to purchase office chairs and desks that allow employees to work with less physical strain.

As Vice President of Human Resources, Karrie Camp sees part of her responsibility as protecting the assets of M-Global, and making sure that employees work effectively and efficiently. Indeed, Karrie, who has been with the organization for 30 years, has a master’s degree in finance and keeps a close eye on the bottom line of each branch. She is interested in exploring new work practices only if they may improve employee productivity. More than likely, she will

be the final decision maker about the pilot project, although she will inform Jeannie McDuff if there is a change of policy in the Boston branch.

Jeannie McDuff, Richard’s boss, evaluates branch managers largely on the financial performance of the branches, but she is interested in innovation and has been one of the main forces behind the organization’s new image.

Rationale for Pilot Project

The Commute Group spent much time discussing two topics: the branch jobs that would be best suited to telecommuting and specific arguments in support of a telecommute policy.

Group members agreed that employees who do much independent work, especially on the computer, would be the best candidates for a pilot project. In particular, members of the technical and scientific staff often spend half their days at personal computers, either performing technical calculations or drafting sections of reports and proposals.

Next, the group discussed reasons for adopting a telecommute pilot project. The group first met to discuss the issue after a series of horrible rush hours over the holiday season in December. Bad weather forced most of the 125 branch employees either to miss some workdays during the period or to arrive up to two hours late several days. Most employees already have a one-way commute of at least one hour because there is little affordable housing close to the office location in downtown Boston. Thus the heavy holiday traffic prompted the discussion about telecommuting.

In its deliberations, the Commute Group focused mostly on the kind of work that could be done by employees at home. What follows are some of the points discussed by the group, in random order.

- Telecommuting will save time either by eliminating commuting (on days the employee works exclusively at home) or by reducing commuting time (on days when the employee comes to the office for part of the day and thus avoids one or both rush-hour periods that day).
- Employees can write and edit reports and proposals at home for several hours at a time, without the usual office interruptions of meetings, phone calls, drop-in visitors, and so on. Some experts claim that writers are most productive during the drafting stage if they have uninterrupted blocks of writing time.
- Morale will improve as long as there is a clear rationale for adopting the policy and selecting participants for the pilot project. Employees chosen should be those who

work well independently, whose jobs can be handled through telecommuting, and who have already made significant contributions to their departments.

- If M-Global adopts a telecommuting policy after the pilot project, the firm may attract an additional pool of excellent employees.
- Telecommuting will improve some employees' productivity by allowing them to work when hazardous driving conditions exist, or when family members are ill—in other words, times when the employee would be unable to drive to the office.
- The company would benefit from the increase in computer literacy among both the telecommuters and those who work with them back at the office. The firm would begin to take advantage of the considerable investment it already has made in computer technology—personal computers, laptops, networking, groupware, software for instant messaging, Web cams, and so on. In particular, e-conferencing and instant messaging would become a way of life. Until now, many employees have been reluctant to replace time-consuming meetings, phone calls, and online discussions.
- If telecommuting were to become a regular way of doing business, it might reduce the amount of work space needed at the office and thus reduce overhead. For example, several employees could share the same office work space if much of their work time were spent at home.
- Even some noncomputer tasks, such as phone calls to clients, could be done best in the quiet environment of the home, as opposed to the hectic environment of the office, where noise and interruptions are a part of doing business.
- If a telecommuting policy were adopted, M-Global would gain public support by showing that it is part of the solution to the central problems of traffic congestion and air pollution. Some potential clients might even be attracted by the firm's progressive policies.

Possible Problems With Telecommuting

The Commute Group also addressed problems that might arise with the pilot project and with telecommuting in general. Group members were unsure of how or if the problems should be woven into the fabric of the report. Following are some concerns that were discussed:

- The right employees must be selected for the pilot project. Whereas some employees might improve their productivity at home, others might find it difficult to stay on task, either because of their own work habits or because of their home environment. Some kind of appropriate screening device would be in order.

- The branch must determine how to evaluate the success of the pilot project, perhaps by some combination of (1) self-evaluation by the employees, (2) performance evaluations by the employees' supervisors, (3) productivity assessment by the corporate office, and (4) opinions gathered by surveying employees who are not part of the pilot project but who interact regularly with the employees who are telecommuting.
- Good communication is central to the project. Employees must be involved in selecting participants, planning the study, conducting the project on a day-to-day basis, and evaluating its success.

Organization of the Report

The Commute Group has agreed on the audience for the report, the likely qualifications for participation in the pilot study, advantages of telecommuting, and some possible problems with the study and with telecommuting in general. However, the group has not resolved two main questions: (1) what part of the information assembled should be included in the report, and (2) what order this information should assume. In other words, the group must wrestle with matters of organization. Indeed, disagreements about these two issues created a stumbling block in the group's work.

Assume the role of a documentation specialist who is assigned to a standing proposal-writing team at the Boston branch. You have been called in by the Commute Group to help create an effective and persuasive argument. Answer the following questions, remembering that you are not to be concerned with specific report sections or headings described later in this book. Instead, this exercise concerns only the generic ABC (Abstract/Body/Conclusion) structure explained in this chapter.

1. Briefly, how should the ABC structure be used to organize this report? Your answer should take into account the intended purpose and audience of the report.
2. More specifically, what points would you suggest be included in the abstract component? What issues need not be addressed? Why?
3. What points would you suggest be included in the body? Why? In what order? Explain the rationale for the order you suggest. If you have excluded some information discussed by the committee, explain why.
4. Given what you've read so far, what one main purpose should be served by the conclusion component of the group's report? To accomplish this purpose, what information should be included? Why?
5. What issues, if any, remain to be discussed by the Commute Group before it writes its recommendation report?

Write About It

Members of M-Global's Publications Development team (The Pub) are assigned to branches throughout the organization, but all members of The Pub share certain goals and responsibilities. One of the unofficial duties that they have agreed on is to help all employees at M-Global become better writers. Although you work in Boston, you are a member

of The Pub. You take this opportunity to teach your fellow employees about organization. Create a general outline for the body of the report, identifying its key sections. Decide on patterns of organization for each section. Then write a memo to the members of the Commute Group. Include your suggested outline and organization patterns for each section and explain your rationale for your suggestions.

Collaboration at Work Organizing the Catalog

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use team time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Here, the term organization means the arrangement of information, such as purpose statements, supporting details, conclusions, and recommendations. As explained in this chapter, you should aim to choose patterns of organization that fit the context. In particular, they should respond to the needs of the specific readers.

Your college or university catalog is an example of a document that includes varied information, varied readers, and, in many cases, varied patterns of organization. Standard topics covered in catalogs often include the following:

- Accreditation organization, status, and guidelines
- Mission of the institution

- Admissions procedures
- Academic departments
- Degree programs
- Course descriptions
- Financial aid
- Extracurricular activities
- Academic regulations

To add to the complexity, different sections of the catalog may have been written by different writers. However, usually one or two people are responsible for coordinating and editing the entire document.

Team Assignment

Your team will either choose or be assigned one or more sections of your institution's catalog. Your task is to (1) describe the manner in which information is organized, (2) speculate about the rationale the writer had for the pattern(s) selected, and (3) develop an opinion as to whether the patterns meet the needs of the catalog's main readers.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class.

Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Overall Organization

Find an example of technical writing that includes multiple sections, such as an owner's manual or a report. Prepare a written or an oral report (your instructor's choice) that explains how well the excerpt follows this chapter's guidelines for organization.

2. Analysis: Evaluating an Abstract

Read the following abstract and evaluate the degree to which it follows the guidelines in this chapter.

ABSTRACT: The objective of this study is to gain a structural understanding of the Burr arch-truss, specifically as found in the Pine Grove Bridge. The scope of the study involves first-order linear elastic analysis of the truss, but does not include analysis of specific connections. From our research we found that the loading of the arch can be as much as three times greater than the truss, as the arch is more efficient in carrying dead load, and the truss provides necessary bending rigidity during concentrated live loads. Maximum stresses are found to occur at the springing of the arch, and no elements are overstressed by current design standards. Based on this we conclude that in the Pine Grove Bridge the arch is structurally dominant, and the truss provides necessary reinforcement under large concentrated live loads.

Source: <http://www.cr.nps.gov/hdp/samples/HAER/Pine%20Grove%20Engr%20Report%20-%20Final%20-%20LL.pdf>.

3. Analysis: All Patterns of Organization—Recognition Exercise

For this group assignment, your instructor will provide each group with a different packet of “junk mail” (catalogs, sales letters, promotions, etc.) and perhaps other documents, such as memos or product information sheets. Your group will search for and evaluate examples of various patterns of organization in the documents and then report its findings to the whole class.

4. Analysis: Division

Compare syllabi for several different courses. (Your teacher may ask you to work in groups, so that you have many examples to study.) How do they divide information about courses? Identify the divisions that appear most often in the syllabi. If you note significant differences between the syllabi—differences between the principle used for dividing information (e.g., by time or task) or divisions that are used in one syllabus but not in the others—analyze those differences. Do the differences seem to be connected to the topic of the course? To the particular type of course (whether it is a lecture or a lab course)? To the course level? Write a short essay that reports your findings.

5. Analysis: Paragraph Organization

Select a body paragraph from each of four different articles taken from periodicals in your campus library. Choose one from a nationally known newspaper (like the New York Times), one from a popular magazine (like Time or Sports Illustrated), one from a business magazine (like Forbes or Business Week), and one from a technical journal (like IEEE Transactions on Professional Communication). Explain in writing how each of the

paragraphs does or does not follow the top-down pattern of organization discussed in this chapter. If a paragraph does not follow the top-down pattern, indicate whether you believe the writer made the right or wrong decision in organizing the paragraph. In other words, was there a legitimate reason to depart from the ABC pattern? If so, what was the reason? If not, how would you revise the paragraph to make it fit the ABC model?

6. Practice, M-Global Context: Section Organization

As a graphics specialist at M-Global, you have written a recommendation report on ways to upgrade the graphics capabilities of the firm. One section of the report describes a new desktop publishing system, which you believe will make M-Global proposals and reports much more professional looking. Your report section describes technical features of the system, the free training that comes with purchase, and the cost.

Write a lead-in paragraph for this section of your report. If necessary, invent additional information for writing the paragraph.

7. Practice: Classification

Many Web sites offer advice to incoming freshmen about what to pack for their college dorm room. Using at least two lists as a starting place, create your own list of recommendations. You may include as many or as few of the recommended items as you feel worthwhile, and you can add your own items to the list. Then choose a principle for classifying the items on your list. Group the items and clearly identify the characteristics that helped you group the items. When you turn in your lists or share them with the class (as your teacher instructs), identify the Internet sites that you used as a starting point.

8. Practice, M-Global Context: Classification: Projects

For this assignment you will use the main technical tasks listed on the eight projects at the end of Chapter 12. Perform a classification exercise by finding a common basis, selecting an appropriate number of groups, and placing each of the technical tasks in one of the groups.

9. Practice, M-Global Context: Paragraph Organization

Below is a list of notes that were created by a writer who is preparing an internal proposal that suggests ways to improve work schedules. Using the list, write a paragraph that follows the organizational guidelines in this chapter. Use all the information, rearrange the points as needed, change any of the wording when necessary, and add appropriate transitions.

- Four-day weeks may lower job stress because employees have long weekends with families and may avoid the worst part of rush hour.

- A four-day, 10-hour-a-day workweek may not work for some service firms, where projects and clients need five days of attention.
- Standard five-day, 8-hour-a-day workweeks increase on-the-job stress, especially considering commuter time and family obligations.
- M-Global is considering a pilot program for one office; this office would depart from the standard 40-hour workweek.
- M-Global is also considering other strategies to improve the work schedules of its employees.
- The 40-hour workweek came into being when many more families had one parent at home while the other worked.
- Some firms have gone completely to a four-day week (with 10-hour days).
- M-Global's pilot program would be for one year, after which it would be evaluated.

10. Practice: Writing an Abstract

The short report that follows lacks an abstract that states the purpose and provides the main conclusion or recommendation from the body of the report. Write a brief abstract for this report.

DATE: June 13, 2012
TO: Ed Simpson
FROM: Jeff Radner
SUBJECT: Creation of an Operator Preventive Maintenance Program

The Problem

The lack of operator involvement in the equipment maintenance program has caused the reliability of equipment to decline. Here are a few examples:

- ◆ A tractor was operated without adequate oil in the crankcase, resulting in a \$15,000 repair bill after the engine locked.
- ◆ Operators have received fines from police officers because safety lights were not operating. The bulbs were burned out and had not been replaced. Brake lights and turn-signal malfunctions have been cited as having caused rear-end collisions.
- ◆ A small grass fire erupted at a construction site. When the operator of the vehicle nearest to the fire attempted to extinguish the blaze, he discovered that the fire extinguisher had already been discharged.

When the operator fails to report deficiencies to the mechanics, dangerous consequences may result.

The Solution

The goal of any maintenance program is to maintain the company equipment so that the daily tasks can be performed safely and on schedule. Since the operator is using the equipment on a regular basis, he or she is in the position to spot potential problems before they become serious. For a successful maintenance program, the following recommendations should be implemented:

- ◆ Hold a mandatory four-hour equipment maintenance training class conducted by mechanics in the motor pool. This training would consist of a hands-on approach to preventive maintenance checks and services at the operator level.
- ◆ Require operators to perform certain checks on a vehicle before checking it out of the motor pool. A vehicle checklist would be turned in to maintenance personnel.

The attached checklist would require 5 to 10 minutes to complete.

Conclusion

I believe the cost of maintaining the vehicle fleet at M-Global will be reduced when potential problems are detected and corrected before they become serious. Operator training and the vehicle pretrip inspection checklist will ensure that preventable accidents are avoided. I will call you this week to answer any questions you may have about this proposal.

M-Global, Inc.
Fleet Maintenance Division
Vehicle Checklist
Pretrip Inspection

Inspected by: _____ Date: _____
Vehicle #: _____ Odometer: _____

Fluid Levels, Full/Low

_____ Engine Oil	Comments _____
_____ Transmission Fluid	_____
_____ Brake Fluid	_____
_____ Power Steering	_____
_____ Radiator Level	_____

Before Cranking Vehicle

_____ Tire Condition	Comments _____
_____ Battery Terminals	_____
_____ Fan Belts	_____
_____ Bumper and Hitch	_____
_____ Trailer Plug-in	_____
_____ Safety Chains	_____

After Cranking Vehicle

_____ Parking Brakes	Comments _____
_____ Lights	_____
_____ All Gauges	_____
_____ Seat Belts	_____
_____ Mirrors/Windows/Wipers	_____
_____ Clutch	_____
_____ Fire Ext. Mounted and Charged	_____
_____ Two-Way Radio Working	_____

Additional Comments: _____

11. Ethics Assignment

Read this chapter's "Communication Challenge" section entitled "Telecommuting: The Last Frontier?" (You may also want to conduct some library or Internet research on telecommuting, or to discuss the concept with someone who works full time.) Then write a short essay or report that examines (a) any personal ethical dilemmas that may arise for M-Global employees if the Boston office adopts a telecommuting policy and (b) possible solutions to the ethical problems you discuss.

12. International Communication Assignment

In the ABC pattern, the beginning of a document (A, or Abstract) includes a clear purpose statement, a summary of main points for decision makers, and a brief description or listing of information to follow in the document. Although this pattern works in most situations—especially in the United States and many Western countries—there may be contexts and cultures in which it is not the best choice. For example, the front-end location of important points may appear

abrupt and even offensive in some cultures. Using a country or culture outside the United States, describe a context in which you would depart from the strict ABC pattern. (Possible countries to examine include China, Japan, Saudi Arabia, and Germany.) Be specific about purpose, readers, and preferred organizational pattern. Also, give the source upon which you base your conclusions: family experience, business experience, interviews, books, Internet research, and so on.



13. A.C.T. N.O.W Assignment (Applying Communication To Nurture Our World)

Find a document (report, article, letter to the editor, poster with text, editorial, etc.) intended to alert readers to a

health or safety issue. Depending on the instructions you are given, prepare an oral or a written report in which you (a) analyze the degree to which the document does or does not subscribe to the ABC pattern of organization and (b) offer suggestions for how the document might be reorganized to more effectively model the ABC format. For example, you may want to give specifics about the manner in which existing information may be rearranged or new information added.

MEMORANDUM

DATE: September 5, 2011
TO: Danielle Firestein
FROM: Barbara Ralston BR
SUBJECT: Recommendation for AIM 500 Fax

INTRODUCTORY SUMMARY

The purpose of this report is to present the results of the study you requested on the AIM 500 facsimile (fax) machine. I recommend purchase of additional AIM 500 machines because they deliver fast, dependable service and include the features we need most. This report includes the following sections: Ease of Operation, Features of the AIM 500, Dependability of the AIM 500, and Conclusion.

EASE OF OPERATION

The AIM 500 is so easy to operate that a novice can learn to transmit a document to another location in about two minutes. Here's the basic procedure:

1. Press the button marked TEL on the face of the fax machine. You then hear a dial tone.
2. Press the telephone number of the person receiving the fax on the number pad on the face of the machine.
3. Lay the document facedown on the tray at the back of the machine.

At this point, just wait for the document to be transmitted—about 18 seconds per page to transmit. The fax machine will even signal the user with a beep and a message on its LCD display when the document has been transmitted. Other, more advanced operations are equally simple to use and require little training. Included with the machine are two different charts that illustrate the machine's main functions.

The size of the AIM 500 makes it easy to set up almost anywhere in an office. The dimensions are 13 inches in width, 15 inches in length, and 9.5 inches in height. The narrow width, in particular, allows the machine to fit on most desks, file cabinets, or shelves.

FEATURES OF THE AIM 500

The AIM 500 has many features that will be beneficial to our employees. In the two years of use in our department, the following features were found to be most helpful:

- Automatic redial
- Last-number-redial memory
- LCD display



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ABSTRACT
Identifies purpose of report and recommendations.
Provides overview of structure.

BODY
Headings and sub headings indicate structure.

Ralston to Firestein. 2

Preset dialing
Group dialing
Use as a phone

Automatic Redial. Often when sending a fax, the sender finds the receiving line busy. The redial feature will automatically redial the busy number at 30-second intervals until the busy line is reached, saving the sender considerable time.

Last-Number-Redial Memory. Occasionally there may be interference on the telephone line or some other technical problem with the transmissions. The last number memory feature allows the user to press one button to automatically trigger the machine to redial the number.

LCD Display. This display feature clearly displays pertinent information, such as error messages that tell a user exactly why a transmission was not completed.

Preset Dialing. The AIM 500 can store 16 preset numbers that can be used with one-touch dialing. This feature makes the unit as fast and efficient as a sophisticated telephone.

Group Dialing. After selecting two or more of the preset telephone numbers, the user can transmit a document to all of the preset numbers at once.

Use as a Phone. The AIM 500 can also be used as a telephone, providing the user with more flexibility and convenience.

DEPENDABILITY OF THE AIM 500

Over the entire two years our department has used this machine, there have been no complaints. We always receive clear copies from the machine, and we never hear complaints about the documents we send out. This record is all the more impressive in light of the fact that we average 32 outgoing and 15 incoming transmissions a day. Obviously, we depend heavily on this machine.

So far, the only required maintenance has been to change the paper and dust the cover.

CONCLUSION

→ The success our department has enjoyed with the AIM 500 compels me to recommend it highly for additional future purchases. The ease of operation, many exceptional features, and record of dependability are all good reasons to buy additional units. If you have further questions about the AIM 500, please contact me at extension 3646.

CONCLUSION
Clear
recommendation.
Invites contact.

■ Model 4-1 ■ continued

ADDITIONAL FEATURES OF MAGCAD

This report has presented two main advantages of the MagCad Drawing System: ease of correction and multiple use of drawings. However, there are two other features that make this system a wise purchase for M-Global's Boston office: the selective print feature and the cost.

Selective Printing

Using the Selective Print feature, you can "turn off" specific objects that are in the drawing with a series of keystrokes. The excluded items will not appear in the printout of the drawing. That is, the printed drawing will reflect exactly what you have temporarily left on the screen, after the deletions. Yet the drawing that remains in the memory of the machine is complete and ready to be reconstructed for another printout.

The selective print feature is especially useful on jobs where different groups have different needs. For example, in a drawing of a construction project intended only for the builder, one drawing may contain only the land contours and the building structures. If the same drawing is going to the paving company, we may need to include only the land contours and the parking lots. In each case, we will have used the selective print feature to tailor the drawing to the specific needs of each reader.

This feature improves our service to the client. In the past, either we had to complete several different drawings or we had to clutter one drawing with details sufficient for the needs of all clients.

Cost of MagCad

When we started this inquiry, we set a project cost limit of \$12,000. The MagCad system stays well within this budget, even considering the five stations that we need to purchase.

The main cost savings occur because we have to buy only one copy of the MagCad program. For additional work stations, we need pay only a \$400 licensing fee per station. The complete costs quoted by the MagCad representative are listed below:

1. MagCad Version 5	\$ 5,000
2. Licenses for five additional systems	2,000
3. Plotter	2,000
4. Installation	1,000
TOTAL	\$ 10,000

With the \$2,000 difference between the budgeted amount and the projected cost of the system, we could purchase additional work stations or other peripheral equipment. The next section suggests some add-ons we might want to purchase later, once we see how the MagCad can improve our responsiveness to client needs.

ABSTRACT

Clearly identifies change in topic.

BODY

Headings identify structure.

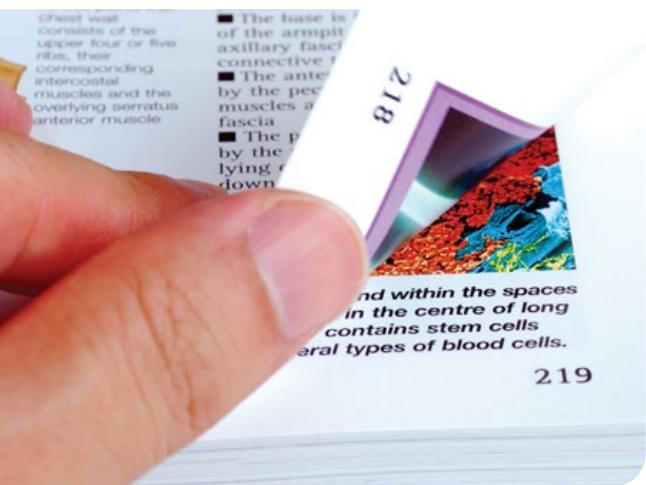
CONCLUSION

Suggests benefits.

- Introduces topic. → Conversion to a partial solar heating and cooling system would upgrade the hospital building considerably. In fact, the use of modern solar equipment could
- Specifies advantages. → decrease your utility bills by up to 50 percent, according to the formula explained in Appendix B. As you may know, state-of-the-art solar systems are much more efficient than earlier models. In addition, the equipment now being installed around the country is much more pleasing to the eye than was the equipment of 10 years ago. The overall effect will be to enhance the appearance of the building, as well as to save on utility costs.
- Summarizes result. →
- Introduces topic. → We also believe that changes in landscaping would be a useful improvement to the hospital's physical plant. Specifically, planting shade trees in front of the windows
- Provides details. → on the eastern side of the complex would block sun and wind. The result would be a decrease in utility costs and enhancement of the appearance of the building. Of course, shade trees will have to grow for about five years before they begin to affect
- Summarizes result. → utility bills. Once they have reached adequate height, however, they will be a permanent change with low maintenance. In addition, your employees, visitors, and patients alike will notice the way that trees cut down on glare from the building walls and add "green space" to the hospital grounds.

■ **Model 4-3** ■ ABC format in paragraphs

Chapter | 5 | Document Design



>>> Chapter Objectives

In this chapter, students will

- Learn how document design is affected by the context in which documents will be read
- Learn the importance of consistent design in individual documents, as well as in all documents created within an organization
- Learn to use color effectively in documents
- Be introduced to the style and template software tools that can make consistent document design easier
- Learn the basic elements of page design, including grids, white space, and lists
- Be introduced to guidelines for choosing fonts
- Learn to use type effectively to emphasize concepts and words in a text
- Learn to use running headers and footers and headings to help readers navigate documents
- Learn about special navigation elements in documents
- Be introduced to the special considerations of designing digital documents
- Compare a model document that does not use document design principles to a model document that does use them

The Information Services (IS) Department at M-Global is preparing to introduce new intranet security sign-on procedures for all employees in the organization, and Mark Merrill, one of the programmers, has been assigned the task of writing the new sign-on procedures. He sends his draft as an e-mail attachment to David Carlyle, a documentation specialist. Mark doesn't mind writing, but he is glad that David has been assigned to help make the information in IS documents clearer for the readers who will be using them.

When David opens the e-mail from Mark, he knows that he won't have to do much editing on Mark's text. Mark is a good writer; his documents are usually written clearly and accurately. David's biggest challenge is to make sure that employees find the instructions easy to read and use when they sign onto the company intranet from their desks or from laptops and other electronic devices in the field. Because employees will be using the instructions to access the company's intranet, David will need to design print documents that can be accessed off-line. These documents will include only a few steps, so David decides to create signs that can be posted at shared terminals and smaller laminated cards that can be folded to business card size and kept in a desk, laptop case, or pocket. The next problem he faces is how to format and arrange the information so that it is easy to read and use. He must apply principles of good document design to the sign-on instructions.

Like the organizing principles discussed in Chapter 4, good document design can help your readers find the information that they need. This chapter covers document design, another basic building block in technical communication. Here is an operating definition:

Document design: The creation of clear, readable, and visually interesting documents through judicious use of white space, headings, lists, color, and other design elements. Many firms combine these elements into style sheets that allow employees to produce documents in uniform and consistent formats.

In the workplace, readers are busy, and few take the time to read a document from cover to cover. Some documents, such as manuals, are used as reference works and are consulted only to answer questions or solve problems. As one expert says, the subjects of technical documents do not invite casual reading: "Realize that people are lookers first and that they become readers only if you have revealed a good reason for them to want to."¹ Your challenge is to make your documents inviting by making them appear useful and interesting. A document may offer your reader important information but may never be read. Why? Because it doesn't look inviting.

This chapter presents guidelines and examples for document design, as well as an introduction to the use of computers in the design process.

>>> Elements of Document Design

Just as in your writing, clarity is important in your document design. A document that is cluttered with too many design elements can seem confusing and poorly thought out; however, consistent use of elements such as white space and fonts creates a sense of a unified document. At the same time, document design elements such as headings and lists can help readers identify individual sections of a document.

When you are designing your document's layout, it is just as important to know your audience as when you are planning your document's text. The answers to the fol-

¹J. White. (2004). Building blocks of functional design. *Technical Communication*, 52, 37.

lowing questions will help you make decisions about how a document will be bound, the page size, the number of pages, and whether the pages will use landscape or portrait orientation.

- Where will this document be used? At a desk? On a shop floor? In the field? For example, a guide that will be used in the field should be portable, perhaps printed on 5 ½-by-8 ½-inch sheets, and durable, perhaps with a plastic cover.
- How will the document be used? Will it be kept on a desk as a reference? Read for background information for decision making? For example, a document that will be used as a reference while someone is performing a task should be spiral bound so that it lies flat when open.
- How do you want readers to perceive the document? As very businesslike? As friendly and easy to use? As complex and authoritative? For example, a formal proposal that presents the case for a contract with a government agency should be presented on standard 8 ½-by-11-inch white paper, with a traditional business font like Times New Roman and a simple, sturdy cover.

The choices you make in format, color, font, and navigation elements can influence how readers will approach a document before they begin reading it.

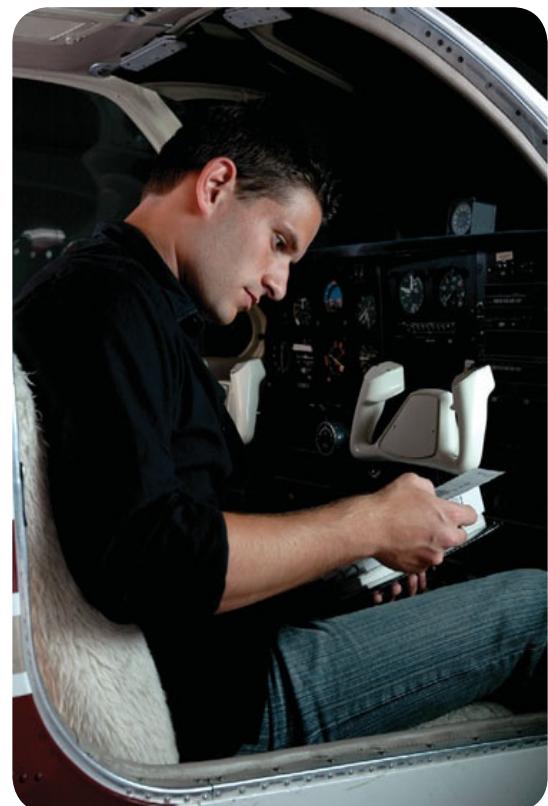
Think of document design as a quick way of communicating the purpose and style of your document. A document that consists of densely packed text seems serious, even boring. A document that uses white space, headings, and lists seems clear and readable.

Consistent Design

Many organizations know the benefits of consistent visual appearance, so they develop company style sheets for frequently used documents, including letters, memos, various types of reports, and proposals. Once developed, these style sheets are assembled into a style manual and distributed for general use. To make universal use easier, they are often loaded as templates into the organization's text-editing software or onto the organization's intranet. More information about templates and styles appears on pages 121–124 in this chapter.

Using style sheets saves time and reinforces the organization's image. Their use makes it possible for members of writing teams to work independently while adhering to standard formatting guidelines. Use of style sheets also ensures that readers see a clear relationship among ideas within a document because headers and subheaders, lists, and other design elements are used consistently.

If the company you work for does not use a style manual, use the elements of document design shown in this chapter to develop your own style sheets: color, grids, white space, fonts, headers and footers, and headings.



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Color

Just as people expect color in photographs, movies, advertisements, and TV, color has emerged as a necessity in technical communications. This tool adds excitement to and stimulates interest in your documents. Most writers have software that lets them simply click on the colors they think are appropriate for a document and, when the job is completed, send them to a color printer. However, these automated color choices—and even the decision to use color—may be inappropriate for a number of reasons.

Because color is so costly and requires a longer time to print, you must know more about its effective use. In this segment, we discuss what you must consider before you use color, including ways to use it effectively.

Once you decide to use color in your documents, you'll notice a difference in how people react to your messages. Organizations often have color style sheets, such as the one shown in Figure 5–1, that provide guidelines for the use of color, using CMYK (cyan, magenta, yellow, black) designations for print documents and RGB (red, green, blue) designations for electronic documents and Web pages. If your company doesn't already have a color style sheet, develop your own so you can use color uniformly and consistently from one project to another.

To develop a style sheet, ask yourself the following four questions:

- **How can I use color to help my audience read and retain the document's message?** You can define the levels of importance in a document by using a different color for different headings, as well as lighter or darker tones of a color to distinguish between subheadings or between major and minor concepts within a heading.

OFFICIAL WESTERN COLORS

The official colors are black and yellow gold (referred to as Western gold). Due to the difficulty in reproducing the yellow gold on different papers, **two different inks should be used depending on the paper choice.**



How do I know which logo to use?

It depends upon your design, space restrictions and audience.

- If you have limited space use the Western logo with or without the Griffon. If you have very limited space use only the Griffon logo.
- In general if you are appealing to any external audience use the Discover Gold with Western logo.
- Always follow the standards for each logo on size restriction.

- *On coated paper (glossy, shiny paper) the Western gold is (PANTONE® Matching System) PMS 123C (as shown in this book).*
- *On uncoated paper (such as paper used in an office copier) the Western gold is PMS 109U.*
- When **four-color process** inks are used, Western gold can be produced by printing: **0C/25M/100Y/0K**.
- For **web publication or audio/visual usage**, the Western gold can be produced by: **R=254 G=194 B=10**.
- If desired, it is acceptable to use a metallic gold, such as a foil or gold metallic ink:
- *On coated paper and uncoated paper the metallic gold is PMS 871.*

■ **Figure 5–1** ■ Color style sheet

Source: Missouri Western Campus Printing and Design Services. (2007). *Graphic standards manual*.

- **How can I use color to attract attention to important data?** Use one color to highlight significant points or to serve a specific function. For example, if you consistently use color to frame tables or graphics, you create a visual cue that prompts your reader to look at the graphics. Alternatively, you may want to use one color to consistently emphasize key words, phrases, or specific actions. In so doing, you build continuity in your document and enhance its readability.
- **Will my audience be able to see the differences in color?** About 10 percent of the male population has some degree of difficulty seeing differences in colors. Therefore, be sure that graphics use light and dark contrasts effectively. This also ensures that your graphics will still be clear, even if the document is copied in black and white.
- **Will the document be distributed universally in color, or will one or more sections be printed in black and white?** If your document will be reproduced—either all or in part—in black and white, you must place greater emphasis on textural differences as well as use distinctive shading and tinting. Most important, do not use blue images; unless shaded considerably, they do not reproduce well in black and white. You must do everything you can to sharpen the images you want your audience to read.

Avoid overusing color. Too many colors distort your message, confuse your audience, cost more, and take more time to produce. Your choice of color immediately communicates the tone of your document. Bright neon or primary colors may suggest energy. They may be appropriate to a marketing brochure or company newsletter, but they may be distracting and even convey the wrong tone for a formal investigative report.

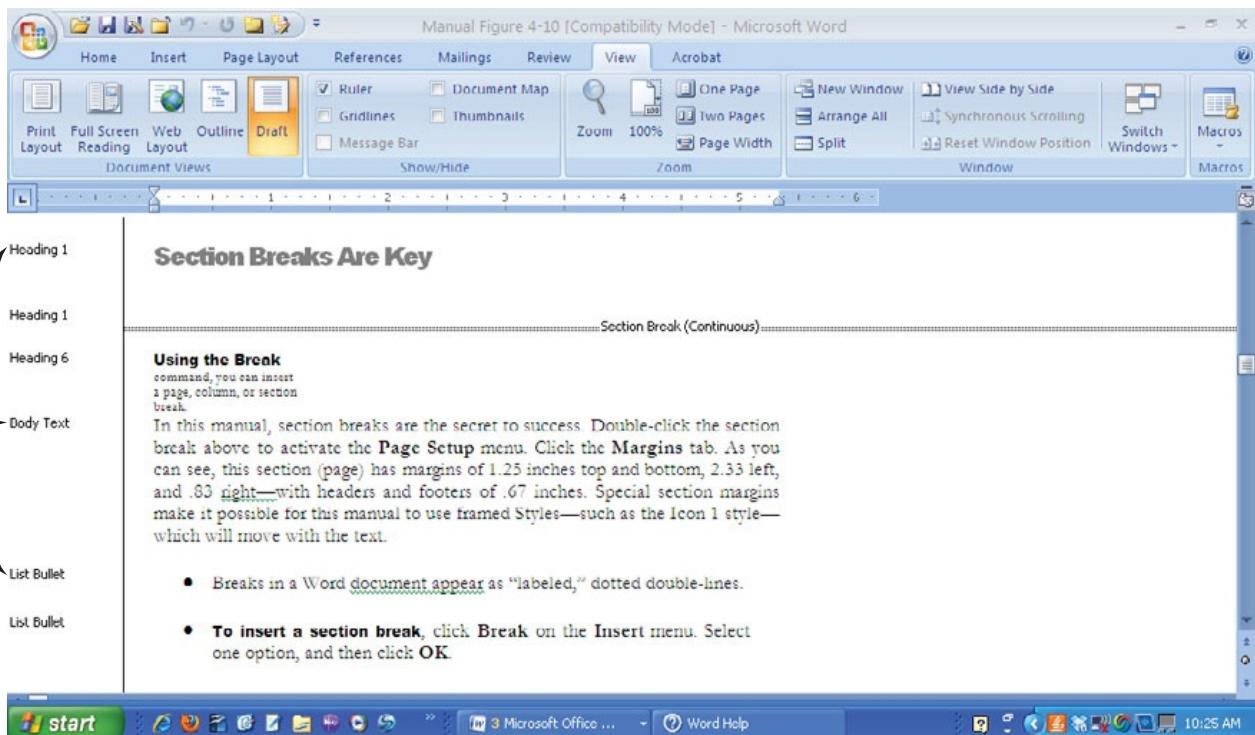
After you answer questions about the general use of color, you can begin the process of selecting and combining colors to enhance your message and your graphics.

>>> Computers in the Document Design Process

Most word-processing programs include tools to make document design easier and more consistent. They allow you to format running headers and footers; ensure consistency of elements such as headers and lists, through the use of style tags; and save time by using templates for the types of documents that you write most often. They can even automatically generate tables of contents and indexes.

Style Sheets

When you are writing a long document with many headings or other typographic elements, it may be difficult to remember how you formatted each element. For example, if it has been several pages since you used a third-level heading, you may have to scroll back



■ **Figure 5–2** ■ Microsoft Word document template with style tags displayed

Source: Microsoft product screen shot(s), reprinted with permission from Microsoft Corporation.

to see what type size you used and whether you put it in bold type or italics. You can solve this problem by using the styles in your word-processing software. A style sheet allows you to assign formatting to specific kinds of elements in your document, such as headings, body text, and lists. This formatting is done with *tags* or codes that your computer attaches to the elements. (If you are familiar with HTML coding, this tagging is similar.) You select the text, such as a first-level heading, select the appropriate style from a pull-down menu, and assign it to the selected text with a single mouse click. Figure 5–2 shows text with tags for headings, body text, and lists visible.

Styles for individual elements, such as different heading levels, bulleted lists, and body paragraphs, are collected on a style sheet, or *catalog*, which may be attached to one document or may be part of a document template, like the one in Figure 5–3.

It is a good idea to plan the appearance of your document early in the writing process. Even if you aren't sure which fonts you will choose, you should tag every text element in your document, including all body paragraphs. Later, if you decide that you want to change the formatting of a text element, you can change it from the Styles menu and apply it to all of the tagged elements at once. For example, if you have set the font size for first-level headings at 12 points and then decide that you want to change it to 14 points, you open the Styles menu, find the style for first-level headings, change the font size, and then apply it to all of the first-level headings. Instead of having to search through the document to find each heading and change it, you change all first-level headings at once. If your document is going to be sent to several other writers, you may want to create your own body text style, even if it uses the same fonts and paragraph settings in the Normal

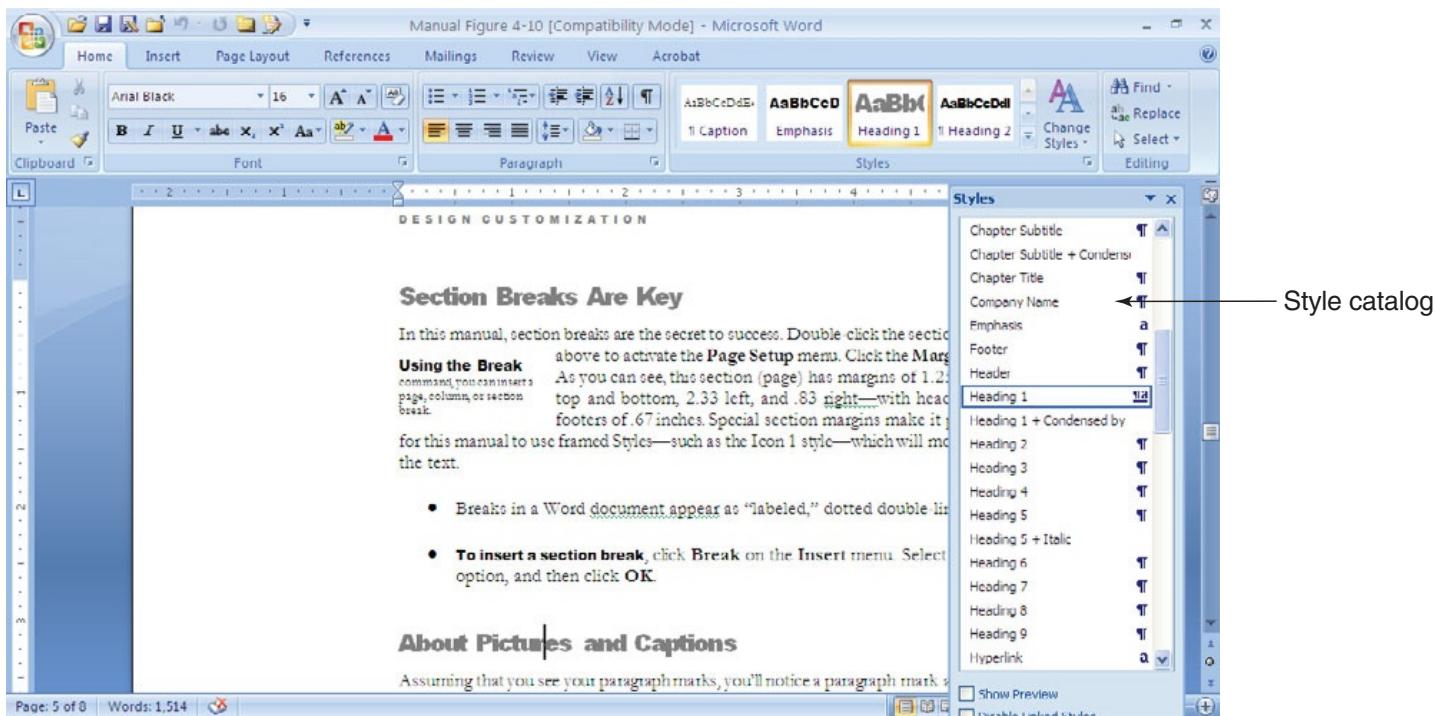


Figure 5-3 Microsoft Word document template with style sheet

Source: Microsoft product screen shot(s), reprinted with permission from Microsoft Corporation.

style in your document. The Normal style can vary from computer to computer, and many writers have faced problems when multiple versions of Normal (or other tags) have been added to a document.

The heading tags that you created for your style sheet can also be used to automatically generate a table of contents. This process, and the one for creating indexes, can be a bit complicated, so consult your word-processing program's Help file or a user's guide for instructions about how to do this.

Templates

If you have a type of document that you must create often, such as progress reports, lab reports, memos, or even papers for school, you may find it useful to create a template for that type of document. Your word-processing program probably already has several templates preloaded for memos, letters, and reports. Although these templates are handy, they may not exactly fit your needs. If you need to include a company logo on a letterhead or alter the headings in the report template, you can modify existing templates or you can create your own. Some software publishers also make a large number of templates available for downloading from their Web sites. Templates include a catalog of styles for elements such as headings, lists, and even body text. They may also include passages of text or elements such as tables that appear in the same place in every document. For example, your teacher may use a template for class policy sheets that include the same information (e.g., office hours, contact information) or even the same text (e.g., absence policies, academic honesty statements).

Learning to use the document design tools in your word-processing program can save you time and help you create consistent and professional-looking documents. However, these tools differ among the many word-processing programs (and sometimes from one version of a word-processing program to the next), so take the time to learn how to use the tools that are available in your word-processing software.

>>> Elements of Page Design

Good organization, as pointed out in Chapter 4, can fight readers' indifference by giving information when and where they want it. However, to get and keep readers interested, you must use effective visual design—on each page of your document. Each page needs the right combination of visual elements to match the needs of your readers and the purpose of the document.

Grids

It is useful to approach document design by visualizing the elements on a page organized on a grid.² Planning your layout as a grid can help you maintain a consistent, unified appearance, especially in longer documents. This technique will also help you decide how to use white space and when elements should break the space, for example, to cover two columns or extend into the margin. When grids are used for page layout, blocks of text are usually represented by gray rectangles, and illustrations are usually represented by white boxes with a large X in them (see Figure 5–4), allowing you to focus on the overall visual design of a page. As you design page layouts, focus on using the two basic document design elements that readers notice first:

1. **Text:** Long lines can be an obstacle to keeping readers' attention. Eyes get weary of overly long lines, so some writers add double columns to their design options. This “book look” uses white space between columns to break up text and thus reduce line length. You can also shorten line length by using wider margins with a single column of text. Figure 5–4 shows four different ways of arranging text blocks to affect line length.

2. **Graphics:** Any illustration within the text needs special attention. Figures and tables are discussed in Chapter 13, but the following are some basic pointers for placing graphics:

- Make sure there is ample white space between any graphic and the text. If the figure is too large to permit adequate margins, reduce its size while maintaining readability.
- When you have the choice, place graphics near the top of the page, where they receive the most attention.

²Some of the information in this section was taken from C. Sevilla. (2002). Page design: Directing the reader's eye. *Intercom*, 49, 7-9, and J. V. White. (2005). Building blocks of functional design. *Technical Communication*, 52, 37-41.



■ **Figure 5-4** ■ Using grids to plan page layout

- When a graphic doesn't fit well on a page with text, place it on its own page to ensure adequate space and readability. Normally, a separate figure appears on the page following the first reference to it.
- Pay special attention to page balance when graphics are included on multicolumn pages, two-page spreads, or both.

To avoid confusing the reader, make sure that each page has no more than one dominant element. You can use more than one basic grid pattern within a document, but if you do, make sure that the patterns are related, and that there is a good reason to use an alternative grid. For example, you could design one grid for most of the pages in a long document, but you could use a second grid for first pages of chapters or major sections within the document.

White Space

The term *white space* simply means the open places on the page with no text or graphics—literally, the white space (assuming you are using white paper). Experts have learned that readers are attracted to text when white space surrounds it, for example, a newspaper ad that includes a few lines of copy in the middle of a white page. Readers connect white space with important information.



■ **Figure 5–5** ■ Use of white space: margins



■ **Figure 5–6** ■ Use of white space: hanging indents

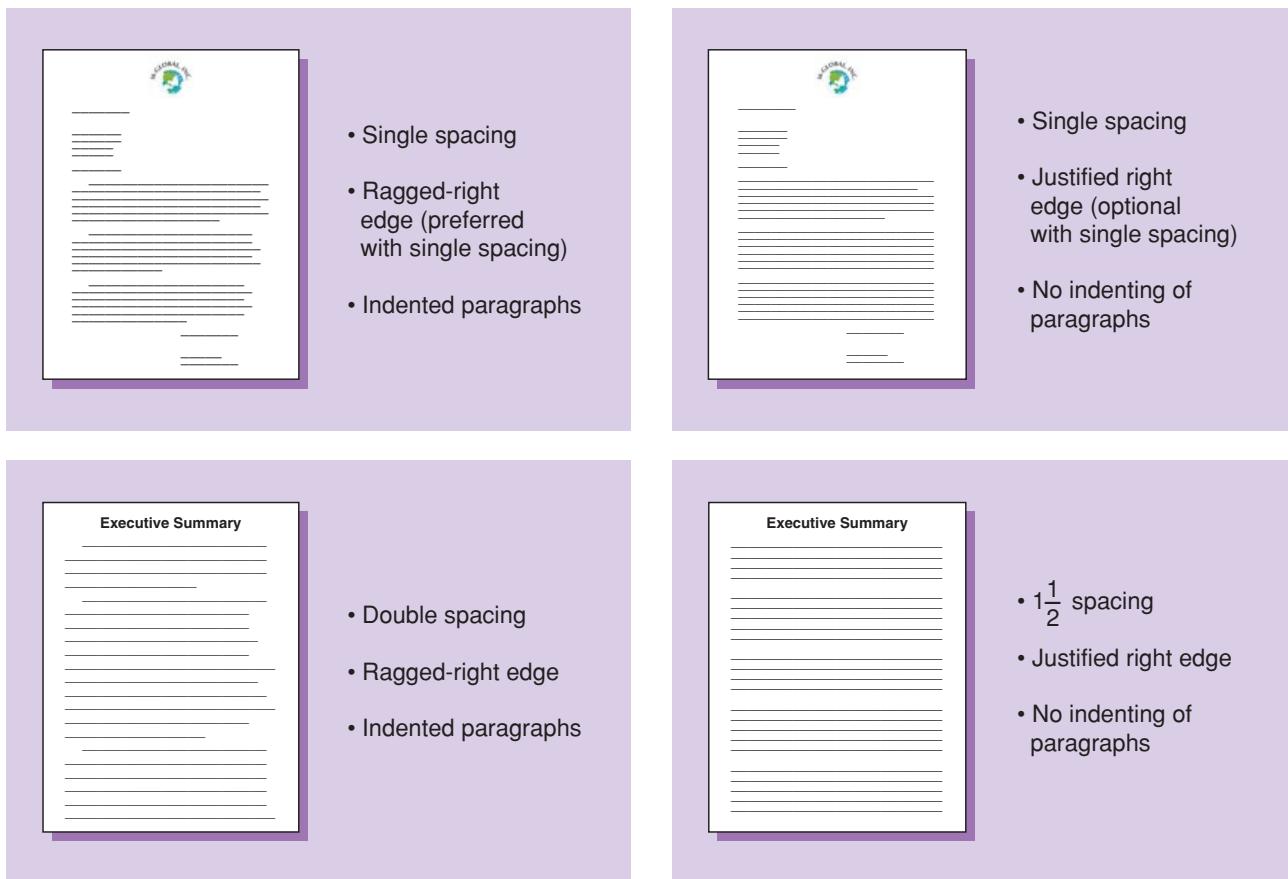
In technical communication you should use white space in a way that (1) attracts attention, (2) guides the eye to important information on the page, (3) relieves the boredom of reading text, and (4) helps readers organize information. Here are some opportunities for using white space effectively:

- 1. Margins:** Most readers appreciate generous use of white space around the edges of text. Marginal space tends to frame your document, so the text doesn't appear to push the boundaries of the page. Good practice is to use 1- to 1 ½-inch margins, with a wider bottom margin. When the document is bound, the margin on the edge that is bound, or the *gutter*, should be larger than the outside margin to account for the space taken by the binding (Figure 5–5.)

- 2. Hanging indents:** Some writers place headings and subheadings at the left margin and indent the text block an additional inch or so, as shown in Figure 5–6. Headings and subheadings force the readers' eyes and attention to the text block. Another common use of hanging indents is bulleted and numbered lists.

- 3. Line spacing:** When choosing single, double, or 1 ½-line spacing, consider the document's length and degree of formality. Letters, memos, short reports, and other documents read in one sitting are usually single-spaced. Longer documents, especially if they are formal, are usually 1 ½-line-spaced or double-spaced, sometimes with extra spacing between paragraphs. Manuscripts or documents that will be typeset professionally are always double-spaced (Figure 5–7).

- 4. Justification:** The choice of justification should be based on line length and the formality of the document. In fully justified copy, all lines are the same length—as on this textbook page. In ragged-edged copy, lines are variable length. Some readers prefer ragged-edged copy because it adds variation to the page, making reading easier on the eye. Yet many readers like the professional appearance of fully justified lines, especially in formal documents or documents that use columns of text. However, full justification



■ **Figure 5-7** ■ Use of white space: line spacing

can sometimes result in odd spacing between letters in the last line of a paragraph, as the computer tries to fill an entire line of space with a few words.

5. Paragraph length: New paragraphs give readers a chance to regroup as one topic ends and another begins. These shifts also have a visual impact. The amount of white space produced by paragraph lengths can shape reader expectations. For example, two long paragraphs suggest a heavier reading burden than do three or four paragraphs of differing lengths. Thus, it is helpful to break complex information into shorter paragraphs. Many readers skim long paragraphs, so vary paragraph lengths and avoid putting more than 10 lines in any one paragraph (Figure 5–8).

6. Paragraph indenting: Another design decision involves indenting the first lines of paragraphs. As with ragged-edged copy, most readers prefer indented paragraphs because the extra white space creates visual variety. As shown in Figure 5–7, indenting can be used in single- or double-spaced text. Reading text is hard work for the eye. You should take advantage of any opportunity to keep your readers' attention.

7. Heading space and ruling: White space helps the readers connect related information immediately. Always have slightly more space above a heading than below it. That extra space visually connects the heading with the material it heads. In a double-spaced document, for example, you would add a third line of space between the heading and the text that came before it. In addition, some writers add a horizontal line across the page above headings, to emphasize the visual break. Later, this chapter discusses other aspects of headings.

■ **Figure 5–8** ■ Use of white space: paragraphs



In summary, well-used white space can add to the persuasive power of your text. Like any design element, however, it can be overused and abused. Make sure there is a reason for every decision you make with regard to white space on your pages.

Lists

Technical communication benefits from the use of lists. Readers welcome your efforts to cluster items into lists for easy reading. In fact, almost any group of three or more related points can be made into a bulleted or numbered listing. Following are some points to consider as you apply this important feature of document design:

1. Typical uses: Lists emphasize important points and provide a welcome change in format. Because they attract more attention than text surrounding them, they are usually reserved for these uses:

Examples

Reasons for a decision

Conclusions

Recommendations

Steps in a process

Cautions or warnings about a product

Limitations or restrictions on conclusions

2. Number of items: The best lists are those that subscribe to the rule of short-term memory; that is, people can retain no more than five to seven items in their short-term memory. A listing of more than seven items may confuse rather than clarify an issue. Consider placing eight or more items in two or three groupings, or grouped lists, as you would in an outline. This format gives the reader a way to grasp the information being presented.

3. Use of bullets and numbers: The most common visual clues for listings are numbers and *bullets* (enlarged dots or squares like those used in the following listing). Following are a few pointers for choosing one or the other:

■ **Bullets:** Best in lists of five or fewer items, unless there is a special reason for using numbers.

■ **Numbers:** Best in lists of more than five items or when needed to indicate an ordering of steps, procedures, or ranked alternatives. Remember that your readers sometimes infer sequence or ranking in a numbered list.

4. Format on page: Every listing should be easy to read and pleasing to the eye. The following specific guidelines cover practices preferred by most readers:

■ **Indent the listing.** Although there is no standard list format, readers prefer lists that are indented farther than the standard left margin. A five-space indent is adequate.

■ **Hang your numbers and bullets.** Visual appeal is enhanced by placing numbers or bullets to the left of the margin used for the list, the format that is followed in this list.

■ **Use line spaces for easier reading.** When one or more listed items contain more than one line of text, an extra line space between listed items enhances readability.

■ **Keep items as short as possible.** Depending on purpose and substance, lists can consist of words, phrases, or sentences—such as the list you are reading. Whichever format you choose, pare down the wording as much as possible to retain the impact of the list format.

5. Parallelism and lead-ins: Make the listing easy to read by keeping all points grammatically parallel and by including a smooth transition from the lead-in to the listing itself. (The term *lead-in* refers to the sentence or fragment preceding the listing.) *Parallel* means that each point in the list is in the same grammatical form, whether a complete sentence, a verb phrase, or a noun phrase. If you change form in the midst of a listing, you take the chance of confusing the reader.

Example: To complete this project, we plan to do the following:

- Survey the site
- Take samples from the three boring locations
- Test selected samples in our lab
- Report the results of the study

The listed items are in active verb form (*survey, take, test, and report*).

6. Punctuation and capitalization: Although there are acceptable variations in the punctuation of lists, the preferred usage includes a colon before a listing, no punctuation



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after any of the items, and capitalization of the first letter of the first word of each item. Refer to the alphabetized Handbook at the end of this book under “Punctuation: Lists” for alternative ways to punctuate lists.

>>> Fonts

Like the other elements of document design, your choice of font will contribute to the image that your document communicates. It will also affect your readers’ perception of how useful the document is.

Type Size

Traditionally, type size has been measured in points, with 72 points to an inch. When you go to the font selection menu, the sizes may be listed this way: 9, 10, 12, 14, 18, and 24.

Despite these many type size options, most technical writing is printed in 10- or 12-point type. When you are choosing type size, however, be aware that the actual size of the letters varies among the font types. Some 12-point type looks larger than other 12-point type. Differences stem from the fact that your selection of a font affects (1) the thickness of the letters, (2) the size of lowercase letters, and (3) the length and style of the parts of letters that extend above and below the line. Figure 5–9 shows the differences in three common fonts. Note that the typeface used in setting the text of this book is 12-point Perpetua.

Before selecting your type size, run samples on your printer so that you are certain of how your copy will look in final form.

Font Types

Your choice of fonts may be either prescribed by your employer or determined by you on the basis of (1) the purpose of the document, (2) the image you want to convey, and (3) your knowledge of the audience.

Font types are classified into two main groups:

- **Serif fonts:** Characters have “tails” at the ends of the letter lines.
- **Sans serif fonts:** Characters do not have tails (Figure 5–10).

If you are able to choose your font, the obvious advice is to use the one that you know is preferred by your readers. A phone call or a look at documents generated by your reader may help you. If you have no reader-specific guidelines, here are three general rules:

- **Use serif fonts for regular text in your print documents.** The tails on letters make letters and entire words more visually interesting to the reader’s eye, and they reduce eye fatigue. In this sense, they serve the same purpose as ragged-edge copy: helping your reader move smoothly through the document.

■ **Figure 5–9** ■ Type sizes

New Century Schoolbook

9 point
10 point
12 point
14 point
18 point
24 point

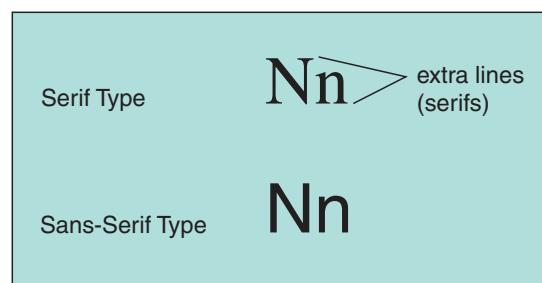
Times Roman

9 point
10 point
12 point
14 point
18 point
24 point

Helvetica

9 point
10 point
12 point
14 point
18 point
24 point

- **Consider using sans serif fonts for electronic documents.** This advice has traditionally been given because of low computer monitor resolutions. Serifs can look blurry and cause eyestrain when used in electronic documents. As computer monitors improve, it may seem that this is no longer a concern. However, documents are now being read on e-readers and handheld devices, so it is still important to choose easy-to-read typefaces.



■ **Figure 5–10** ■
Font types

- **Consider using another typeface or font variation for headings.** Headings benefit from a clean look that emphasizes the white space around the letters. In print documents, sans serif type helps attract attention to these elements of organization within your text. In electronic documents, use the same sans serif font as in the body text, but use combinations of different type size, boldface, and italics to emphasize headings.
- **Avoid too many font variations in the same document.** The line between interesting font variations and busy and distracting text is a fine one—but there is a line. Your rule of thumb might be to use no more than two fonts per document: one for text and another for headings and subheadings.

Font Style Guidelines

How do you know which fonts to choose? Although there are no hard-and-fast rules, keep the following five guidelines in mind to make the task easier:

>> **Font Style Guideline 1: Consider the Reader's or Company's Preferences**

Give font style the same consideration as you give your message. If your reader has clear preferences, by all means adhere to them. If, however, your audience is receptive to new ideas and images, you can become creative in selecting fonts.

>> **Font Style Guideline 2: Consider the Need for Clarity**

All technical writers recognize the need for their messages to be clear. As you select a font, ask yourself questions such as:

- Am I using this type font for captions or for long passages of text?
- Does the material I've written contain technical terms or formulas, or was it written for a general audience?
- Will the font style enhance or detract from the readability of the material?

Clarity of fonts is more than just a matter of size or serif. It also depends on how and where the document will be used. For example, the typeface **Clearview** was created to solve problems with the legibility of highway signs, especially at night. The existing typeface, **Highway Gothic**, was inconsistent in the design of its letters, and the reflective letters often blurred at night. To solve these problems, Don Meeker and James Montalbano created a font with letters that were more open and easier to read, especially at night. (For a detailed discussion of the design of the **Clearview** typeface, visit <http://www.clearviewhwy.com.>)

>> **Font Style Guideline 3: Consider the Space Available**

Although all font styles are measured vertically on the scale of 72 points to an inch, they vary horizontally. If you are writing a long formal proposal, the space available

SANS-SERIF FONT STYLES	
Arial	Readability
Bauhaus Md	Readability
Basic Sans SF	Readability
Bernhard Fashion BT	<i>Readability</i>
Futura Md BT	Readability
Impact	Readability
Serif Font Styles	
Caslon Bd BT	Readability
Americana XBdCn BT	Readability
Poster Bodoni BT	Readability
GarmdITC Bk BT	Readability
<i>Kuenstler script BT</i>	<i>Readability</i>

■ **Figure 5–11** ■
Font styles

might not be important. Adding or deleting one page might not matter. However, if you are writing help text for pop-up boxes in a software program, it may be necessary to select a font style that is clear but that—for this special assignment—fits into a 2-by-4-inch field.

Refer to Figure 5–11. What differences do you see? Wider letters? Thicker strokes? More or less white space between the characters (*kerning*)? More or less white space between rows of typed material (*leading*)? Each of these criteria varies from one font style to another.

>> **Font Style Guideline 4: Consider the Purpose of the Document**

Before making font style decisions, evaluate how different font styles may reinforce your document’s purpose. Ask yourself the following questions:

- Will the document be referred to frequently?
- Does the document present financial or statistical data that must be read and comprehended easily?
- Must it be eye-catching enough to make the audience eager to read it?
- Is it a routine document that needs to be read only once, handled, and filed?

Considering these questions will help you choose a font style that serves the purpose of your entire document.

>> Font Style Guideline 5: Consider the Tone You Want to Convey

Finally, give careful thought to which font style reinforces the tone of your message.

For example, assume you have worked diligently to develop an annual report reflecting serious growth problems for the company and for the company's industry. The document is formal in tone; however, it is also a no-nonsense business document. A font type such as **Lydian CSV BT** is formal; however, it does not even remotely represent the tone required for this annual report. In this instance, you may want to use **Arial** or **Veranda** because of its crisp sans serif image.

In another example, you have been asked to invite management and hourly employees to a retirement party given for a mid-level manager. The tone, you correctly assess, will be informal, warm, and hospitable. As you scroll down the list of font styles, you find several that seem appropriate—**Dom Casual BT**, **Zapfhumnst BT**, and **Ad Lib**—and you wonder which, if any, conveys the right image. The first one looks interesting and casual, but it appears too small. The second one looks too impersonal. The third, although a sans serif font, appears casual, large, and powerful—like someone is shouting, “Come on in!”

In addition to the diversity of font styles available for your use, desktop publishing packages today offer you an opportunity to reconfigure your text into arcs, waves, slopes, and even circles. You can outline, shade, print vertically, and do much more whenever it is appropriate. That is the key: Your font styles must be *appropriate* for the tone you are trying to convey.

Font Style Guidelines

- Consider the reader's or company's preferences
- Consider the need for clarity
- Consider the space available
- Consider the purpose of the document
- Consider the tone you want to convey

In-Text Emphasis

Sometimes you want to emphasize an important word or phrase within a sentence. Computers give you these options: underlining, boldface, italics, color, and capital letters. Although these effects can be combined, the least effective are **FULL CAPS** and **underlining**. Both are difficult to read within a paragraph and distracting to the eye. The most effective highlighting techniques are *italics* and **boldface**; they add emphasis without distracting the reader. There are two situations in which underlining is preferred. First, in digital documents, readers expect hyperlinks to be underlined, so make sure that any links—and only the links—are underlined. Second, publishers of magazines and journals often request manuscripts in which words to appear in italics, like book titles, are underlined. The reason is that in some typefaces, italics are hard for the typesetter to spot.

Whatever typographic techniques you select, use them sparingly. They can create a busy page that leaves the reader confused about what to read. Excessive in-text emphasis also detracts from the impact of headings and subheadings, which should be receiving significant attention.

>>> Elements for Navigation

As noted in Chapter 2, your audience will be busy and rarely read a longer report or document from the first page to the last. Good document design can work with good organization to help readers find the information that they need in a document. Readers can recognize important information by its location on a page, by the use of contrast, or by the repetition of identically formatted elements, such as warning icons or “tips” boxes. One way that readers can locate the information they need is by using navigational tools. You may be used to thinking of navigational tools in electronic texts, such as tabs on Web pages or bookmarks in PDFs, but print documents also use navigational devices, such as tables of contents, running headers and footers, headings, and even color coding.

Headers and Footers

Running headers and footers help readers locate information in a document. They may be as simple as page numbers or much more complex—using chapter titles, project identification numbers, and even colors in the top or bottom margins of the page. At the same time, headers and footers should not clutter up the appearance of the document. Most word-processing programs make the creation of headers and footers easy. In addition to being able to insert automatic page numbering, you can insert other information—such as short titles, your name, or your organization’s name—on each page. You can decide where to position that information and you can hide it on selected pages. Some organizations put information such as the computer file name or project identification number in document footers.

Headings

Headings are brief labels used to introduce each new section or subsection of text. They serve as (1) a signpost for the reader who wants to know the content, (2) a grabber to entice readers to read documents, and (3) a visual oasis of white space where the reader gets relief from the text.

As a general rule, there should be at least one heading on every page of any document that is two or more pages long so that readers can find their way through the text. Models throughout this book show how headings can be used in short and long documents. Of course, heading formats differ greatly from company to company and even from writer to writer. With all the typographic possibilities of word processing, there is incredible variety in typeface, type size, and the use of bold, underlining, and capitals. Following are some general guidelines:

1. **Use your outline to create headings and subheadings.** A well-organized outline lists major and minor topics. With little or no change in wording, outlines can be



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converted to headings and subheadings within the document. As with outlines, you must follow basic principles of organization. The number of subheadings should be one indication of the relative length or importance of the section. Be consistent in your approach to headings throughout the document.

2. **Use substantive wording.** Headings give readers an overview of the content that follows. They entice readers into your document; they can determine whether readers—especially those who are hurried and impatient—will read or skip over the text. Strive to use concrete rather than abstract nouns, even if the heading must be a bit longer. Note the improvements in the following revised headings:

Original: “Background”

Revised: “How the Simmons Road Project Got Started” or “Background on Simmons Road Project”

Original: “Discussion”

Revised: “Procedure for Measuring Toxicity” or “How to Measure Toxicity”

Original: “Costs”

Revised: “Production Costs of the FastCopy 800” or “Producing on the FastCopy 800: How Much?”

3. **Maintain parallel form in wording.** Headings of equal value and degree should have the same grammatical form, as shown in the following:

A. *Headings That Lack Parallel Form*

Scope of Services

How Will Fieldwork Be Scheduled?

Establish Contract Conditions

B. *Revised Headings with Parallel Form*

Scope of Services

Schedule for Fieldwork

Conditions of Contract

You don’t have to be a grammar expert to see that the three headings in Option A are in different forms. The first is a noun phrase, the second is a question, and the third is an imperative sentence. Because such inconsistencies confuse the reader, you should make headings in each section uniform in wording, like the headings in Option B.

4. **Establish a clear hierarchy in your headings.** Whatever typographic techniques you choose for headings, your readers must be able to distinguish one heading level from another. Visual features should be increasingly striking as you move up the ranking of levels. Figures 5–12 and 5–13 show heading formats recommended by a professional organization and by a professional publication.

Following are specific guidelines for using typographic distinctions:

- **Use larger type size for higher-level headings.** You want readers to grasp quickly the relative importance of heading levels as they read your document.

Figure 5-12
Required heading formats for Transportation Research Board publications and manuscripts

Subheads: All subheads should be flush with the left margin, with one line of space above.

FIRST-LEVEL SUBHEAD

(all capitals, boldface, on separate line)

Second-Level Subhead

(initial capitals, boldface, on separate line)

Third-Level Subhead

(initial capitals, italic, on separate line)

Fourth-Level Subhead (initial capitals, boldface, on same line as text, with extra letter space between subhead and text)

Fifth-Level Subhead (initial capitals, italic, on same line as text, with extra letter space between the subhead and text)

Source: Transportation Research Board of the National Academies. (2011). *Information for authors*. Retrieved from <http://onlinepubs.trb.org/onlinepubs/AM/InfoForAuthors.pdf>. Reproduced with permission of the Transportation Research Board.

Type size fixes this relative importance in their minds so that they can easily find their way through your material both the first time and upon rereading it. The incremental upgrading of type size helps readers determine the relative importance of the information.

■ **Use heading position to show ranking.** In formal documents, your high-level headings can be centered. The next two or three levels of headings are at or inside or outside the left margin. Be sure these lower-level headings also use other typographic techniques, such as bolding, to help the reader distinguish levels.

■ **Use typographic techniques to accomplish your purpose.** Besides type size and position, as previously mentioned, you can vary heading type with such features as

Figure 5-13
Required heading formats for manuscripts submitted to Technical Communication

Use up to three levels of headings and indicate them clearly.

FIRST-LEVEL HEADING

(all caps, bold, on a line by itself)

Second-level heading

(initial cap only, bold, on a line by itself)

Third-Level heading (initial cap only, bold, followed by two spaces, as part of the first line of the paragraph)

Source: Society for Technical Communication. (2007). *Author guidelines for technical communication*. Retrieved from <http://archive.stc.org/pubs/techcommGuidelines01.asp>.

Uppercase and lowercase

Bold type

Underlining

Changes in type font

With this embarrassment of riches, writers must be careful not to overdo it and create “busy” pages of print. Use only those features that provide an easy-to-grasp hierarchy of levels for the reader.

■ **Consider using decimal headings for long formal documents.** Decimal headings include a hierarchy of numbers for every heading and subheading listed in the table of contents. Many an argument has been waged over their use. People who like them say that they help readers find their way through documents and refer to subsections in later discussions. People who dislike them say that they are cumbersome and give the appearance of bureaucratic writing.

Unless decimal headings are expected by your reader, use them only in formal documents that are fairly long. Following is the normal progression of numbering in decimal headings for a three-level document:

- 1 xxxxxxxxxxxxxxxx
 - 1.1 xxxxxxxxxxxxx
 - 1.1.1 xxxxxxxxxxxxx
 - 1.1.2 xxxxxxxxxxxxx
 - 1.2 xxxxxxxxxxxxx
 - 1.2.1 xxxxxxxxxxxxx
 - 1.2.2 xxxxxxxxxxxxx
- 2 xxxxxxxxxxxxxxxx
 - 2.1 xxxxxxxxxxxxx
 - 2.1.1 xxxxxxxxxxxxx
 - 2.1.2 xxxxxxxxxxxxx
 - 2.2 xxxxxxxxxxxxx
- 3 xxxxxxxxxxxxxxxx

Special Navigation Elements

If a document is long and contains many sections, or if it will be used as a reference, you may decide to include additional elements to help your readers find information. Within the document, you can use color and graphic lines to separate sections. Icons or symbols can help readers find special features like warnings or advice. Tabs, or bleed indexes like those in Figure 5–14, can help readers go quickly to sections of large documents. If you use any of these navigation elements, use them consistently. Consider adding information about them to your document style sheet.

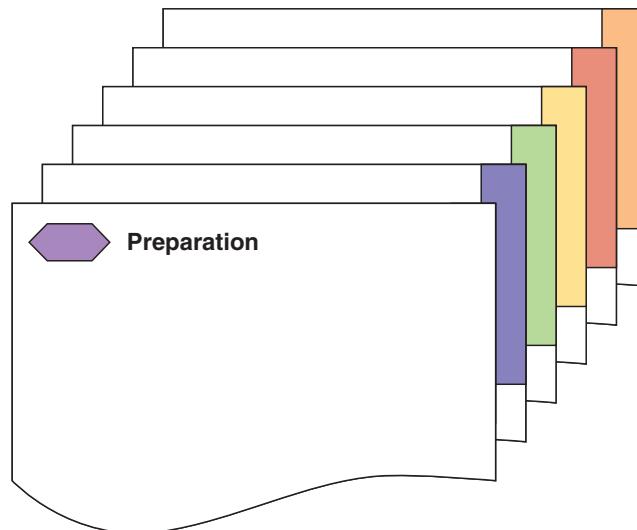


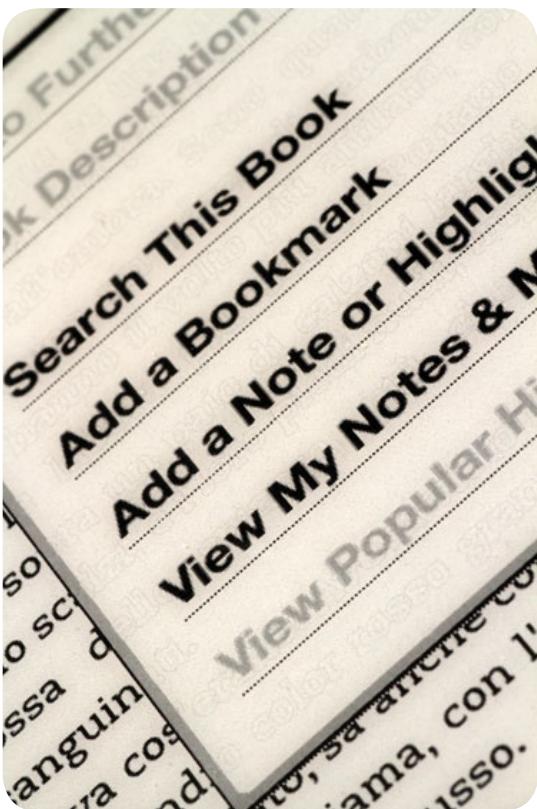
Figure 5-14 ■
Bleed index marks

>>> Designing Digital Documents

How we open and read documents is changing rapidly. With the growing availability of e-book readers, tablet computers, and smart phones, digital documents are no longer confined to computer screens. If you are designing a document that will be read in print and digital formats, Adobe PDF is your best option. With the right software tools, PDFs are easy to create, and with Adobe Acrobat Reader, PDFs can be read on almost any device, and they maintain the look of print. In fact, if you are sending a document as an attachment and formatting is important (for example, a résumé), you should save and send it as a PDF so the document that your recipient gets will look exactly like the one that you sent.

If the document will be published primarily in digital form, you should consider the characteristics of digital media:

- **Page orientation.** Most computer monitors use a landscape orientation instead of the portrait orientation of print documents, so keep this in mind as you design documents that will be read on a computer. However, e-readers and tablet computers may give readers the option of choosing the screen orientation, so you should consider which orientation presents your information in the most readable way.
- **Interactivity.** Readers expect digital documents to be interactive. They expect cross-references as hyperlinks within the document, and they welcome hyperlinks to materials on the Internet. Digital documents can be produced with videos or with 3D images that can be rotated. When the Society for Technical Communication began publishing its magazine, *Intercom*, electronically, it chose to offer the magazine as both a PDF and a flip book. The flip book version included advertisements with links to advertisers' Web sites and with embedded videos that started as soon as the page was "turned."
- **Color.** Because the cost of printing is not a consideration for digital documents, it may be tempting to make them very colorful. Although this approach may be appropriate



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for brochures and marketing material, most technical documents should use color in the same ways that it is used in print documents: for navigation and emphasis. Remember that your readers may decide to print your document, or they may be accessing it through an e-reader that does not have a color display.

- **Legibility.** As mentioned earlier in this chapter, sans serif fonts are usually considered easier on the eyes in digital documents. Your document may be read on a small screen with only medium resolution, so choose fonts that are open and have adequate white space between the letters and the words (*kerning*) and set your paragraphs with adequate white space between the lines (*leading*). You may also want to use line drawings instead of photographs.

Also consider an alternative to the traditional print layout presented in a PDF. If your document will be used primarily as a reference by someone completing tasks on a computer, consider creating a Help file. If your document includes many hyperlinks to Web pages, or if it will be read primarily on a computer screen, you may want to format it as a Web site. (See Chapter 14 for more about designing Web sites.)

>>> Chapter Summary

- Documents should be designed for the conditions in which they will be used, whether in an office or in the field.
- Documents should be designed for the way that readers will use them. Reports that will be read a few times should be designed differently from manuals that will be used often as a reference for how to perform tasks.
- Consistent design in a document helps readers quickly identify sections in the document and find the information that they are seeking.
- Organizations encourage consistent design in all their documents to help reinforce the organization's image.
- Color can be used to set the tone of a document, to highlight important information, and to help readers understand data displays.
- Writers should tag document elements like headings and body text. These style tags are collected in style sheets that make consistent document design easier.
- Style sheets can be saved in templates that provide consistent document design for the same kinds of documents. Many organizations store a collection of templates on their intranet for all employees to use.
- Grids are an effective way of visualizing the overall appearance of a document.

- White space helps readers identify document sections. Used effectively, white space makes documents more readable.
- Lists are an important element of technical and workplace documents. They use white space and numbers or bullets to draw the readers' attention to important ideas.
- Fonts can be divided into two basic categories: serif and sans serif. Fonts with serifs are preferred in print documents; sans serif fonts are preferred in digital documents.
- Different typefaces and fonts can be used to help readers identify parts of documents, but you should use no more than two fonts in a document.
- Fonts can be used to reinforce an organization's image or to convey the tone of a document.
- Bold and italic fonts can be used to emphasize words in a text. Underlining is used to indicate hyperlinks in digital text. Underlining may also be preferred in manuscripts that will be typeset.
- Running headers and footers can help readers navigate large documents.
- Headers should be informative and should use parallel grammatical form to help readers see the relationship between ideas in a document.
- Special navigation elements, like tabs and bleed indexes, can help readers find sections of large documents.
- When designing digital documents, you may want to take page orientation into account. Most computer screens use a landscape orientation.
- Digital documents can take advantage of interactive elements ranging from simple hyperlinks to embedded video.
- Although it is easy to use color in digital documents, remember that they should retain a professional appearance.
- It is important to remember that digital documents may be read on screens that are small or have only medium resolution. Choose fonts and images that are easy to read.

>>> Learning Portfolio

Communication Challenge The St. Paul Style Guide: Trouble in the River City

Frustrated by inconsistency in report styles, Elaine Johnson, a department manager at M-Global's St. Paul office, decided to take action. This case study explains Elaine's process as she tries to create a style guide to ensure a uniform report style throughout the St. Paul branch of M-Global. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

After collecting examples of office reports with diverse document designs, she met with her friend and branch manager Randall DiSalvo to complain.

"Enough is enough, Randall," Elaine said as the meeting started. "The technical staff produces all kinds of formats, the administrative support staff doesn't know what designs are approved, and the clients get a fragmented image of the firm. Let's decide on one document design for reports and stay with it."

After an hour's talk, Elaine and Randall agreed that the office needed a style sheet to describe the required style for each document type written at the St. Paul branch. Busy with many other tasks, Randall told Elaine that he didn't have time to supervise the project, so he gave Elaine the authority to design what he wanted to be called the *Style Guide*. However, first, she had to meet with all department managers and a few other employees about the project. Also, he asked that her first version of the guide be a modest one that covered only brief letter reports; later, the guide could be expanded.

What follows are details about (1) Elaine's process of gathering information, (2) some actual guidelines she decided to include in the *Style Guide*, and (3) some problems that arose with the project.

Soliciting Opinions From Around the Office

The same morning she met with Randall, Elaine met with all five of her fellow department managers in the St. Paul office. Gathering in a meeting room overlooking the Mississippi River, they agreed immediately that the format problem needed to be solved.

The managers then concurred with the branch manager's idea about starting small—that is, covering only short letter reports now but later adding formal reports, proposals, manuals, letters, and memos, along with suggestions on style and grammar. Knowing that Elaine was one of the best writers and editors in the office, the managers said they were comfortable with her writing the manual herself.

She could draw from whatever information she gathered from around the office and whatever guidelines she collected from her research on the subject. When the draft was complete, she would run it by them for their comments. Then it would go to Randall for final approval before distribution to all branch employees.

Elaine could hardly believe it. In one morning, five department managers and the branch manager had reached consensus about the nature of the format problem and its solution. Buoyed by her success, Elaine was almost able to look beyond the fact that she had been given the job of writing the manual. Always one to get a job done quickly, however, she moved to the following steps in the next few days:

- Notepad in hand, she interviewed all seven administrative assistants about their preferences in document design.
- She e-mailed all members of the professional staff, asking them to respond in writing in three days if they had specific preferences about the look they wanted to achieve in their letter reports.
- She called a local chapter of the Society for Technical Communication (STC), asking for references on document design.
- She located the four sources she received from STC and read them cover to cover.

By the end of the following week, Elaine was ready to begin writing the first draft of what would become the *Style Guide* for M-Global's St. Paul office.

Elaine's Format for Informal Reports

Elaine quickly developed a clear idea of what features should be part of M-Global's informal reports in St. Paul. To be sure, some of what she heard from department managers and other employees was at odds with her own views. For example, her preference for ragged-right margins in letter reports differed from that of many colleagues. When there were differences of opinion, she based her decisions primarily on the basis of the responses she had received from the employees she surveyed, but also on her research. The following information summarizes some of the guidelines included in her draft:

1. Font choice should be 12-point New Century Schoolbook.

2. There should be 1.2-inch margins on the sides, a 1/2-inch margin on the top, and a 1-inch margin on the bottom (except for the first page, where letterhead requires the use of a top margin of 1 inch and a bottom margin of 1 1/2 inches).
3. Paragraphs should be block style without the first line indented.
4. Text margins should be ragged-right, not fully justified.
5. Text should be single-spaced, with double spacing between paragraphs.
6. Arrangement of date, inside address, and report title should follow this format:
 Date
 Address line 1
 Address line 2
 Address line 3
 ATTENTION: Name of addressee
 SPECIFIC TITLE OF PROJECT
 M-GLOBAL PROJECT ID NUMBER
 LOCATION OF PROJECT
7. Every page after the first page should include a header. Placed in the top right corner (see margin guideline above), the header should include three single-spaced items: the company name and branch (M-Global, Inc.—St. Paul), the project number (e.g., M-Global Project #134), and the date (e.g., July 29, 2009).
8. The heading system should follow this pattern:

Level 1 Heading

A first-level heading (Futura 14-point bold with initial caps, on a separate line)

Level 2 Heading

A second-level heading (Futura 12-point bold with initial caps, on a separate line)

Level 3 Heading.

A third-level heading The text follows. (Futura 12-point bold, in line with text)

9. Bulleted and numbered lists should be indented 1/2 inch from the left margin, with double spacing before and after the list and between items in the list.

Once her draft was approved by the branch manager, Elaine had 95 copies printed and distributed to all employees of the St. Paul office. She wrote a cover memo to accompany the Style Guide, explaining what it was and how it was to be used.

Questions and Comments for Discussion

Having finished her project by her deadline, Elaine was pleased. There would be clear guidelines for the staff, and

the office would reap the rewards of a more efficient process of producing letter reports. As you look back on Elaine's activities and the guidelines she developed, consider the following questions and comments for discussion:

1. Elaine did a good job of seeking opinions of branch employees before she began her draft. Would it have been useful to consult with M-Global customers while the guide was being developed? Why or why not?
2. Should Elaine have tested the usefulness of the Style Guide before it was issued to all employees, or was her pilot draft approach adequate? If you think further testing was needed, what specifically would you have suggested?
3. Elaine chose to issue the final Style Guide through the office mail, with a cover memo. Was this strategy ideal? If so, why? If not, in what other way might she have introduced the manual?
4. Elaine based most of her decisions on the responses from the employees that she surveyed. Do you think that Elaine's decision to defer to the employees' preferences was a good one? Why or why not?
5. Using Elaine's nine guidelines, edit any short letter report in the models at the ends of Chapters 10 (pp. 300–349) and 11 (pp. 350–397). Do you think the revision is better designed than the original? Why or why not?
6. Elaine's manual provides a fairly rigid set of guidelines, as shown by the guidelines excerpt included in this case. Do you think a company should require employees to follow such a narrowly prescribed layout? Why or why not? Give the advantages and disadvantages of each point of view.
7. One engineer called Elaine to complain that the new guidelines did not allow him to use decimal-numbered headings and subheadings in his short report. He said that he preferred such headings, and he suspected that his clients did as well. If you were in Elaine's position, how would you respond to this complaint?
8. If you were designing an M-Global Style Guide for short reports, what are some of the guidelines you would include, taking your own personal preferences into account?

Write About It

Taking the role of Elaine, write the cover memo for the Style Guide, indicating that (1) the guide should be considered the new model for all letter reports leaving the office, (2) that it is a pilot draft that the office will review after six months, and (3) that the guide will be expanded later to include other documents. In your memo, explain how this style guide will benefit the St. Paul office and why employees should use it.

Collaboration at Work Design of the Campus Paper

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Chapter 4 used the term *organization* to refer to the structure of ideas in your writing. This chapter introduces the term *document design* to refer to the arrangement of all visual elements—including text—on the page. Effective document design incorporates features such as white space, headings, lists, font size and type, and color. Choices in document design can greatly influence the readers' interest in a document.

This exercise concerns the design of a document with which you may be familiar: the campus print or online newspaper. Typical features of a college or university paper include the following:

- Campus news and events
- Local or regional news

- Updates on academic programs
- Updates on student organizations and activities
- Editorials
- Letters to the editor
- Advertisements

How these features are presented through effective (or ineffective) document design helps determine whether members of the campus community read the paper and take it seriously as journalism.

Team Assignment

The purpose of this assignment is to evaluate the document design of your campus newspaper. (If your campus has no paper, use a similar document available on or near campus.) Your team has two options for this assignment. Option 1 is to review a current issue of your campus newspaper, note elements of its document design, and determine whether these elements serve a useful purpose. Option 2 is to compare and contrast the effectiveness of the document design of two different campus newspapers or two different issues of the same paper.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

Model 5–2 on pages 150–151, principles of document design have been applied to the same text. Working in small teams, compare Model 5–1 to Model 5–2. Identify the document design elements that have been used. Analyze the effectiveness of the document design of the document in Model 5–2. Your instructor will indicate whether you should prepare a written or an oral report of your findings. Give specific support for your praise or criticism.

2. Analysis: Individual Evaluation of Technical Document Design

Locate an example of technical writing, such as a user's manual or instructions. Use the guidelines in this chapter to analyze the document's document design. Your instructor will indicate whether your report should be oral or written.

3. Analysis, M-Global Context: Individual Evaluation of Document Design

Use the guidelines in this chapter to evaluate the document design of Model 1–1 (pp. 25–34). Is the "Welcome to M-Global"

1. Analysis: Team Evaluation of Document Design

Model 5–1 on page 148 does not include the elements of document design that are discussed in this chapter. In

booklet designed appropriately for its audience, and purpose? What image of the company does it communicate? What could be improved? Be specific in your comments.

4. Practice, M-Global Context: Page Design

As a manager at M-Global, you have just finished a major report to a client. It gives recommendations for transporting a variety of hazardous materials by sea, land, and air. The body of your report contains a section that defines the term *stowage plan* and describes its use. Given your mixed technical and nontechnical audience, this basic information is much needed. What follows is the text of that section. Revise the passage by applying any of this chapter's principles of document design that seem appropriate—such as adding headings, graphics, lists, and white space. If you wish, you may also make changes in organization and style. Optional: Share your version with another student to receive his or her response.

5. Practice: Word-Processing Tools

Review the summary of the guidelines in the Communication Challenge in this chapter (pp. 142–143). Use the Styles and Templates functions in your word-processing program to create a template that follows the guidelines.

6. Practice: Document Design as a Team

Working in small teams, prepare a redesigned version of the memorandum in Model 5–2 (pp. 150–151). If your class meets in a computer lab, present your team's version on-screen. If you are not using a lab, present your version on an overhead transparency.

7. Practice: Using Computer Communication

This assignment is feasible only if you and your classmates have access to software that allows you to post messages to team members, edit on-screen, and send edited copy back and forth. Your task is to add appropriate document design features to either (a) the *stowage plan* excerpt in Assignment 3 or (b) any other piece of unformatted text permitted for use by your instructor. Choose a team leader who will collect and collate the individual edits. Choose another team member to type or scan the excerpt into the computer and then e-mail the passage to other team members. Then each person should add the features desired and e-mail the edited document to the team leader, who will collate the revisions and e-mail the new version to team members for a final edit. Throughout this process, participants may conduct e-mail conversations about the draft and resolve differences, if possible, before sending drafts to the leader. The

In the chemical shipping industry, a stowage plan is a kind of blueprint for a vessel. It lists all stowage tanks and provides information about tank volume, tank coating, stowed product, weight of product, loading port, and discharging port. A stowage plan is made out for each vessel on each voyage and records all chemicals loaded. The following information concerns cargo considerations (chemical properties and tank features) and some specific uses of the stowage plan in industry.

The three main cargo considerations in planning stowage are temperature, compatibility, and safety. Chemicals have physical properties that distinguish them from one another. To maintain the natural state of chemicals and to prevent alteration of their physical properties, a controlled environment is necessary. Some chemicals, for example, require firm temperature controls to maintain their physical characteristics and degree of viscosity (thickness) and to prevent contamination of the chemicals by any moisture in the tanks. In addition, some chemicals, like acids, react violently with each other and should not be stowed in adjoining, or even neighboring, tanks. In shipping, this relationship is known as *chemical compatibility*.

The controlled environment and compatibility of chemicals have resulted in safety regulations for the handling and transporting of these chemicals. These regulations originated with the federal government, which based them on research done by the private manufacturers. Location and size of tanks also determine the placement of cargo. A ship's tanks are arranged with all smaller tanks around the periphery of the tank grouping and all larger tanks in the center. These tanks, made of heavy steel and coated with zinc or epoxy, are highly resistant to most chemicals and thus reduce the chance of cargo contamination. Each tank has a maximum cargo capacity, and the amounts of each chemical are matched with the tanks. Often chemicals to be discharged at the same port are staggered in the stowage plan layout so that after they are discharged the ship maintains its equilibrium.

The stowage plan is finalized after consideration of the cargo and tank characteristics. In its final form, the plan is used as a reference document with all information relevant to the loading/discharging voyage recorded. If an accident occurs involving a ship, or when questions arise about discharging operations, this document serves as a visual reference and brings about quick decisions.

team may need one or two short meetings in person, but most business should be conducted via the computer. The goal is to arrive at one final version for your team.

8. Practice: Organization and Document Design

The list that follows mostly includes exact wording or paraphrased excerpts from the National Center for Environmental Health Publication No. 01-0164—March 2001. (Some information has been slightly altered to accommodate this assignment, and much information in the publication has been left out.) Assume that the points are to be included as a section of a report you are producing. (NOTE: You are not being asked to produce a complete technical report, a subject covered in Chapters 10 and 11.) First, arrange the information in an order that generally follows the ABC format described in Chapter 4, eliminating any possible redundant information or any items that do not seem to fit the report section you are producing. Second, make adjustments in wording or style you consider appropriate. Third, add appropriate elements of document design that have been covered in this chapter.

- A.** This report will be followed by yearly updates. Future reports will attempt to answer the following questions:
 1. Are exposure levels increasing or decreasing over time?
 2. Are public health efforts to reduce exposure working?
 3. Do certain groups of people have higher levels of exposure than others?
- B.** Cotinine is a metabolite of nicotine that tracks exposure to environmental tobacco smoke (ETS) among non-smokers—higher levels reflect more exposure to ETS.
- C.** An environmental chemical is a chemical compound or chemical element in air, water, soil, dust, food, or other environmental media.
- D.** Biomonitoring is the assessment of human exposure to environmental chemicals by measuring the chemicals (or their breakdown products) in human specimens, such as blood or urine.
- E.** Because the sample size was relatively small and because the sampling was conducted in only 12 locations, the data cannot be considered conclusive. Additional studies should be conducted.
- F.** It should be noted that just because people have an environmental chemical in their blood or urine does not mean that the chemical causes disease. Research studies, separate from this report, are required to determine at what level the chemical may cause disease and what levels are of negligible health concern.
- G.** The reduction in cotinine levels reflected in the attached table indicates a dramatic reduction in exposure of the general population to environmental tobacco smoke since 1988–1991.
- H.** Special populations of children at high risk for lead exposure (e.g., those living in homes containing lead-based paint or lead-contaminated dust) remain a major public health concern.
- I.** The report provides new data on blood mercury levels among children ages 1–5 years and among women of childbearing age (16–49 years).
- J.** This report must be updated each year. The results from all samplings of the 27 chemicals at the 12 locations are included on the attached table. Most of the data will not be considered conclusive and therefore will not be commented on until we have results for additional years, which will give more support for comments on trends.
- K.** This report measures the exposure (through biomonitoring) of a sample population to 27 environmental chemicals, which include 13 metals (antimony, barium, beryllium, cadmium, cesium, cobalt, lead, mercury, molybdenum, platinum, thallium, tungsten, and uranium), 6 organophosphate pesticide metabolites, 7 phthalate metabolites, and cotinine.
- L.** The results showed that levels of some metabolites in the sample population were considerably higher than other metabolites, indicating a need for further study.
- M.** Compared with an adult, the fetus and children are usually more vulnerable to the effects of metals, such as mercury. One goal of collecting such data is to better estimate health risks for the fetus, children, and women of childbearing age from potential exposures to mercury.
- N.** One noteworthy conclusion is that lead levels in the blood continue to decline among U.S. children when considered as a group, highlighting the success of public health efforts to decrease the exposure of children to lead.
- O.** Because more than half of American youth are still exposed to ETS, it remains a major public health concern.
- P.** Plans are to expand the list of measured chemicals from 27 to approximately 100.



9. Ethics Assignment

Document design greatly influences the way people read documents, no matter what message is being delivered. Even a product, a service, or an idea that could be considered harmful to the individual or public good can be made

to seem more acceptable by a well-designed piece of writing. Find a well-designed document that promotes what is, in your opinion, a harmful product, service, or idea. Explain why you think the writers made the design decisions they did. Although your example may include graphics, focus mainly on the kind of document design covered in this chapter.

10. International Communication Assignment

Collect one or more samples of business or technical writing that originated in—or were designed for—cultures outside the United States. (Use either print examples or examples found on the Internet.) Comment on features of the document design in the samples. If applicable, indicate

how such features differ from those evident in business and technical writing designed for an audience within the United States.



11. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Find a document (report, article, letter to the editor, poster with text, editorial, etc.) intended to alert readers to a health or safety issue. Depending on the instructions you are given, prepare an oral or a written report in which you (a) analyze the degree to which the document subscribes to document design guidelines mentioned in this chapter and (b) offer suggestions about how the document's design might be improved so that it accomplishes more effectively what you believe to be the purpose of the document.

MEMORANDUM

DATE: August 19, 2012
TO: Randall Demorest, Dean
FROM: Kenneth Payne, Professor and Head **KP**
SUBJECT: BSTC Advisory Board

When we seek support for the college, we have to (1) make people feel that they will get something in return and (2) make them feel comfortable about us and our organization. As businesses have demonstrated, one way we can accomplish these goals is by taking potential donors to lunch. As you and I have discussed, the B.S. in Technical Communication degree program (BSTC) needs to strengthen ties to its Advisory Board. We must ask board participants to provide tangible support for the program *and* give them meaningful involvement in the work we are doing. The immediate need is to involve members of the Advisory Board in the coming year's program. I want to do this in two ways: plan carefully for a fall board meeting, and discuss with each of them individually what we want to accomplish this year. To do the second item mentioned, I request an allocation of \$360 so that I can take each member to lunch for an extended one-on-one discussion. I plan to discuss the needs of our program and each member's capabilities to support it. Each member of the board will be asked individually to consider the following ways to contribute: To continue support for the internship program, to participate in the research project we began a year ago, and to offer cooperative work experiences for BSTC faculty, possibly during the summer of 2013; Financial support for the college's membership as a sponsoring organization in the Society for Technical Communication; contributions—financial or otherwise—to library holdings in technical writing and the usability testing laboratory; a workshop series bringing to the campus some outstanding technical communicators (for example, Edward Tufte, expert in graphics; JoAnn Hackos, expert in quality management; and William Horton, expert in online documentation). In the long run, board members will get a better BSTC program, which will produce better technical communicators for them to hire. In the short term, they will get meaningful involvement in the program. They will specifically gain training opportunities for their personnel through the workshops mentioned. My tentative plan for those workshops is to provide a one-day seminar for our students and a second seminar for employees of the Advisory Board members. (We will allow them a number of participants based on how much they contribute to the workshops.) Please let me know as soon as possible if money is available for the lunches. I hope to begin scheduling meetings within a week.

MEMORANDUM

DATE: August 19, 2012
TO: Randall Demorest, Dean
FROM: Kenneth Payne, Professor and Head **KP**
SUBJECT: BSTC Advisory Board

What? Lunch meetings between Advisory Board members and me

Why? To get more board support for the BSTC degree program

Who? Each individual member at a separate luncheon

When? Fall 2012

How? Allocation of \$360 to pay for the lunches

Rationale

When we seek support for the college, we have to (1) make people feel that they will get something in return and (2) make them feel comfortable about us and our organization. As businesses have demonstrated, one way we can accomplish these goals is by taking potential donors to lunch.

As you and I have discussed, the B.S. in Technical Communication degree program (BSTC) needs to strengthen ties to its Advisory Board. We must ask board participants to provide tangible support for the program *and* give them meaningful involvement in the work we are doing.

Method

The immediate need is to involve members of the Advisory Board in the coming year's program. I want to do this in two ways:

1. Plan carefully for a fall board meeting
2. Discuss with each of them individually what we want to accomplish this year

Cost

To do the second item mentioned, I request an allocation of \$360 so that I can take each member to lunch for an extended one-on-one discussion. I plan to discuss the needs of our program and each member's capabilities to support it.



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Payne to Demorest, 2

Specifics

Each member of the board will be asked individually to consider the following ways to contribute:

1. Continuing support for the internship program
2. Participation in the research project we began a year ago
3. Cooperative work experiences for BSTC faculty, possibly during the summer of 2013. Financial support for the following items:
 - The college's membership as a sponsoring organization in the Society for Technical Communication
 - Contributions—financial or otherwise—to library holdings in technical writing
 - Usability testing laboratory
 - A workshop series bringing to the campus some outstanding technical communicators (for example, Edward Tufte, expert in graphics; JoAnn Hackos, expert in quality management; and William Horton, expert in online documentation)

Benefits

What are board members going to get from this?

Long range: A better BSTC program, which will produce better technical communicators for them to hire

Immediately: Meaningful involvement in the program

Specifically: Training opportunities for their personnel through the workshops mentioned

My tentative plan for those workshops is to provide a one-day seminar for our students and a second seminar for employees of Advisory Board members. (We will allow them a number of participants based on how much they contribute to the workshops.)

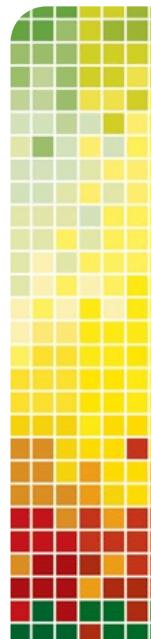
Response Needed

Please let me know as soon as possible if money is available for the lunches. I hope to begin scheduling meetings within a week.



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Chapter | 6 | Correspondence



>>> Chapter Objectives

In this chapter, students will

- Learn general guidelines for all correspondence
- Learn the general ABC format for all correspondence
- Learn strategies for writing positive, negative, neutral, and persuasive messages
- Learn special considerations for writing letters: correspondence to readers outside an organization
- Learn special considerations for writing memos: correspondence within an organization
- Learn special considerations for writing e-mail: correspondence that can be sent both outside of and within an organization
- Learn the ABC format for e-mail
- Learn guidelines for choosing whether to send a memo or an e-mail message
- Read and analyze model correspondence

Marie Stargill, M-Global's fire science expert, just returned from a seminar that emphasized new techniques for preventing injuries from job site fires. Within 24 hours of her return, she has already done three things:

1. Written her manager an e-mail message over the office computer network
2. Sent a letter to an M-Global client suggesting use of fire-retardant gloves she learned about at the seminar
3. Sent the conference director a letter of appreciation about the meeting

Like Marie, you will write many letters, memos, and e-mails in your career. In fact, you probably will write more of this correspondence than any other type of document.

Letters, memos, and e-mails are short documents written to accomplish a limited purpose. Letters are directed outside your organization, memos are directed within your organization, and e-mail can be directed to either an external or an internal audience. (Longer, more complicated letters and memos—called *letter reports* and *memo reports*—are covered in Chapter 10.) Here are some working definitions:

Letter: A document that conveys information to a member of one organization from someone outside that same

organization. Letters usually cover one major point and fit on one page.

Memo: A document written from a member of an organization to one or more members of the same organization. Memos usually cover just one main point and no more than a few. Readers prefer one-page memos.

E-mail: A document often written in an informal style either to members of one's own organization or to an external audience. E-mail messages usually cover one main point. Characterized by the speed with which it is written and delivered, an e-mail can include more formal attachments to be read and possibly printed by the recipient.

Your ability to write good memos, letters, and e-mails, like other forms of technical communication, depends on a clear sense of purpose, thorough understanding of reader needs, and close attention to correct formats. This chapter prepares you for this challenge by presenting sections that cover

1. General rules that apply to all workplace correspondence
2. Specific formats for positive messages, negative messages, neutral messages, and persuasive messages
3. Guidelines for letters, memos, and e-mail

Job letters and résumés are discussed in a separate chapter on the job search (Chapter 16).

>>> General Guidelines for Correspondence

Letters convey your message to readers outside your organization, just as memos are an effective way to get things done within your own organization, and e-mail is a way to communicate quickly with readers inside and outside your organization. By applying the guidelines in this chapter, you can master the craft of writing effective correspondence. You must plan, draft, and revise each letter, memo, and e-mail as if your job depends on it—for it may.

Refer to Models 6–1, 6–2, and 6–3 on pages 182–185 for M-Global examples that demonstrate the guidelines that follow. Later examples in this chapter illustrate specific guidelines for letters, memos, and e-mail.

>> Correspondence Guideline 1: Know Your Purpose

Before beginning your draft, write down your purpose in one clear sentence. This approach forces you to sift through details to find a main reason for writing every letter or memo. This *purpose sentence* often becomes one of the first sentences in the document. Following are some samples:

- **Letter purpose sentence:** “As you requested yesterday, I am sending samples of the new candy brands you are considering placing in M-Global’s office vending machines.”
- **Memo purpose sentence:** “This memo explains M-Global’s new policy for selecting rental cars on business trips.”
- **E-mail purpose sentence:** “I have attached the most recent draft of the proposal for the PI Corp. pipeline project.”

Some purpose statements are implied; others are stated. An implied purpose statement occurs in the second paragraph of Models 6–1. This paragraph shows that the writer wishes both to respond to requests for M-Global brochures and, just as important, to seek the professor’s help in soliciting good graduates for M-Global’s Atlanta office. In a sense, one purpose leads into the other. Models 6–2 shows a more obvious purpose statement in the second sentence, directly stating the contents of the memo.

>> Correspondence Guideline 2: Know Your Readers

Who are you trying to inform or influence? The answer to this question affects the vocabulary you choose, the arguments you make, and the tone you adopt. Pay particular attention when correspondence will be read by more than one person. If these readers are from different technical levels or different administrative levels within an organization, the challenge increases. A complex audience compels you to either reduce the level of technicality to one that can be understood by all readers or write different parts of the document for different readers.

Models 6–1 is directed to a professor with whom the writer wants to develop a reciprocal relationship—that is, George Lux gives free guest lectures in civil engineering classes, hoping the professor will in turn help him inform potential job applicants about M-Global. Models 6–2, directed to an in-house technical audience, contains fairly general information about the new technical editor. This information applies to, and should be understood by, all readers. Models 6–3 is typical of e-mail between people who know each other professionally. It has a conversational tone not found in other forms of correspondence.



George Doyle/Thinkstock

>> Correspondence Guideline 3: Follow Correct Format

Most organizations adopt letter and memo formats that must be used uniformly by all employees. You should learn the formats that your organization uses, but most correspondence follows these basic guidelines:

■ **Letters:** There are three main letter formats—block, modified block, and simplified. Figures 6–1, 6–2, and 6–3 show the basic page design of each; letter examples throughout the chapter use the three formats. Some letters, like the one in Model 6–6 on page 188, include a subject line or attention line instead of the salutation line. As noted, you usually follow the preferred format of your own organization.

Addresses on envelopes and in letters should use the format recommended by the U.S. Postal Service. Addresses should include no more than four lines, and should not include punctuation such as commas or periods.

■ **Memos:** With minor variations, all memos look much the same. The obligatory “Date/To/From/Subject” information hangs at the top left margin, in whatever order your organization requires. Figure 6–4 shows one basic format. These four lines allow you to dispense with lengthy introductory passages seen in more formal documents. Note that the sender signs his or her initials after or above the typed name in the “From” line.

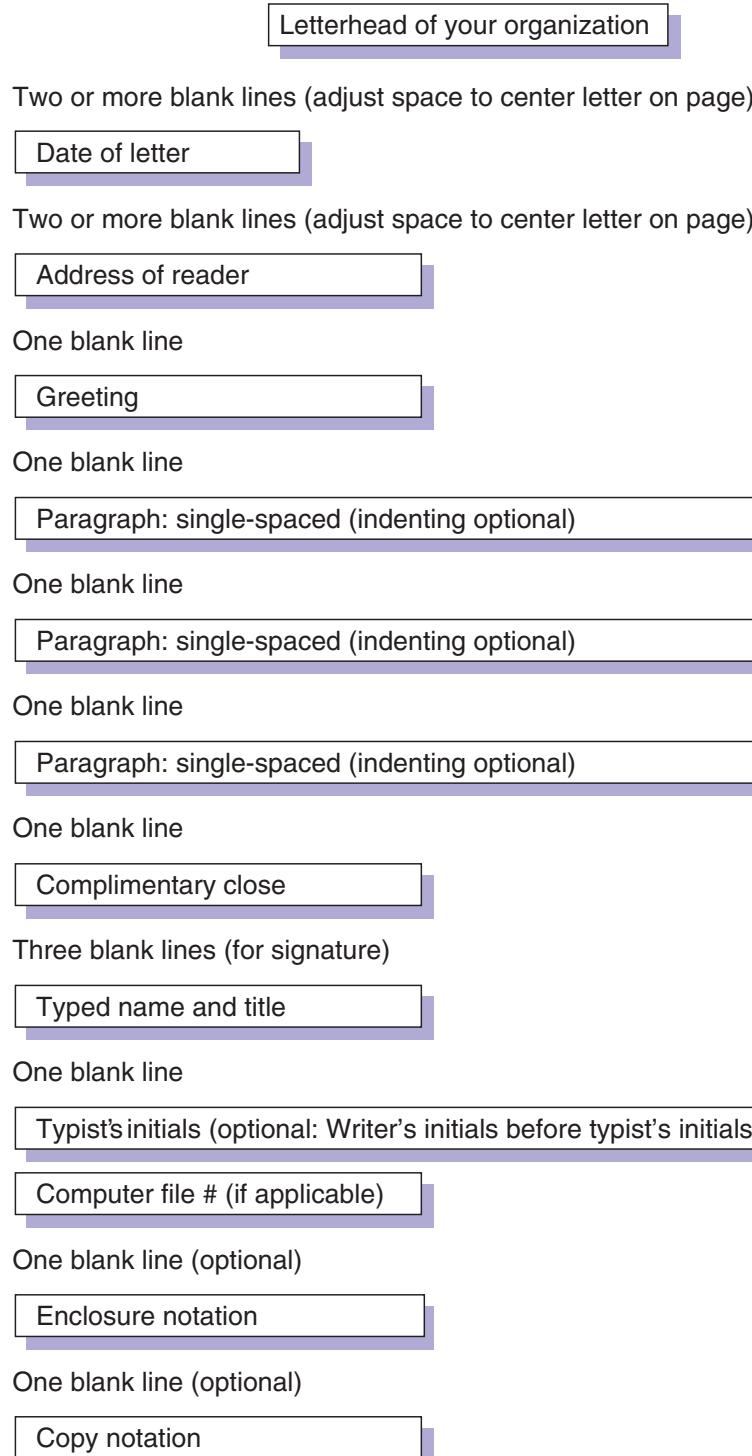
■ **Letters and memos:** Some format conventions apply to both letters and memos. Three of the more important features are:

Reference initials: If the document has been typed by someone other than the writer, place the typist’s initials two lines beneath the signature block for letters and below the last paragraph for memos (e.g., jt). Some organizations prefer that the initials of the writer also be included, followed by those of the typist (e.g., GTY/jt).

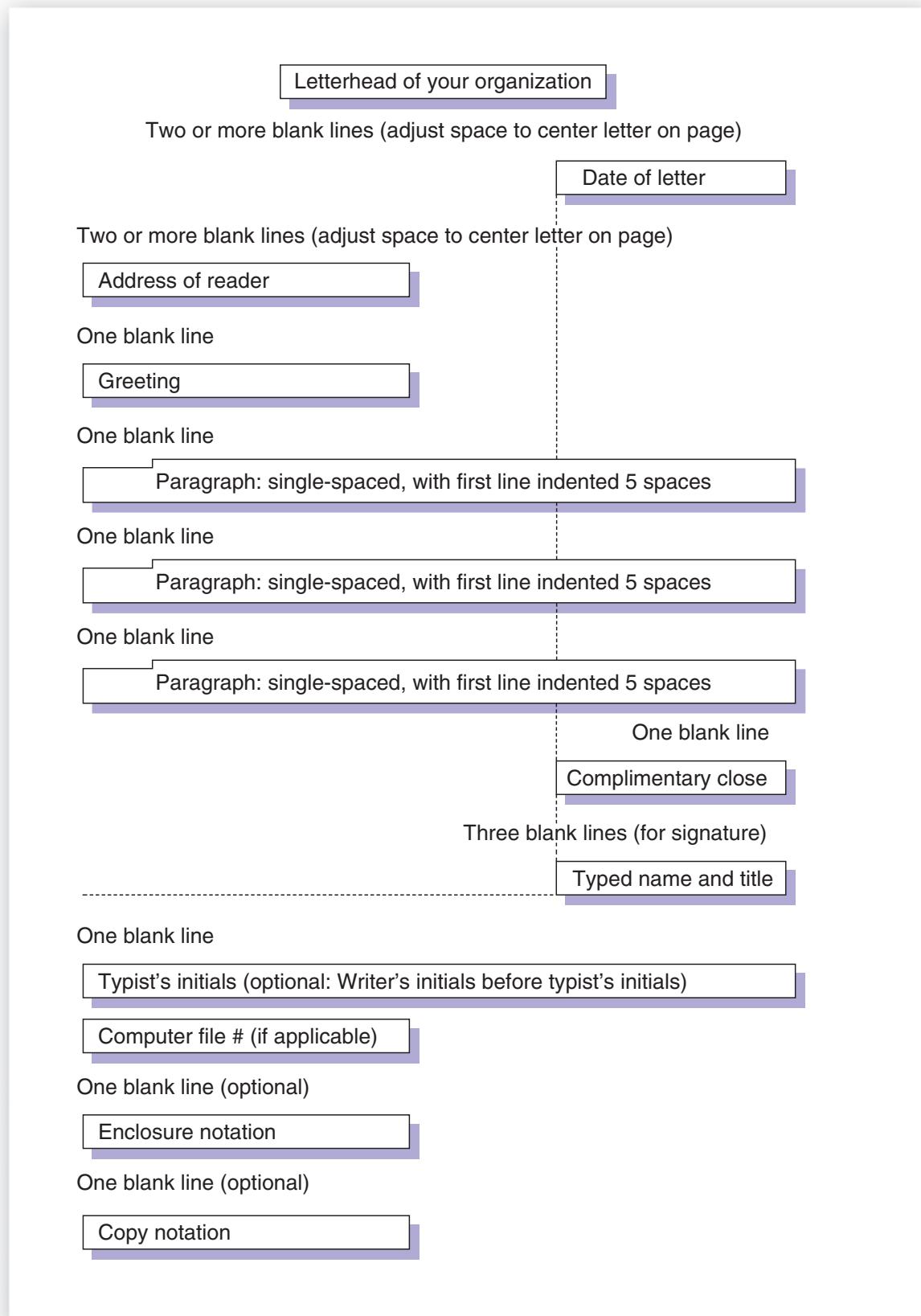
Enclosure notation: If attachments or enclosures accompany the letter or memo, type the singular or plural form of “Enclosure” or “Attachment” one or two lines beneath the reference initials. Some writers also list the item itself (e.g., Enclosure: Specification Sheet B54321).

Multiple-page headings: Each page after the first page often has a heading that includes the name of the person or company receiving the letter or memo, the date, and the page number. Some organizations may prefer an abbreviated form such as “Jones to Bingham, 2,” without the date.

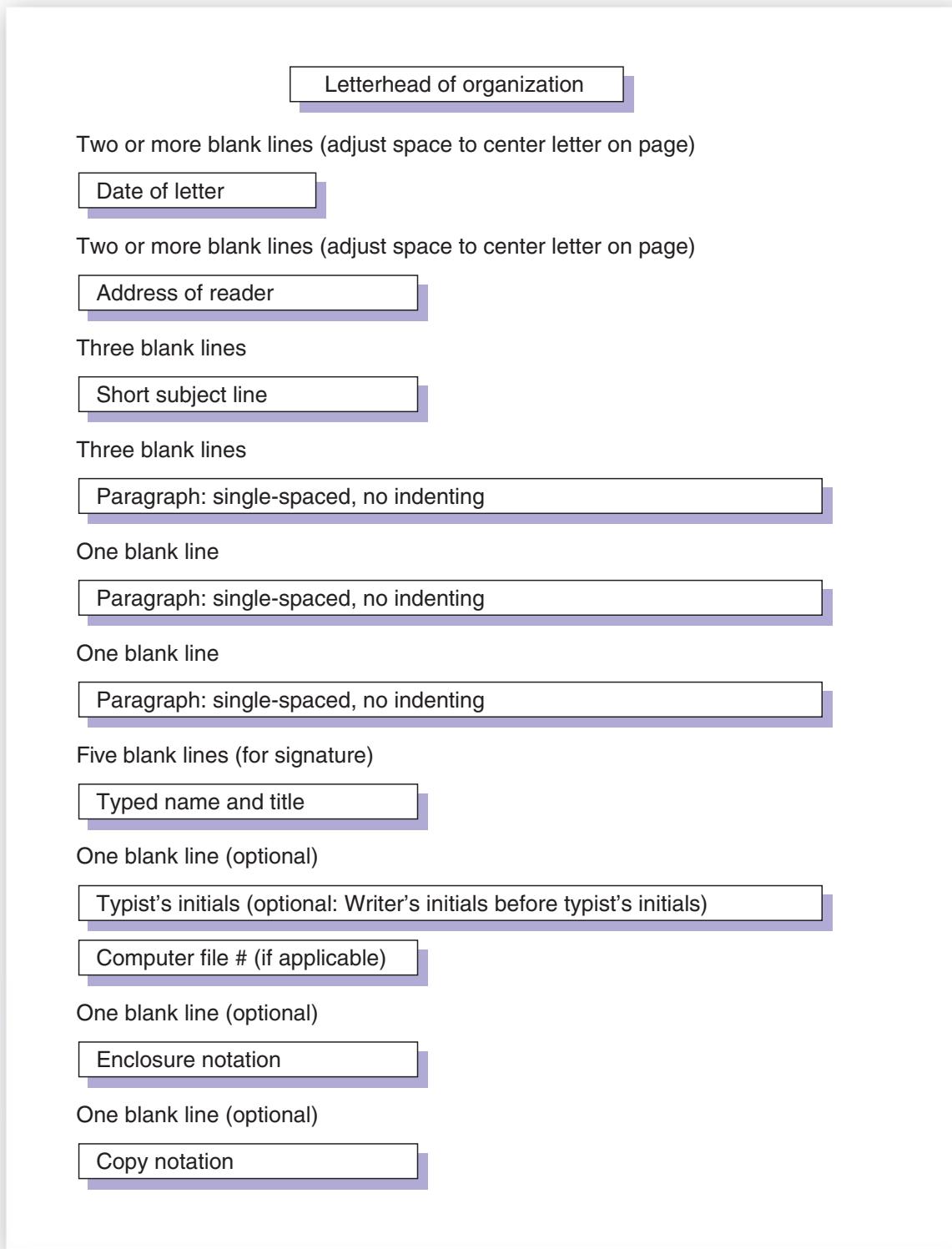
■ **E-mail:** Computers and e-mail systems handle formatting of texts and special characters differently, so you should format your e-mail so that it can be read on any computer. Use your system’s default font, and avoid highlighting, color, bold, italics, and underlining. E-mails are generally short, a length that can be seen on a computer screen all at once, and paragraphs should be short. Some e-mail systems can’t translate tab indentations at the beginning of paragraphs, so use lines of white space between paragraphs.



■ **Figure 6–1** ■ Block style for letters



■ **Figure 6–2** ■ Modified block style (with indented paragraphs) for letters

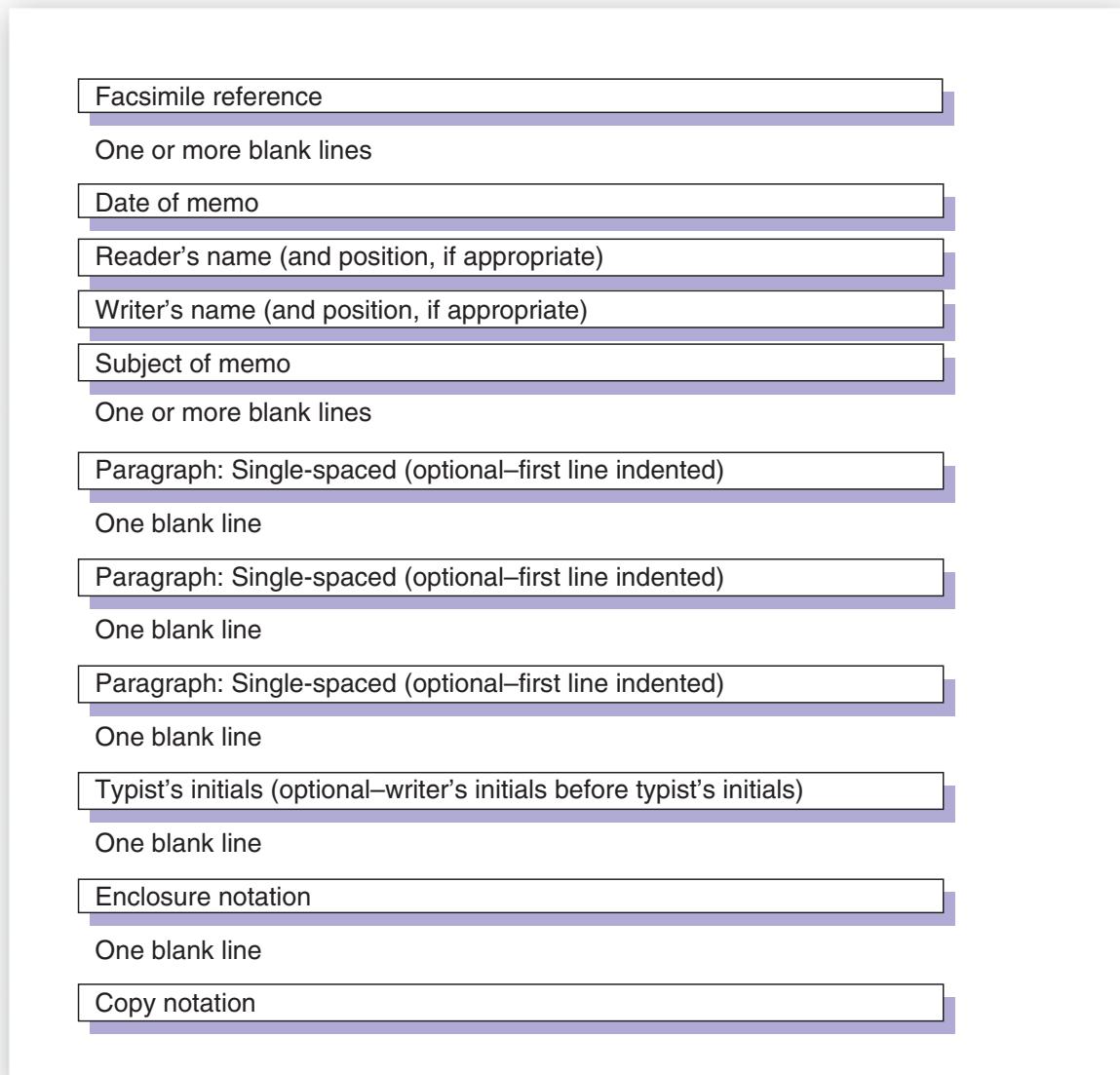


■ **Figure 6-3** ■ Simplified style for letters

In memos and e-mails, give the subject line special attention because it telegraphs meaning to the audience immediately. In fact, readers use it to decide when, or if, they will read the complete correspondence. Be brief, but also engage interest. For example, the subject line of the Model 6–2 memo could have been “Editing.” Yet that brevity would have sacrificed reader interest. The actual subject line, “New employee to help

■ Figure 6–4 ■

Memo style



with technical editing,” conveys more information and shows readers that the contents of the memo will make their lives easier.

■ Letters, memos, and e-mail: Some format conventions apply to all three forms of correspondence. Two of the more important features are:

Copy notation: If the correspondence has been sent to anyone other than the recipient, type “Copy” or “Copies” one or two lines beneath the enclosure notation, followed by the name(s) of the person or persons receiving copies (e.g., Copy: Preston Hinkley). Some organizations prefer the initials “c” (for *copy*), “cc” (for *carbon copy*, even though carbons rarely exist anymore), or “pc” (for *photo-copy*). E-mail inserts this information automatically. If you are sending a copy but do not want the original letter or memo to include a reference to that copy, write “bc” (for *blind copy*) and the person’s name only on the copy—not on the original (e.g., bc: Jim McDuff). (Note: Send blind copies only when you are certain it is appropriate and ethical to do so. See page 170–171 in this chapter for more on sending copies.)

Postscripts: Items marked “PS” or “P.S.” appear occasionally in letters and rarely in memos. They are considered by many readers to be symbols of poor planning, so use them with caution. If used, they appear as the last item on the document (beneath the copy notation) and can be typed or written in longhand.

>> Correspondence Guideline 4: Follow the ABC Format for All Correspondence

Correspondence subscribes to the same three-part ABC (*Abstract/Body/Conclusion*) format used throughout this book. This approach responds to each reader’s need to know “What does this document have to do with me?” According to the ABC format, your correspondence is composed of these three main sections:

- **Abstract:** The abstract introduces the purpose and usually gives a summary of main points to follow. It includes one or two short paragraphs.
- **Body:** The body contains supporting details and thus makes up the largest part of a letter or memo. You can help your readers by using such techniques as:

Deductive patterns for paragraphs: In this general-to-specific plan, your first sentence should state the point that helps the reader understand the rest of the paragraph. This pattern avoids burying important points in the middle or end of the paragraph, where they might be missed. Fast readers tend to focus on paragraph beginnings and expect to find crucial information there. Note how most paragraphs in Model 6–2 follow this format.

Lists that break up the text: Listed points are a good strategy for highlighting details. Readers are especially attracted to groupings of three items, which create a certain rhythm, attract attention, and encourage recall. Use bullets, numbers, dashes, or other typographic techniques to signal the listed items. For example, the bulleted list in Model 6–1 draws attention to three important points about M-Global that the writer wants to emphasize. Because some e-mail systems can’t read special characters like bullets, use asterisks or dashes for lists in e-mail.

Headings to divide information: One-page letters and memos, and even e-mail, sometimes benefit from the emphasis achieved by headings. The three headings in Model 6–2 quickly steer the reader to main parts of the document.

- **Conclusion:** Readers remember first what they read last. The final paragraph of your correspondence should leave the reader with an important piece of information—for example, a summary of the main idea or a clear statement of what will happen next. The Model 6–1 letter makes an offer that helps continue the reader’s association with the university, whereas the Model 6–2 memo gives readers specific issues to study before the next meeting.

Your final paragraph in external correspondence should always continue the business relationship by encouraging future contact. Internal correspondence may also include a statement offering to answer questions or concerns. The final paragraph in the Model 6–1 letter encourages the reader to call, and the final paragraph in the original e-mail in Model 6–3 specifically encourages the recipient to respond with questions or concerns.

>> Correspondence Guideline 5: Use the 3Cs Strategy

The ABC format provides a way to organize all letters and memos. Another pattern of organization for you to use is the *3Cs strategy*—especially when your correspondence has a persuasive objective. This strategy has three main goals:

- **Capture** the reader’s attention with a good opener, which tells the reader what the letter, memo, or e-mail can do for him or her.
- **Convince** the reader with supporting points, all of which confirm the opening point that this document will help the reader meet his or her goals.
- **Contact** solidifies your relationship with the reader with an offer to follow up on the correspondence.

Although neither Model 6–1 nor Model 6–2 is overtly persuasive, each has an underlying persuasive purpose, as does the original message in Model 6–3. Note how each uses the 3Cs strategy.

>> Correspondence Guideline 6: Stress the “You” Attitude

Begin writing correspondence by looking at the subject from your reader’s perspective. Ask yourself, “What will interest my reader?” and “What does my reader want to accomplish?” For example, you should perform the following tasks:

- Anticipate questions your reader might raise and then answer these questions. You can even follow an actual question (“And how will our new testing lab help your firm?”) with an answer (“Now M-Global’s labs can process samples in 24 hours”).
- Replace the pronouns *I*, *me*, and *we* with *you* and *your*. Of course, you must use first-person pronouns at certain points in a letter, but many pronouns should be second person. The technique is quite simple. You can change almost any sentence from writer-focused prose (“We feel that this new service will . . .”) to reader-focused prose (“You’ll find that this new service will . . .”).

Model 6–1 shows this *you* attitude by emphasizing what M-Global and the writer himself can do for the professor and his students. Model 6–2 shows it by emphasizing that the new editor will make the readers’ jobs easier.

>> Correspondence Guideline 7: Use Attachments for Details

Keep text brief by placing details in attachments, which readers can examine later, rather than bogging down the middle of the letter or memo. This way, the supporting facts are available for future reference, without distracting readers from the main message. The memo in Model 6–2, for example, includes an attached list of possible job tasks for the new M-Global editor. The listing would only clutter the body of the memo, especially because its purpose is to stimulate discussion at the next meeting.

>> Correspondence Guideline 8: Be Diplomatic

Without a tactful tone, all of your planning and drafting will be wasted. Choose words that persuade, not demand. Be especially careful with memos written to subordinates. If

you sound too authoritarian, your message may be ignored—even if it is clear that what you are suggesting will help the readers. Generally speaking, negative (or “bad news”) letters often use the passive voice, whereas positive (or “good news”) letters often use the active voice.

For example, the letter in Model 6–1 would fail in its purpose if it sounded too pushy and one-sided about M-Global’s interest in hiring graduates. Similarly, the editing memo in Model 6–2 would be poorly received if it used stuffy and condescending wording, such as “Be advised that starting next month, you are to make use of proofreading services provided in-house by . . .”

>> Correspondence Guideline 9: Edit Carefully

Because letters, memos, and e-mail are short, editing errors may be obvious to readers. Take special care to avoid the following errors:

■ Mechanics

- Misspelled words of any kind, but especially the reader’s name
- Wrong job title (call the reader’s office to double-check, if necessary)
- Old address (again, call the reader’s office to check)

■ Grammar

- Subject-verb and pronoun agreement errors
- Misused commas

■ Style

- Stuffy phrases, such as “Per your request” and “Enclosed herewith”
- Long sentences with more than one main and one dependent clause
- Phrases that make presumptions, such as “Thanking you in advance for . . .”
- Negative tone suggested by phrases such as “We cannot,” “I won’t,” and “Please don’t hesitate to”

The last point is crucial and gets more attention later in this chapter. Use the editing stage to rewrite any passage that could be phrased in a more positive tone. You must always keep the reader’s goodwill, no matter what the message.

>> Correspondence Guideline 10: Respond Quickly

A letter, memo, or e-mail that comes too late fails in its purpose, no matter how well written. Mail letters within 48 hours of your contact with, or request from, the reader. Send memos in plenty of time for your reader to make the appropriate adjustments in schedule, behavior, and so forth. Respond to e-mails the same day you receive them. The first sentence in the Model 6–1 letter, for example, shows that George Lux writes the day after his guest lecture. This responsiveness helps secure the goodwill of the professor.



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Correspondence Guidelines

- Know your purpose
- Know your readers
- Follow correct format
- Follow the ABC format for all correspondence
- Use the 3Cs strategy
- Stress the “you” attitude
- Use attachments for details
- Be diplomatic
- Edit carefully
- Respond quickly

>>> Types of Messages in Correspondence

This section gives you specific guidelines for the following documents:

- Correspondence with a positive message
- Correspondence with a negative message
- Correspondence with a neutral message
- Correspondence with a persuasive message

To be sure, many documents are hybrid forms that combine these patterns. As a technical sales expert for M-Global, for example, you may be writing to answer a customer question about a new piece of equipment just purchased from M-Global’s Equipment Development Lab. Your main task is to solve a problem

caused by a confusing passage in the owner’s manual. At the same time, however, your concern about the customer’s satisfaction can pave the way for purchase of a second machine later in the year. Thus the letter has both a positive message and a persuasive message. This example also points to a common thread that weaves all four message types together: the need to maintain the reader’s goodwill toward you and your organization.

The next four sections present a pattern for each type of correspondence, based on the ABC format used throughout this text; as well as one or more brief case studies in which the pattern might be used at M-Global.

Positive Messages

Everyone likes to give good news; fortunately, you will often be in the position of providing it when you write. Following are some sample situations:

- Letter replying to a question about products or services
- Letter responding favorably to a complaint or an adjustment
- Letter hiring an employee
- Memo announcing high bonuses for the fiscal year
- Memo informing employees about improved fringe benefits
- E-mail commending an employee for performance on a project

The trick is to recognize the good-news potential of many situations. This section gives you an all-purpose format for positive correspondence, followed by a case study from M-Global.

ABC Format for Positive Correspondence

All positive messages follow one overriding rule. You must always:

State good news immediately!

Any delay gives readers the chance to wonder whether the news will be good or bad, thus causing momentary confusion. On the left is a complete outline for positive correspondence that corresponds to the ABC format.

M-Global Case Study for a Positive Letter

As a project manager at M-Global's Houston office, Nancy Slade has agreed to complete a foundation investigation for a large church about 300 miles away. There are cracks in the basement floor slab and doors that do not close, so her crew needs a day to analyze the problem (observing the site, measuring walls, digging soil borings, taking samples, etc.). She took this small job on the condition that she could schedule it around several larger (and more profitable) projects in the same area during mid-August.

Yesterday, Nancy received a letter from the minister (speaking for the church committee), who requested that M-Global change the date. He had just been asked by the regional headquarters to host a three-day conference at the church during the same time that M-Global was originally scheduled to complete the project.

After checking her project schedule, Nancy determines that she can reschedule the church job. Model 6-4 on page 186 shows her response to the minister.

Negative Messages

It would be nice if all your correspondence could be as positive as the one just described. Unfortunately, the real world does not work that way. You will have many opportunities to display both tact and clarity in relating negative information. Following are a few cases:

- Letter explaining delays in projects or delivery of services
- Letter refusing to make adjustments based on complaints
- Letter giving bad news about employment or performance
- Memo reporting decreased quarterly revenues for the year
- Memo requesting closer attention to filling out time sheets
- E-mail asking for volunteers to work on a holiday

This section gives you a format to follow in writing sensitive correspondence with negative information. Then it provides one application at M-Global.

ABC Format for Negative Correspondence

One main rule applies to all negative correspondence:

Buffer the bad news, but still be clear.

ABC Format: Positive Correspondence

- **ABSTRACT:** Puts correspondence in the context of an ongoing professional relationship by referring to previous communication related to the subject
 - Clear statement of good news you have to report
- **BODY:** Supporting data for main point mentioned in abstract
 - Clarification of any questions reader may have
 - Qualification, if any, of the good news
- **CONCLUSION:** Statement of eagerness to continue relationship, complete project, etc.
 - Clear statement, if appropriate, of what step should come next

ABC Format: Negative Correspondence

- **ABSTRACT:** Puts correspondence in the context of an ongoing professional relationship by referring to previous communication related to the subject
 - General statement of purpose or appreciation—in an effort to find common bond or area of agreement
- **BODY:** Strong emphasis on what can be done, when possible
 - Buffered yet clear statement of what cannot be done, with clear statement of reasons for negative news
 - Facts that support your views
- **CONCLUSION:** Closing remarks that express interest in continued association
 - Statement, if appropriate, of what will happen next

Despite the bad news, you want to keep the reader's goodwill. Spend time at the beginning building your relationship with the reader by introducing less controversial information—before you zero in on the main message. On the right is an overall pattern to apply in all negative correspondence.

M-Global Case Study for a Negative Letter

Reread the letter situation described in the section on positive correspondence. Now, assume that instead of being able to comply with the minister's request, Nancy is unable to complete the work on another date without changing the fee. This change is necessary because Nancy must send a new crew 300 miles to the site, rather than using a crew already working on a nearby project.

Nancy knows the church is on a tight budget, but she also knows that M-Global would not be in business very long by working for free. Most important, because the church is asking for a change in the original agreement, she believes it is fair to request a change in the fee. Model 6–5 on page 187 is the letter she sends. Note her effort to buffer the negative news.

Neutral Messages

Some correspondence expresses neither positive nor negative news. It is simply the routine correspondence written every day to keep businesses and other organizations operating. Some situations follow:

- Letter requesting information about a product or service
- Letter inviting the reader to an event
- Memo summarizing the results of a meeting with a client
- Memo explaining a new laboratory procedure
- E-mail announcing a meeting

Use the following outline in writing your neutral correspondence. Also, refer to the M-Global examples that follow the outline.

ABC Format for Neutral Correspondence

Because the reader usually has no personal stake in the news, neutral correspondence requires less emphasis on tone and tact than other types, yet it still requires careful planning. In particular, always abide by this main rule:

Make your message absolutely clear.

Neutral correspondence operates a bit like good-news correspondence. You must make your point early, without giving the reader time to wonder about your message.

Neutral correspondence varies greatly in specific organization patterns. The *umbrella plan* suggested here emphasizes the main criterion of clarity.

M-Global Case Study for a Neutral Letter

Letters with neutral messages get written by the hundreds each week at M-Global. The letter in Model 6–6 on page 188 is typical. Farah Linkletter, a supply assistant with M-Global’s San Francisco office, often writes letters to equipment suppliers. Instead of a salutation, her letter uses a subject line, much like a subject line used in memos or e-mail. It opens with a reference to an ongoing conversation and then clearly lists the requested items. It closes with a statement of the next steps in the process and a sentence that keeps the business relationship open.

M-Global Case Study for a Neutral Memo

When the Copy Center at M-Global changed its services, Gini Preston, Director of Copy Services, decided to write a memo to all employees. This memo is presented in Model 6–7 on page 189. She chose a memo instead of e-mail because the text is somewhat long for an e-mail, and because she wanted to use formatting that highlighted the major changes. The memo uses lists and bold type to help readers identify the important information. It includes the date on which the change will take place and closes with a phone number for those who have questions.

Persuasive Messages

When people think about persuasive writing in the workplace, they often think of proposals (like the ones discussed in Chapter 12). However, regular business correspondence often has a somewhat persuasive goal. Positive correspondence, like a letter of recommendation, or negative correspondence, like a letter explaining why a project is delayed, may have a persuasive tone. The following list will give you an idea of correspondence with a strong persuasive message:

- Letter starting a business relationship
- Letter registering complaints about products or services
- Letter seeking repeat business
- Memo requesting funding for a training seminar
- Memo explaining policy changes that may be perceived negatively
- E-mail encouraging employees to follow required procedures

ABC Format: Neutral Correspondence

- **ABSTRACT** Puts correspondence in the context of an ongoing professional relationship by referring to previous communication related to the subject
 - Precise purpose of correspondence (e.g., request, invitation, information about new procedure)
- **BODY:** Details that support the purpose statement (e.g., a description of items requested, the requirements related to the invitation, a description of changes in procedure)
- **CONCLUSION:** Statement of appreciation
 - Description of actions that should occur next



ABC Format for Persuasive Correspondence

The one main rule that governs all persuasive correspondence is as follows:

Help readers solve their problems.

You must engage the readers' interest by showing that you understand their needs and can help fulfill them. The ABC format offers a plan for writing successful persuasive correspondence. Note reference to the 3Cs (*Capture/Convince/Contact*) strategy mentioned earlier in the chapter.

M-Global Case Study for a Persuasive Letter

M-Global provides customers with professional services and equipment, so persuasive letters that sell the company services are important to the firm. Benjamin Feinstein is one employee who writes them almost every day. As a first-year employee with a degree in industrial hygiene, Benjamin works in the newly formed asbestos abatement group. The letter in Model 6–8 on page 190 is the first step in Benjamin's process of gaining new clients for M-Global. This letter will be followed by more letters, phone calls, and meetings, which Benjamin hopes will lead to negotiating a contract with the Jessup County School System. In his letter, Benjamin uses the "you attitude" to emphasize how the school system's problem can be solved by M-Global.

ABC Format: Persuasive Correspondence

- **ABSTRACT:** Puts correspondence in the context of an ongoing professional relationship by referring to previous communication related to the subject. Identifies problem or issue to be addressed
- Focuses on how the information in the correspondence will help the reader
- **BODY:** Puts strongest points first or last, to emphasize them for the reader.
 - Clear explanation of steps to be taken
 - Emphasis on benefit to the reader
 - Reference to any attachments
- **CONCLUSION:** Summary of actions requested, with emphasis on the benefit to the reader
 - Statement of what will happen next
 - Offer of further explanation or future contact

M-Global Case Study for a Persuasive Memo

As personnel director of M-Global's Cleveland office, Timothy Fu knows that employees are always concerned when their health benefits change. They are afraid that the process will be more complicated and that their health coverage will decrease. Timothy opens this memo by emphasizing the benefits of the change. Using questions as his headings allows him to respond directly to employees' concerns. To reduce anxiety and confusion among his readers, he lists only the three most important elements of the new program. Finally, he closes with contact information for employees who have questions.

>>> Letters

Letters are to your clients and vendors what memos are to your colleagues. They relay information quickly and keep business flowing. Letters use a professional tone, even if the sender and recipient are on a first-name basis or know each other personally. Letters are usually action-oriented and are used to conduct business and continue business relationships. The first paragraph of business letters should refer to this business relationship. If the letter is in response to a phone call, meeting, or other business

communication, that information should be included, with details of the date, method, and subject of the communication.

Although letters are generally used for corresponding with external audiences, they may be used for internal correspondence in special cases, true when correspondence relates to employment. When an employee is given official notice of a change in job status—whether a promotion or termination—this information is usually recorded in a letter, even if it is also delivered in person.

Another special type of letter is the *transmittal letter*. Transmittal letters, or cover letters, accompany longer formal documents such as reports or proposals. They tell the readers why they are receiving the document, and they highlight the most important information in the document. If they accompany a proposal, they usually have a strong persuasive tone. (See Chapter 10 for more about transmittal letters.)

>>> Memos

Even though e-mail has become common in the workplace, *memos* are still important. You write them to peers, subordinates, and superiors in your organization—from the first days of your career until you retire. Even if you work in an organization that uses e-mail extensively, you will still compose print messages that convey your point with brevity, clarity, and tact. Later, this chapter discusses the choice of whether to send a message as a memo or an e-mail.

Because many activities are competing for their time, readers expect information to be related as quickly and clearly as possible. Memos should be as self-contained as possible. If they are part of an ongoing series of correspondence, include enough information in the first sentences so that your reader immediately recognizes the context. Use headings and lists to help your reader find the information that he or she needs. While memos should be concise, they should be complete enough to be clear, and they should address your reader's concerns.

>>> E-mail

Electronic communication (*e-mail*) has become the preferred means of communication in most organizations. Some of us receive 100 or more messages a day. Because e-mail can be sent internally, within an organization, or externally, from one organization to another, specific e-mail guidelines are added to the general guidelines for correspondence earlier in the chapter.

Guidelines for E-mail

When writing e-mail, you should try to strike a balance between speed of delivery on one hand and quality of the communication to your reader on the other. In fact, the overriding rule for e-mail is as follows:

Don't send it too quickly!



Ryan McVay/Thinkstock

By taking an extra minute to check the style and tone of your message, you have the best chance of sending an e-mail that will be well received.

>> **E-mail Guideline 1: Use Style Appropriate to the Reader and Subject**

E-mail sent early in a relationship with a client or other professional contact should be somewhat formal. It should be written more like a letter, with a salutation, closing, and complete sentences. E-mail written once a professional relationship has been established can use a more casual style. It can resemble conversation with the recipient on the phone. Sentence fragments and slang are acceptable, as long as they contribute to your objectives and are in good taste. Most important, avoid displaying a negative or angry tone. Don't push the Send button unless an e-mail will produce a constructive exchange.

>> **E-mail Guideline 2: Be Sure Your Message Indicates the Context to Which It Applies**

Tell your readers what the subject is and what prompted you to write your message. If you are replying to a message, be sure to include the previous message or summarize the message to which you are replying. Most e-mail software packages include a copy of the message to which you are replying, as in Model 6–3. However, you should make sure that you include only the messages that provide the context for your reader. Long strings of forwarded e-mail make it difficult to find the necessary information.

>> **E-mail Guideline 3: Choose the Most Appropriate Method for Replying to a Message**

Short e-mail messages may require that you write only a brief response at the beginning or end of the e-mail to which you are responding. For complex, multитopic messages, however, you may wish to split your reply by commenting on each point individually (Figure 6–5).

>> **E-mail Guideline 4: Format Your Message Carefully**

Because e-mail messages frequently replace more formal print-based documents, they should be organized and formatted so that the readers can easily locate the information you want to communicate.

- Use headings to identify important chunks of information.
- Use lists to display a series of information.
- Use sufficient white space to separate important chunks of information.
- Use separators to divide one piece of information from another.

Figure 6–6 illustrates an e-mail message with headings, separators, and white space.

>> **E-mail Guideline 5: Chunk Information for Easy Scanning**

Break the information into coherent chunks dealing with one specific topic, including all the details that a reader needs to get all of the essential information. Depending on

■ **Figure 6–5** ■ An e-mail message that separates different topics for reply

X-Sender: mckinley@mail2.m-global.com
Date: Tue, 11 Nov 2012 09:25:30 -0800
To: pcarmich@advantage.com
From: Mike McKinley <mckinley@mail2.m-global.com>
Subject: our recent visit
Mime-Version: 1.0

Dear Paul,

YOU WROTE:

>I hope that you had a good flight back home. I certainly enjoyed meeting you and look forward to the possibility of working with you this coming spring on the project that your firm, M-Global, may do for us.

REPLY:

The trip back was fine, but tiring. I enjoyed meeting you also and visiting with your staff. I particularly enjoyed meeting Harold Black, for he will be very valuable in developing the plans for the possible water purification plant.

YOU WROTE:

>If Advantage, Inc., does decide to build the water purification plant, we would be very interested in having M-Global's Mary Stevens as the project manager.

REPLY:

That certainly will be a possibility; Mary is one of our best managers.

YOU WROTE:

>After you left, I called the city administration here in Murrayville. M-Global does not need a business license for your work here, but, of course, you will need the necessary construction permits.

REPLY:

Thanks for taking care of this matter—I had not thought of that. We will supply the details to you for applying for the construction permits if you accept our proposal.

■ Model 6–6 ■

E-mail message
with use of
appropriate
headings,
separators, and
white space

Date: Tue, 7 Oct. 2012 09:25:30 -0800

To: Branch employees

From: Paul Carmichael <pcarmich@advantage.com>

Subject: October update

Mime-Version: 1.0

This is the October Electronic Update for Advantage, Inc. If you do not wish to receive this electronic update, send a message to

pcarmich@advantage.com

With the message in the subject line: Unsubscribe.

UPCOMING EVENTS

Project managers' meeting

October 21—project managers meeting (notice the change of location):
Hereford building, room 209.

November department meetings

All departments will have their planning and reporting meetings on November 18 at noon, with a joint lunch in the main dining room and breakout sessions at 12:30. Meetings should conclude at 2 p.m.

December department meetings

NOTE CHANGE OF DATE: The December department meetings will be held on December 10 (second Wednesday), NOT December 17 (third Wednesday).

the nature of the information, include specific topic, time, date, location, and necessary prerequisites and details.

>> E-mail Guideline 6: Use Copy Options Carefully

E-mail makes it easy to send copies of the same message to a large number of people at once. Using this technique can be helpful, but it can also clog readers' inboxes with unwanted mail. Before you copy someone, make sure that person really needs to see

the message that you are sending. Also think carefully about how you list the recipients. The “To:” line indicates a primary audience of decision makers, participants, or operators. (See Chapter 2 for more on types of readers.) The “Cc:” line indicates a secondary audience that needs to be informed about the subject but is not expected to act. Finally, use the “Bc:” line very carefully. Copying someone without informing the person to whom the e-mail is addressed can be considered unethical. One good use of the “Bc:” line is to send a copy of your e-mail message to yourself, for your own records.

>> E-mail Guideline 7: When Writing to Groups, Give Readers a Method to Abstain from Receiving Future Notices

E-mail can easily become invasive and troublesome for recipients. You will gain favor—or at least not lose favor—if you are considerate and allow recipients to decide what e-mail they wish to receive. Figure 6–6 includes information about how to unsubscribe from the branch’s employee e-mail list.

>> E-mail Guideline 8: When Writing to Groups, Suppress the E-mail Addresses of Recipients—Unless the Group Has Agreed to Let Addresses Be Known

It is inappropriate to reveal the e-mail addresses of group members to other group members. Use the “Bc:” line to suppress group members’ addresses.

>> E-mail Guideline 9: When Composing an Important Message, Consider Composing It With Your Word Processor

Important e-mail messages should be not only clear in format but also correct in mechanics. Because e-mail software may not have a spelling checker, compose important messages with your word processor and use your spelling checker to check accuracy. Then either cut and paste it into an e-mail message or attach it as a file.

ABC Format for E-mail

Simply understanding that e-mail *should* have a format puts you ahead of many writers, who consider e-mail a license to ramble on without structure. Yes, e-mail is casual and quick, but that does not make it formless. The three-part ABC format resembles that used for letters.

Remember—your reader is confronted with many e-mails during the day. Furthermore, the configurations of some computers make reading a screen harder on the eyes than reading

E-mail Guidelines

- Use style appropriate to the reader and subject
- Be sure your message indicates the context to which it applies
- Choose the most appropriate method for replying to a message
- Format your message carefully
- Chunk information for easy scanning
- Use Copy options carefully
- When writing to groups, give readers a method to abstain from receiving future notices
- When writing to groups, suppress the e-mail addresses of recipients
- When composing an important message, consider composing it with your word processor

ABC Format: E-mail

- **ABSTRACT:** Casual, friendly greeting if justified by relationship
 - Short, clear statement of purpose for writing
 - List of main topics to be covered
- **BODY:** Supporting information for points mentioned in abstract
 - Use of short paragraphs that start with main ideas
 - Use of headings and lists
 - Use of abbreviations and jargon only when understood by all readers
- **CONCLUSION:** Summary of main point
 - Clarity about action that comes next

print memos. So give each e-mail a structure that makes it simple for your reader to find important information.

Appropriate Use and Style for E-mail

E-mail is an appropriate reflection of the speed at which we conduct business today. Indeed, it mirrors the pace of popular culture as well. Following are some of the obvious advantages that using e-mail provides:

- It gets to the intended receiver quickly.
- Its arrival can be confirmed easily.
- Your reader can reply to your message quickly.
- It's cheap to use—once you have invested in the hardware and software.
- It permits cheap transmission of multiple copies and attachments.

Adding to the ease of transmission is the fact that e-mail allows you to create mailing lists. One address label can be an umbrella for multiple recipients, saving you much time.

Of course, remember the flip side of this ease of use: E-mail is *not* private. Every time you send an e-mail, remember that it may be archived or forwarded, and may end up being read by “the world.” Either by mistake or design, many supposedly private e-mails are received by unintended readers.

E-mail communication is often considered less formal and therefore less demanding in its format and structure than print-based messages such as memos and letters. However, because e-mail messages have become so pervasive a means of communication, you should consider constructing them as carefully as you would other correspondence. Another reason to exercise great care is that e-mail, like conventional documents, can be used in legal proceedings and other formal contexts.

Chapter 3, which mentions e-mail in the context of team writing, shows how electronic mail helps you collaborate with others during the writing process—especially the planning stage. Interestingly, the e-mail medium has produced a casual writing style similar to that of handwritten notes. It even has its own set of abbreviations and shortcut languages, which ranges so widely and changes so often that no list of abbreviations is included here. Following is an e-mail message from one M-Global employee to another. Josh Bergen and Natalie Long are working together on a report in which they must offer suggestions for designing an operator’s control panel at a large dam. Josh has just learned about another control panel that M-Global designed and installed for a Russian nuclear power plant (see Model 12–6 on pages 472–478). Josh wrote this e-mail message to draw Natalie’s attention to the related M-Global project:

DATE: September 15, 2012

TO: Natalie Long

FROM: Josh Bergen

SUBJECT: Zanger Dam Project

Natalie—

I've got an idea that might save us A LOT of time on the Zanger Dam project. Check out the company project sheet on the Russian nuclear plant job done last year.

Operators of hi-tech dams and nuke plants seem to face the same hassles:

- confusing displays
- need to respond quickly
- distractions

When either a dam or nuke operator makes a mistake, there's often big trouble. I think we'd save time—and our client's money—if we could go right to some of the technical experts used in the nuke job. At least as a starting place. Maybe we'd even make our deadline on this project. That would be a change, considering the schedule delays this month on other jobs.

What do you think about this idea? Let me know today, if possible.

This message displays some of the most common stylistic features of electronic mail.

Model 6–10 on page 191 is another example of e-mail. Like the memo in Model 6–7, this e-mail explains a change in procedure. Note that even though the tone is less formal, as is appropriate to an in-house e-mail message like this one, the message meets the other guidelines for neutral correspondence that are discussed in on pages 164–165.

>>> Memos Versus E-mail

Although e-mail has become the most common form of internal correspondence in the workplace, there are times when a memo is a better option. Send a memo instead of an e-mail in the following situations.

- The document is longer than can be viewed easily on a computer screen.
- The document must include symbols, special characters, or other formatting that may not be available on all e-mail systems.
- The document includes graphics.
- The document must be posted in print form.
- The document contains sensitive information, including information about clients, projects, or personnel.

>>> Chapter Summary

- All correspondence should use the 3Cs strategy: Capture, Convince, and Contact.
- All correspondence should use the “You attitude.” The writer should identify the reader’s interests and use those interests as a guide when writing letters, memos, or e-mail.

- The ABC format for correspondence provides a general framework for organizing messages.
- Specific ABC formats for positive, negative, neutral, and persuasive correspondence provide structure that tailors the message to its purpose.
- Letters are generally written to readers outside an organization. In personnel matters, letters may be written for correspondence within an organization. Letters are generally formal in tone.
- Memos are written from one member of an organization to another member of the same organization. Memos should be brief, but clear. Memos may use navigation tools such as headings to help readers find the information that they need.
- Because e-mail may be written to readers within or outside an organization, it deserves extra care.
 - E-mail messages should be formatted so that the information in them is clear. Techniques include chunking information, separating information with headers, and using lists.
 - The ABC format for e-mail provides a general structure for e-mail messages.
 - E-mail style should be adapted to the audience and the business context. E-mail written to someone outside the organization may be written more like a letter. E-mail that is part of an ongoing conversation within an organization may be very informal.
 - Memos should be sent instead of e-mail when documents are long, require special formatting or graphics, or will be posted in print form. Memos are also preferred for sensitive information.

>>> Learning Portfolio

Communication Challenge: Containing the E-mail Flood

Many organizations maintain internal e-mail discussion lists. Some of these lists are confined to specific topics, such as personnel information. Other lists may be more general, open to all kinds of announcements from members of the organization. In fact, many of the earliest e-mail discussion lists were essentially internal company bulletin boards. As e-mail has become common, the number of e-mails that we all receive has increased dramatically. Managing all of this e-mail can be a challenge and often seems like a waste of time. This case study asks you to respond to this situation at the corporate headquarters of M-Global. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Jeannie McDuff, Vice President for Domestic Operations for M-Global, makes it a practice to check her e-mail only three times a day—an hour or two after she gets to work, an hour or two after lunch, and an hour before she leaves work in the evening. She finds that this schedule allows her to manage her time, to take advantage of her most productive times in the morning and early afternoon, and to deal with any issues that need her attention before the end of the day.

One January day, she opens her e-mail around 2:00. Among the 43 messages in her in-box, she sees the following subjects from the [NEWS] list, an e-mail list that is sent to all employees at the corporate headquarters:

[NEWS] W-2 availability
[NEWS] M-Global basketball team Congrats!
[NEWS] Scholarships for M-Global dependents
[NEWS] Fitness class starts Tuesday
[NEWS] Fund-raiser—candy available in EDL
[NEWS] File cabinet available
[NEWS] MS Word problem—Help!
[NEWS] Reminder: Please submit travel paperwork on time
[NEWS] Cafeteria weekly specials
[NEWS] Fund-raiser winner—Research and Training
[NEWS] New sign-on procedures for secure network
[NEWS] Cute puppies available
[NEWS] A request
[NEWS] Friday Potluck: It's chili time!
[NEWS] Advice needed
[NEWS] Visiting regulators
[NEWS] Tickets available

Jeannie takes a sip of her coffee, settles in to sort through her mail, and sighs. Even though she knows that she can delete most of these messages without opening them, it still takes time. She has thought about setting her e-mail filters so that all of the [NEWS] e-mail goes to her junk folder, but then she might miss important messages like the one about the new sign-on procedures. In addition, she likes to see employees praised for good work, and reading the messages on the [NEWS] list gives her some insight into the informal activities that promote the feeling that M-Global is still a family company (even if the family has gotten very large). What's more, the [NEWS] list has been around for years, and employees like that it is open to anyone at the corporate headquarters. However, it seems as if more messages are being posted each week, and the messages are having less and less to do with company activities.

After some thought, Jeannie decides that it might be a good idea to set some rules for the [NEWS] list. She calls Janet Remington, Director of the Publications Development Office. "Janet, your people are the communication specialists. I'd like some rules for communication on the [NEWS] list. We're getting way too many messages on there, and some of them are getting pretty close to being spam. See what you can come up with—maybe guidelines for what to post, or even a new system for checking and approving all messages before they actually go to the list."

Janet appreciates Jeannie's problem. She knows the jokes about how it seems as if the same filing cabinet moves from one office to another, or how many people are advertising their children's latest fund-raiser. Right now, however, it seems that everyone in her office is in the middle of a big project. She looks around and sees Bart French, a technical communication student who just started his internship last week. Janet decides that asking Bart to look through the postings on the [NEWS] list will give him a good introduction to the culture at M-Global, so she assigns the task to him. She tells him exactly what Jeannie told her and asks him to have a recommendation by next week. She encourages him to draw on what he has learned from his classes and to do some research on netiquette—the etiquette of e-mail.

Questions and Comments for Discussion

1. Is Jeannie's reaction to the number of [NEWS] items in her in box justified? Does this seem like an unreasonable number of employee news messages, sent

- over a four-hour period, for a list with almost 200 members?
2. Read through the list of subject lines. Do any of them seem inappropriate for the M-Global [NEWS] list, given its users and its history?
 3. Are there any subject lines that could be improved? Explain.
 4. What do you think about Jeannie's suggestion that all messages sent to the [NEWS] list be approved before being posted? What problems do you see with this approach? What advantages?
 5. What do you think of Janet's decision to assign the task of creating rules for the [NEWS] list to a college intern? What benefits does it offer Bart? What potential problems does he face in completing this task?

Write About It

Assume the role of Bart. Do some research on netiquette and decide what guidelines might apply to a list like the employee [NEWS] list. Look over the subject lines and decide what subjects, if any, should be kept off the list. Think about what advice you might offer about subject lines for the list. Do you like Jeannie's idea about messages to the list requiring approval? What alternatives are there? If your campus has a similar list (or lists) that go out to everyone, look at the subjects of that list. Your instructor may be willing to share the subjects of a day's worth of postings to any similar campus lists that she or he is on.

Write a persuasive memo to Janet that responds to Jeannie's request and explains your reasons for your decisions. Include citations from any sources that you have researched.

Collaboration at Work Choosing the Right Mode

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) use team time inside or outside of class to complete the case, and (3) produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

A century ago, business professionals had few opportunities for communication beyond the formal letter or meeting; today, the range of options is incredibly broad. On one hand, we marvel at the choices for getting our message heard or read; on the other hand, the many ways to communicate present an embarrassment of riches that can be confusing.

In other words, when you have multiple communication options, you're challenged to match the right method with the right context—right in terms of what the reader

wants and *right* in terms of the level of effort you should exert to suit the purpose. You may think this challenge applies only to your working life. However, it also can influence your life in college, as this exercise shows.

Team Assignment

Brainstorm with your team to list every means you have used to communicate with your college and university, from the time you applied to the present. Then for each communication option that follows, provide two or three situations for which the option is the appropriate choice:

1. Letter that includes praise
2. Letter that describes a complaint
3. Letter that provides information
4. Letter that attempts to persuade
5. Telephone call
6. E-mail
7. Memo
8. Personal meeting

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Negative Letter Analysis: Complaint

The following letter was received by the Customer Service Department of the Justrite Small Appliance Company. Be prepared to discuss the strengths and weaknesses in the letter. If a friend had written the letter and had asked your advice, what recommendations would you make for revising it?

This is to let you know that the Justrite microwave oven that I bought awhile back has stopped working. The turntable won't turn. I don't know what is wrong with it—I just was reheating a casserole and the thing stopped turning.

I took it back to my local appliance store, The Good Life, but they said that since the 6 month warranty expired two weeks before the turntable broke, there was nothing they could do. They gave me your address and suggested that I write to you, so I am.

Is there a way to get my Justrite microwave fixed? The microwave works fine. The turntable just doesn't turn. Thank you.

3. Persuasive Memo Analysis, M-Global Context: Change in Benefits

The memo in Model 6–9 was written to explain changes in health benefits for M-Global employees. As noted in the discussion in this chapter, changes in benefits can cause anxiety among employees. Be prepared to discuss the effectiveness of this memo. How well does it follow the guidelines for negative correspondence? Is it appropriate for the audience—all employees of M-Global? If you were an employee of M-Global and received this memo, would you see this change as positive or negative? Be prepared to explain.

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

4. Positive Letter Practice, M-Global Context: Job Offer

Assume that you are the personnel director for M-Global's San Francisco office. Yesterday, you and your hiring committee decided to offer a job to Ashley Tasker, one of 10 recent graduates you interviewed for an entry-level position as a lab technician. Write Ashley an offer letter and indicate a starting date (in two weeks), a specific salary, and the need for her to sign and return an acceptance letter immediately. In the interview, you outlined the company's benefit plan, but you are enclosing with your letter a detailed description of fringe benefits (e.g., health insurance, long-term disability insurance, retirement plan, vacation policy). Although Ashley is your first choice for this position, you are prepared to offer the job to another top candidate if Ashley is unable to start in two weeks at the salary you stated in the letter.

5. Positive Letter Practice, M-Global Context: Recommendation

Kevin Kehoe, an employee at the San Francisco office, is being considered for promotion to manager of technical services. He has asked you to write a letter to the San Francisco branch manager on his behalf. Although you now work as a marketing associate at the corporate office, two years ago you worked directly for Kevin on the Ocean Exploration Program in Cameroon (see Model 12–6 on pages 472–478). Kevin has asked that your letter deal exclusively with his work on that program. Kevin was manager of the project; you

2. Positive Letter Analysis: Favorable Response to Complaint

The following letter was written in response to the complaint letter in Assignment 1. Be prepared to discuss the strengths and weaknesses in the letter.

This letter is in response to your August 3 complaint about the Justrite microwave oven you purchased about six months ago from your local store, The Good Life. We understand that the turntable in the microwave broke shortly after the warranty expired.

Did you know that last year our microwave oven was rated "best in its class" and "most reliable" by *Consumers Count* magazine? Indeed, we have received so few complaints about the product that a recent survey of selected purchasers revealed that 98.5 percent of first-time purchasers of our microwave ovens are pleased that they chose our product and would buy another.

Please double-check your microwave to make sure that the turntable is broken—it may just be temporarily stuck. We rarely have had customers make this specific complaint about our product. However, if the turntable is in need of repair, return the entire appliance to us, and we will have it repaired free of charge or have a new replacement sent to you. We stand behind our product because the warranty period only recently expired.

It is our sincere hope that you will continue to be a satisfied customer of Justrite appliances.

believe that it was largely through his technical expertise, boundless energy, and organizational skills that the project was so successful. He developed the technical plan of work that led to the clear-cut set of findings. Write a letter that conveys this information to the branch manager considering Kevin for the promotion. Because the branch manager is new, he is not familiar with the project on which you and Kevin worked. Therefore your letter may need to mention some details from the project sheet.

6. Positive E-mail Practice, M-Global Context: Bonuses

As an accountant for M-Global's Atlanta office, you have determined that last year's profits were even higher than previously expected. Apparently, several large construction jobs had not been counted in the first reporting of profits. The manager of the Atlanta office, Nathan Quosh, has already announced individual raises. Write an e-mail to Nathan that explains that every branch employee will receive a \$500 across-the-board bonus, in addition to whatever individual raises have been announced for next year. Include the subject line for the e-mail.

7. Negative Letter Practice, M-Global Context: Explanation of Project Delay

You work for M-Global's Boston office. As project manager for the construction of a small strip shopping center, you have had delays about halfway through the project because of bad weather. Even worse, the forecast is for another week of heavy rain. Yesterday, just when you thought nothing else could go wrong, you discovered that your concrete supplier, Atlas Concrete, has a truck drivers' strike in progress. Because you still need half the concrete for the project, you have started searching for another supplier.

Your client, an investor/developer named Tanya Lee, located in a city about 200 miles away, probably will be upset by any delays in construction, whether or not they are within your control. Write her a letter in which you explain weather and concrete problems. Try to ease her concern, especially because you want additional jobs from her in the future.

8. Negative Letter Practice, M-Global Context: Request for Prompt Payment

Recently, your M-Global office completed the General Hospital construction project in Floor County, Florida. (See Model 12-6 on pages 472–478.) As indicated on the sheet, Floor County was quite satisfied with your work. As the accounts receivable clerk in the business office, you billed the county within a week after completion and requested payment within 30 days of receipt of the bill, as you do

for most clients. When 45 days elapsed without payment being received, you sent a second bill. Now it has been three months since completion of the project, and you still have not been paid. You suspect that your bills got lost in the paperwork at the county offices, for a new county commission took office shortly after you finished the project. Yet two phone calls to the county's business office have brought no satisfaction: Two different assistants told you they could not find the bills and that you should rebill the county. You are steamed but would like to keep the client's goodwill, if possible. Write another letter requesting payment.

9. Negative Letter Practice, M-Global Context: Change in Project Scope and Schedule

As a marketing account executive at the Cleveland office, you are responsible for many of M-Global's clients in the area. One important account is a company that owns and operates a dozen radio and television stations throughout the Midwest. On one recent project, M-Global engineers and technicians did the foundation investigation for, and supervised construction of, a new transmitting tower for a television station in Toledo. First, your staff members completed a foundation investigation, at which time they examined the soils and rock below grade at the site. On the basis of what they learned, M-Global ordered the tower and the guy wires that connect it to the ground. Once the construction crew actually began excavating for the foundation, however, they found mud that could not support the foundation for the tower. Although unfortunate, it sometimes happens that actual soil conditions cannot be predicted by the preliminary study. Because of this discovery of mud, the tower must be shifted to another location on the site. As a result, the precast guy wires are the wrong length for the new site, so M-Global must order wire extenders. The extenders will arrive in two weeks, and the placement of the tower will be delayed by that much time. All other parts of the project are on schedule, so far.

Your client, Ms. Sharon West of Midwest Media Systems in Cleveland, doesn't understand much about soils and foundation work, but she does understand what construction delays mean to the profit margin of her firm's new television station as it attempts to compete with larger stations in Toledo. You must console this important client while informing her of this recent finding.

10. Negative E-mail Practice, M-Global Context: Declining a Request

Assume that you work at the M-Global office that completed the Sentry Dam (see Model 12-6 on pages 472–478). Word of your good work has spread to the state director of dams. He has asked you, as manager of the Sentry project, to deliver

a 20-minute speech on dam safety to the annual meeting of county engineers. Unfortunately, you have already agreed to be at a project site in another state on that day, and you cannot reschedule the site visit. Write an e-mail, including the subject line, to the director of dams—who is both a former and, you hope, a future client—and decline the request. Although you know he expressly wanted you to speak, offer to send a substitute from your office.

11. Neutral Letter Practice, M-Global Context: Response to Request for Information

As reservations clerk for the Archview Inn in St. Louis, you just received a letter from Jerald Pelletier, an administrative secretary making arrangements for a meeting of M-Global managers from around the country. The group is considering holding its quarterly meeting in St. Louis in six months. Pelletier has asked you to send some brief information on hotel rates, conference facilities (meeting rooms), and availability. Send him some room rates for double and single rooms, and let him know that you have four conference rooms to rent out at \$75 each per day. Also, tell him that at this time, the hotel rooms and conference rooms are available for the three days he mentioned.

12. Neutral Memo Practice, M-Global Context: Scheduling Change

As an employee at M-Global's London office, you were part of a committee that developed a pilot program that allows employees flexible scheduling. James Ladira, the branch manager, has accepted your proposal and has asked you to write a memo explaining the new program. The program will give up to half the office employees the choice to work four 10-hour days each week, as opposed to five 8-hour days. Your committee wanted to offer this flexibility to workers who, for whatever reason, desired longer weekends. James has made it clear that he will evaluate the program at the end of the one-year pilot.

Your committee has agreed that departments will have to set up a schedule to make sure that they are not understaffed because too many employees have opted for the same day off (Friday, for example). Department managers will have to work with employees to set schedules for anyone who is taking advantage of this opportunity, and these schedules will be permanent. The schedules will be published on the branch intranet. The change will take place in one month.

13. Neutral E-mail Practice, M-Global Context: Change in Procedure

As mailroom supervisor at M-Global's Baltimore headquarters, you have a number of changes to announce to employees of the corporate office. Write an e-mail, includ-

ing the subject line, that clearly relates the following information: Deliveries and pickups of mail, which currently are at 8:30 a.m. and 3:00 p.m., will change to 9:00 a.m. and 3:30 p.m., starting in two weeks. Also, there will be an additional pickup at noon on Monday, Wednesday, and Friday. The mailroom will start picking up mail to go out by Federal Express or any other one-day carrier, rather than the sender's having to wait for the carrier's representative to come to the sender's office. The sender must call the mailroom to request the pickup, and the carrier must be told by the sender to go to the mailroom to pick up the package. The memo should also remind employees that the mail does not go out on federal holidays, even though the mailroom continues to pick up mail from the offices on those days.

14. Persuasive Memo Practice, M-Global Context: Policy Change

You are project manager of the construction management group at M-Global's St. Paul office. The current policy in your office states that employees must pass a preemployment drug screening before being hired. After that, there are no tests unless you or one of your job supervisors has reason to suspect that an employee is under the influence of drugs on the job.

Lately, a number of clients have strongly suggested that you should have a random drug-screening policy for all employees in the construction management group. They argue that the on-the-job risk to life and property is great enough to justify this periodic testing, without warning. You have consulted your branch manager, who likes the idea. You have also talked with the company's attorney, who assures you that such random testing should be legal, given the character of the group's work. After considerable thought, you decide to implement the policy in three weeks. Write a memo to all employees of your group, explaining the change and emphasizing how this change will be helpful to the branch and ensure employees' safety.

15. Persuasive Memo Practice: Purchase Recommendation

For this assignment, choose either (1) a good reference book or textbook in your field of study or (2) an excellent periodical in your field. The book or periodical should be one that could be useful to someone working in a profession, preferably one that you may want to enter.

Now assume that you are an employee of an organization that would benefit by having this book or periodical in its staff library or customer waiting room, or perhaps as a reference book purchased for employees in your group.

Write a one-page memo to your supervisor recommending the purchase. You might want to consider criteria such as

- Relevance of information in the source to the job
- Level of material with respect to potential readers
- Cost of book or periodical as compared with its value
- Amount of probable use
- Important features of the book or periodical (such as bibliographies or special sections)

16. Persuasive Memo Practice, M-Global Context: Request

Assume you work at an M-Global office and have no undergraduate degree. You are not yet sure what degree program you want to enter, but you have decided to take one night course each term. Your M-Global office has agreed to pay 100 percent of your college expenses on two conditions. First, before taking each course, you must write a memo of request to your supervisor, justifying the value of the class to your specific job or to your future work with the company. Clearly, your boss wants to know that the course has specific application or that it will form the foundation for later courses. Second, you must receive a C or better in every class for which you want reimbursement.

Write the persuasive memo just described. For the purposes of this assignment, choose one course that you actually have taken or are now taking. Yet in your simulated role for the assignment, write as if you have not taken the course.

17. Ethics Assignment

In the Communication Challenge section of this chapter, you were asked to examine the problem faced by many organizations as they try to manage e-mail. This assignment moves that problem into the realm of e-mail communication ethics. The project is best completed as a team assignment.

Pooling the experience that members of your team have had with e-mail, focus specifically on inappropriate or unethical behavior. Possible topics include the content of messages, the tone of language, and the use of distribution

lists. Now draft a simple code of ethics that could be distributed to members of any organization—such as M-Global, Inc.—whose members use e-mail on a daily basis. Search the Internet for examples of codes of ethics in general, and of e-mail ethics in particular.

18. International Communication Assignment

E-mail messages can be sent around the world as easily as they can be sent to the next office. If you end up working for a company with international offices or clients, you probably will use e-mail to conduct business.

Investigate the e-mail conventions of one or more countries outside your own. Search for any ways that the format, content, or style of international e-mail may differ from e-mail in your country. Gather information by collecting hard copies of e-mail messages sent from other countries, interviewing people who use international e-mail, or consulting the library for information on international business communication. Write a memo to your instructor in which you (1) note differences you found and (2) explain why these differences exist. If possible, focus on any differences in culture that may affect e-mail transactions.

19. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Whether you commute or live on campus, your everyday life at a college or university may be influenced by student government associations, usually made up of students elected to their positions. For example, such associations often receive fees (paid by students each term) to sponsor various cultural, intellectual, athletic, or entertainment events. Learn about what types of activities your student government association sponsors on campus. Then write a letter to your campus newspaper or to the student government association president in which you compliment or critique the use of funds—related either to a specific event or to the general use of the budget. If your campus has no student government, direct your letter to the campus administrator or office that does coordinate such events.

12 Peachtree Street

Atlanta GA 30056

404.555.7524

August 2, 2012

Professor Willard R Burton PhD
Department of Civil Engineering
Southern University of Technology
Paris GA 30007

Dear Professor Burton:

Thanks very much for your hospitality during my visit to your class yesterday. I appreciated the interest your students showed in my presentation on stress fractures in highway bridges. Their questions were very perceptive.

Expresses appreciation and provides lead-into body.

You may recall that several students requested further information on M-Global, so I have enclosed a dozen brochures for any students who may be interested. As you know, job openings for civil engineering graduates have increased markedly in the last five years. Some of the best opportunities lie in these three areas of the discipline:

Responds to question that arose at class presentation.

- Evaluation of environmental problems
- Renovation of the nation's infrastructure
- Management of construction projects

Uses bulleted list to emphasize information of value to professor's students.

These areas are three of M-Global's main interests. As a result, we are always searching for top-notch graduates from solid departments like yours.

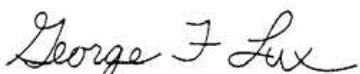
Adds unobtrusive reference to M-Global's needs.

Again, I enjoyed my visit back to Southern last Friday, Professor Burton. Please call when you want additional guest lectures by me or other members of M-Global's staff.

Closes with offer to visit class again.

Sincerely,

George F. Lux, P.E.



Enclosures

Includes reference to enclosures.



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MEMO

DATE: December 4, 2012
 TO: Technical Staff
 FROM: Ralph Simmons, Technical Manager **RS**
SUBJECT: New employee to help with technical editing

Uses informative subject line.

Gives purpose of memo and highlights contents.

Uses side headings for easy reading.

Shows that the change arose from their concerns.

Adds evidence from outside observer.

Gives important information about Ron in first sentence.

Establishes his credibility.

Refers to attachment.

Focuses on benefit of change to reader.

Restates next action to occur.

Last week we hired an editor to help you produce top-quality reports, proposals, and other documents. This memo gives you some background on this change, highlights the credentials of our new editor, and explains what the change will mean to you.

PROBLEM: TIME SPENT EDITING AND PROOFREADING

At September's staff meeting, many technical staff members noted the excessive time spent editing and proofreading. For example, some of you said that this final stage of writing takes from 15 to 30 percent of the billable time on an average report. Most important, editing often ends up being done by project managers—the employees with the highest billable time.

Despite these editing efforts, many errors still show up in documents that go out the door. Last month I asked a professional association, the Engineers Professional Society (EPS), to evaluate M-Global-Boston documents for editorial correctness. (EPS performs this service for members on a confidential basis.) The resulting report showed that our final reports and proposals need considerable editing work. Given your comments at September's meeting and the results of the EPS peer review, I began searching for a solution.

SOLUTION: IN-HOUSE EDITOR

To come to grips with this editing problem, the office just hired Ron Perez, an experienced technical editor. He'll start work January 3. For the last six years, Ron has worked as an editor at Jones Technical Services, a Toronto firm that does work similar to ours. Before that he completed a master's degree in technical writing at

Sage University in Buffalo.

At next week's staff meeting, we'll discuss the best way to use Ron's skills to help us out. For now, he will be getting to know our work by reviewing recent reports and proposals. Also, the attached list of possible activities can serve as a springboard for our discussion.

CONCLUSION

By working together with Ron, we'll be able to improve the editorial quality of our documents, free up more of our time for technical tasks, and save the client and ourselves some money.

I look forward to meeting with you next week to discuss the best use of Ron's services.

Enclosure

Copy: Ron Perez



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POSSIBLE ACTIVITIES FOR IN-HOUSE EDITOR

1. Reviewing reports at all levels of production
2. Helping coordinate the writing of proposals
3. Preparing a format manual for the word-processing operations and secretaries
4. Preparing a report/proposal guide for the technical staff
5. Teaching luncheon sessions on editing
6. Teaching writing seminars for the technical staff
7. Working with the graphics department to improve the page design of our documents
8. Helping write and edit public-relations copy for the company
9. Visiting other offices to help produce consistency in the editing of documents throughout the company

■ **Model 6-2** ■ continued

From: "James Thuvenot" jthuvenot@rbirdarc.com
To: "Evelyn Dame" edame@m-global.com
Date: 3/14/2012 8:14 AM
Subject: RE: Riverview Shopping Center Project

Evelyn,

Thanks for the information. I just heard about the construction on the radio this morning and wondered if it would cause us problems.

So far, everything looks like it's going well.

Thanks for your good work.

Jim

James Thuvenot
Redbird Architects
335 River Ave.
Columbia, Illinois 62236

>Jim,

>We've just been informed that construction on the JB Bridge will start next
>month. We are adjusting our work schedule so that most of the material and
>equipment will be delivered to the Columbia worksite before the bridge
>construction begins.

>Although we may run into a few problems, we don't expect
>the bridge construction to delay the completion of the project by more than 2 or
>3 weeks.
>
>Please let me know if you have any questions or concerns.

>Evelyn Dame
>Project Manager
>M-Global St. Louis



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12 Post Street
Houston Texas 77000
713.555.9781

July 23, 2012

The Reverend Mr John C Davidson
Maxwell Street Church
Canyon Valley Texas 79195

Dear Reverend Davidson:

Thanks for your letter asking to reschedule the church project from mid-August to another, more convenient time. Yes, we'll be able to do the project on one of two possible dates in September, as explained below.

As you know, M-Global originally planned to fit your foundation investigation between two other projects planned for the Canyon Valley area. In making every effort to lessen church costs, we would be saving money by having a crew already on-site in your area—rather than having to charge you mobilization costs to and from Canyon Valley.

As it happens, we have just agreed to perform another large project in the Canyon Valley area beginning on September 18. We would be glad to schedule your project either before or after that job. Specifically, we could be at the church site for our one-day field investigation on either September 17 or September 25, whichever date you prefer.

Please call me by September 2 to let me know your scheduling preference for the project. In the meantime, have a productive and enjoyable conference at the church next month.

Sincerely,

Nancy Slade

Nancy Slade, P.E.
Project Manager

NS/mh
File #34678



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Mentions letter that prompted this response. Gives good news immediately.

Reminds reader of rationale for original schedule—cost savings.

Offers two options—both save the church money.

Shows M-Global's flexibility.

Makes clear what should happen next.

12 Post Street
Houston Texas 77000
713.555.1381

July 23, 2012

The Reverend Mr John C Davidson
Maxwell Street Church
Canyon Valley Texas 79195

Dear Reverend Davidson:

Provides “bridge” and compliments Davidson on conference.

Reminds him about original agreement—in tactful manner.

Phrases negative message as positively as possible, giving rationale for necessary change.

Makes it clear what will happen next. Ends on positive note.

- Thanks for your letter asking to reschedule the foundation project at your church from mid-August to late August because of the regional conference. I am sure you are proud that Maxwell was chosen as the conference site.
- One reason for our original schedule, as you may recall, was to save the travel costs for a project crew going back and forth between Houston and Canyon Valley. Because M-Global has several other jobs in the area, we had planned not to charge you for travel.
- We can reschedule the project, as you request, to a more convenient date in late August, but the change will increase project costs from \$1,500 to \$1,800 to cover travel. At this point, we just don't have any other projects scheduled in your area in late August that would help defray the additional expenses. Given our low profit margin on such jobs, that additional \$300 would make the difference between our firm making or losing money on the foundation investigation at your church.
- I'll call you next week, Reverend Davidson, to select a new date that would be most suitable. M-Global welcomes its association with the Maxwell Street Church and looks forward to a successful project in late August.

Sincerely,

Nancy Slade, P.E.
Project Manager

NS/mh
File #34678



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345 Underwood Street
Belforth California 90706
713.555.9781

April 2, 2012

Faraday Supply Company
34 State Street
San Francisco CA 94987

ORDER FOR FIELD TRANSITS

Yesterday I called Ms. Gayle Nichols to ask what transits you had in current inventory. Having considered what you have in stock, I wish to order those listed below.

Provides bridge to previous contact.
States purpose clearly.

Please send us these items:

1. One Jordan #456 Transit, with special field case
2. One Smith-Beasley #101FR, with special field case
3. One Riggins #6NMG, without special field case

Gives exact information needed by reader.

Note that we *do* want the special field cases with the Jordan and Smith-Beasley units but do *not* want the case with the Riggins unit.

Emphasizes important details about the order.

Please send the units and the bill to my attention. As always, we appreciate doing business with Faraday.

States exactly what should happen next.

Farah Linkletter

Farah Linkletter
Supply Assistant

gh



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MEMO

DATE: August 1, 2012
 TO: All Employees
 FROM: Gini Preston, Director of Copy Services
 SUBJECT: Copy Center Changes

Gives brief purpose statement and overview of contents.

With the purchase of two new copiers and a folder, the Copy Center is able to expand its services. At the same time, we have had to reduce the paper stock that we keep on hand because of space limitations. This memo highlights the services and products now available at the Copy Center.

Emphasizes need for special handling of requests for special paper.

- Color copies:** With our new equipment, color copies do not require additional time to process. However, because color copies are expensive, please limit your use of them. If you have a document that includes both color and black-and-white pages, submit them as separate jobs so that the color copier is used only for color copies.
- Special stock:** The Copy Center now stocks only two colors of paper in addition to white paper: blue and goldenrod. Cover stock is available only in white and blue. We continue to stock transparencies. Although we are no longer stocking other kinds of paper, we are still able to meet requests for most special stock:

- **Stocks available with 24-hour notice:** We can purchase 11-by-17-inch paper, cover stock and regular stock in a variety of colors, and specialized paper such as certificates and NCR (carbonless copy) paper. Departments will be charged for all special stock.
- **Coated stock:** Our copiers do not produce quality copies on coated stock (paper or cover stock with a slick coating, like magazine paper). We will continue to outsource jobs that use coated stock to KDH Printing. Please allow at least one week for jobs that use coated stock.

Makes it clear when changes will take place.

- Bindery services:** With our new equipment, collating and stapling of large jobs no longer require additional time. The following bindery services are also available in-house but may require additional time:
 - Perfect and spiral binding
 - Folding
 - Cutting and hole punching. (The paper cutter and paper drill can be used on up to 500 sheets at a time.)

Invites contact.

The new equipment will be available August 15. Your efforts to make the most efficient use of Copy Center resources help improve the quality of your documents and the productivity of the company.

Feel free to call me at ext. 567 if you have any questions.



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211 River Front Circle
St Louis Missouri 63103
314.555.8175

August 21, 2012

Mr James Swartz Safety Director
Jessup County School System
1111 Clay Street
Smiley MO 64607

NEW ASBESTOS ABATEMENT SERVICE NOW AVAILABLE

We enjoyed working with you last year, James, to update your entire fire alarm system. Given the current concern in the country about another safety issue, asbestos, we wanted you to know that our staff now does abatement work.

As you know, many of the state's school systems were constructed during years when asbestos was used as a primary insulator. No one knew then, of course, that the material can cause illness and even premature death for those who work in buildings where asbestos was used in construction. Now we know that just a small portion of asbestos produces a major health hazard.

Fortunately, there's a way to tell whether you have a problem: the asbestos survey. This procedure, done by our certified asbestos abatement professionals, results in a report that tells whether your buildings are affected. And if we find asbestos, we can remove it for you.

Jessup showed real foresight in modernizing its alarm system last year, James. Your desire for a thorough job on that project was matched, as you know, by the approach we take to our business. Now we'd like to help give you the peace of mind that will come from knowing that either (1) there is no asbestos problem in your 35 structures or (2) you have removed the material.

The enclosed brochure outlines our asbestos services. I'll call you in a few days to see whether M-Global can help you out.

Barbara Feinstein

Barbara H. Feinstein
Certified Industrial Hygienist

BHF/sg



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Simplified style eliminates salutation and closing.

Uses subject line to gain attention.

Refers to previous successful work.

Leads in naturally to letter's subject (asbestos abatement).

Comforts reader by showing how problem can be discovered and solved.

Reinforces relationship between writer's and reader's organizations.

Refers briefly to enclosures; stays in control by mentioning follow-up phone call.

MEMO

DATE: May 2, 2012
 TO: All Employees of Cleveland Office
 FROM: Timothy Fu, Personnel Director TF
 SUBJECT: New Cost Containment Measure for Health Care

Puts this memo in context of all benefits changes.

Emphasizes point of agreement—concerns about costs. Describes problem that led to need for change.

Gives overview of program.

Uses list to highlight three main elements of PAC.

Uses heading to focus on main concern of reader—quality of care.

Indicates that similar programs have worked well elsewhere.

→ The next fiscal year will bring several changes in the company's fringe benefit plan. Later this month, you'll receive a complete report on all adjustments to go into effect July 1. For now, this memo will outline one major change in health care. Specifically, M-Global will adopt a cost containment program called PAC—intended to help you and the company get more health care for the dollar.

WHAT IS PAC AND HOW DOES IT WORK?

Health costs have risen dramatically in the last 10 years. The immediate effect on M-Global has been major increases in insurance premiums. Both you and the company have shared this burden. This year M-Global will fight this inflationary trend by introducing a new cost containment program called PAC—Pre-Admission Check.

Started by Healthco, our company medical supplier, PAC changes the procedure by which you and your dependents will be recommended for hospitalization. Except in emergencies, you or your physician will need to call the PAC hotline before admission to the hospital. The PAC medical staff will do the following:

1. Review the length of stay recommended by your physician, to make sure it conforms to general practice
2. Request a second opinion if the PAC staff believes that such an opinion is warranted
3. Approve final plans for hospitalization

If your physician recommends that you stay in the hospital beyond the time originally planned, he or she will call PAC for authorization.

WILL PAC AFFECT THE LEVEL OR QUALITY OF HEALTH CARE?

No. PAC will in no way restrict your health care or increase your personal costs. Quite the contrary, it may reduce total costs considerably, leading to a stabilization of the employee contributions to premiums next year. The goal is to make sure physicians give careful scrutiny to the length of hospital stays, staying within the norms associated with a particular illness unless there is good reason to do otherwise.

Programs like PAC have worked well for many other firms around the country; there is a track record of lowering costs and working efficiently with physicians and hospitals. Also, you will be glad to know that Healthco has the firm support of its member physicians on this program.



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Leaves reader with clear sense of next step.

WHAT WILL HAPPEN NEXT?

As mentioned earlier, this change goes into effect with the beginning of the new fiscal year on July 1. Soon you will receive a report about this and other changes in benefits. If you have any questions before that time, please call the Corporate Benefits Department at ext. 678.

MEMO TO: all employees
 MAY 2, 2012
 Page 2

TO: Lab, Marketing, and Administrative Staff in U.S. Offices
FROM: Janice Simmons, Benefits Manager
SUBJECT: Training Funds for Fiscal Year 2012
DATE: January 2, 2012

Happy New Year to all of you! I hope you had a good break. I'm writing to announce some guidelines for approved training for the next 12 months—including an increased reimbursement. Please read on to see how these changes affect all lab, marketing, and administrative staff.

Begins with casual, friendly tone.

1. Lab Staff

Maximum Reimbursement: \$3,000 (up from \$2,000) Approval Process: Discuss with your manager 21 days before trip Trip Purpose: To improve lab procedures

2. Marketing Staff

Maximum Reimbursement: \$4,000 (up from \$3,500) Approval Process: Discuss with your manager 21 days before trip Trip Purpose: To learn new sales techniques

3. Administrative Staff

Maximum Reimbursement: \$4,500 (up from \$4,000) Approval Process: Discuss with your manager 21 days before trip Trip Purpose: To improve productivity of office procedures

In the past most employees have failed to make use of their maximum training allotment. I encourage all of you to seek training opportunities that fit the guidelines listed above.

Please note the required 21-day lead time in the approval process!

Supplies details about topics mentioned in first paragraph.

Uses list and parallel structure for easy reading.

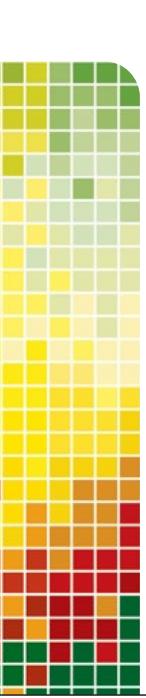
Uses short paragraphs.

Concludes with reminder about an important part of the procedure.

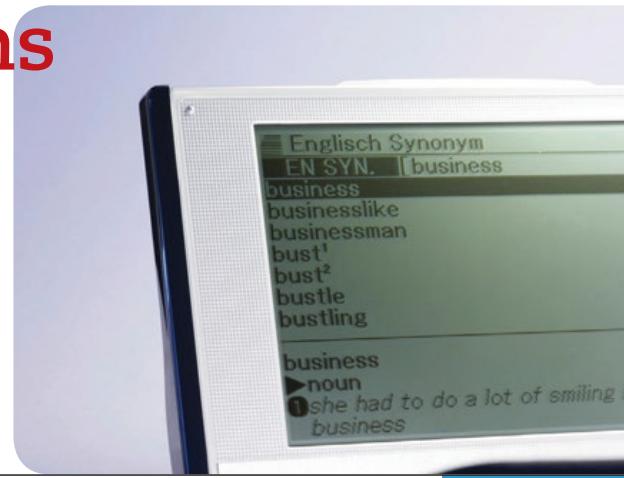
Encourages them to contact her if there are questions.

Janice

■ Model 6-10 ■ Neutral e-mail about changes in procedure



Chapter | 7 | Definitions and Descriptions



>>> Chapter Objectives

In this chapter, students will:

- Learn why definitions and descriptions are important in technical documents
- Learn the similarities and differences between definitions and descriptions
- Learn guidelines for informal and formal definitions
- Learn guidelines for expanded definitions
- Learn the ABC Format for expanded definitions
- Learn guidelines for descriptions
- Learn the ABC format for descriptions
- Read and analyze model definitions and descriptions

Recently, M-Global has decided to change its insurance provider, and Karrie Camp, Vice President for Human Resources, has decided to take this opportunity to revise the packet of information about benefits that is given to all employees in the United States. Although employees will continue to receive the detailed information about benefits from the insurance provider, Karrie knows that employees have asked for a quick, easy-to-read overview of the benefits available to them. She decides to create a set of information sheets that both define and describe each of the

benefits in the new benefits package. (See Model 7-2 on page 212 for one of the sheets Karrie created for the packet.)

Definitions, descriptions, process explanations, and instructions are the types of writing that people often think of when they think of technical communication. This chapter and Chapter 8 explain these four elements of technical communication. Definitions and descriptions are closely related. Process explanations and instructions are also closely related, with the difference being how the reader will use the documents.

>>> Definitions Versus Descriptions

Definitions and descriptions can appear in any part of a document, from the introduction to the appendix. They may also be created as stand-alone documents like the Models 7-1, 7-2, 7-3, and 7-4 on pages 208–214 at the end of this chapter. During your career, you will use technical terms known only to those in your profession. As a civil engineer, for example, you would know that a *triaxial compression test* helps determine the strength of soil samples. As a documentation specialist, you would know that *single-sourcing* allows the creation of multiple documents from the same original text. When writing to readers who are unfamiliar with these fields, however, you must define these technical terms. You may also have to describe these technical objects, and the distinction between *definition* and *description* can sometimes be a bit confusing. In fact, you can consider a *description* a special type of definition that focuses on parts, functions, or other features. It emphasizes *physical* details.

Descriptions often open with a sentence definition.

Technical Definitions at M-Global

Good definitions support findings, conclusions, and recommendations throughout your document. They also keep readers interested. Conversely, the most organized and well-written report will be ignored if it includes terms that readers do not grasp. “Define your terms!” is the frustrated exclamation of many a reader. For your readers’ sake, then, you must be asking questions like these about definitions:

- How often should they be used?
- Where should they be placed?
- What format should they take?
- How much information is enough, and how much is too much?

To answer these questions, the following sections give guidelines for definitions and supply an annotated example. First, here are some typical contexts for definitions within M-Global, Inc.:

- **Construction:** As an M-Global technician helping to build a wind farm, you often use the term *turbine* in speech and writing. Obviously, your co-workers and clients understand the term. Now, however, you are using it in a brochure to be sent to residents in areas where wind farms are being built. For this general audience, you must define *wind turbine*, and you decide to accompany the definition with an illustration so that the nontechnical audience can visualize how wind turbines work.
- **Human resources:** As a health and benefits specialist in M-Global's corporate office, you have been asked to introduce employees to a new organizationwide campaign to encourage employees to adopt healthy habits. Your first project is a memorandum to all employees encouraging them to take advantage of free cholesterol screening being offered at all M-Global branches. Your memo must provide clear definitions of terms like *good cholesterol* and *bad cholesterol*.
- **Forestry:** As a forestry and agriculture expert with M-Global's Denver office, you have coordinated a major study for the state of Idaho. Your job has been to recommend ways that a major forested region can still be used for timber with little or no damage to the region's ecological balance. Although the report will go first to technical experts in Idaho's Department of Natural Resources, you have been told that it will also be made available to the public. Therefore you have decided to include a glossary that defines terms such as *silviculture*, *biodiversity*, *watershed management*, and *fuel reduction*.

In each case, you are including definitions to help readers with the least familiarity with the technical field to understand the topic about which you are writing. When in doubt, insert definitions! Readers can always skip over ones they do not need.

Descriptions at M-Global

Descriptions are similar to definitions. In fact, they often open with a short definition, but they also emphasize the physical details of the object being described. Like definitions, descriptions often appear as supporting information in the document body or in appendixes. Following are some typical contexts for descriptions within M-Global, Inc.:

- **Site recommendation:** M-Global's San Francisco office has been hired to recommend possible locations for a new swimming and surfing park in northern California. Written to a county commission (five laypersons who will make the decision), your recommendation report gives three possible locations and the criteria for selecting them. The report includes appendixes that give brief physical descriptions of the sites. Specifically, the appendixes to the report describe (1) surface features, (2) current structures, (3) types of soils gathered from the surface, (4) water quality, and (5) aesthetic features, such as quality of the ocean views.

- **Sonar equipment:** A potential M-Global client, Rebecca Stern, calls you in your capacity as a geologist at M-Global’s Baltimore office. She wants information about the kind of sonar equipment M-Global uses to map geologic features on the seafloor. This client has a strong technical background, so you write a letter with a detailed technical description of the M-Global system. The body of the letter describes the locations and functions of (1) the seismic source (a device that sends the sound waves and is towed behind a boat) and (2) the receiver (a unit that receives the signals and is also towed behind the boat).
- **Site analysis:** M-Global’s Cleveland office was hired to examine asbestos contamination in a large high school built in 1949. As a member of the investigating team, you found asbestos throughout the basement in old pipe coverings. Your final report to the school board provides conclusions about the level of contamination and recommendations for removal. An appendix gives a detailed technical description of the entire basement, including a map with a layout of the plumbing system.
- **Office equipment:** As the purchasing officer at M-Global’s St. Paul office, you have been asked to provide information about printers and plotters that are used in the office. You gather the user’s guides and manuals for the equipment and attach them to a cover memo that explains how often each piece of equipment is used and how well each piece of equipment has performed. Model 7–3 on pages 211–212 includes pages from the user’s guide for the large document printer, which is used for a wide variety of documents.

>> Guidelines for Writing Definitions

Definitions are essential for terms that users may be unfamiliar with, and they are also important for terms that are taken for granted. If you are using key terms and concepts that differ from one context to another, or that may be open to interpretation, definitions establish a common language for the writer and reader. The importance of definitions can be seen every day. How do you know if the produce you buy at the farmer’s market is really organic? If an application deadline is “two weeks before the end of the semester,” what is the end of the semester? You will also need to define abstract terms in your workplace writing: What is a “strategic goal”? How do you know if your project is “user-centered”? Readers may each have their own definitions of terms and concepts like these, so they should be clearly defined to establish a foundation that helps your reader understand your documents.

Once you know definitions are needed, you must decide on their format and location. Again, consider your readers. How much information do they need? Where is this information best placed within the document? To answer these and other questions, we offer five working guidelines for writing good definitions.

>> Definition Guideline 1: Keep It Simple

Occasionally, the sole purpose of a report is to define a term; most often, however, a definition just clarifies a term in a document with a larger purpose. Your definitions should be as simple and unobtrusive as possible. Always present the simplest possible definition, with only that level of detail needed by the reader.



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For example, in writing about your land survey of a client's farm, you might briefly define a *transit* as "the instrument used by land surveyors to measure horizontal and vertical angles." The report's main purpose is to present property lines and total acreage, not to give a lesson in surveying, so this sentence definition is adequate. Choose from the following three main formats (listed from least to most complex) in deciding the form and length of definitions:

- **Informal definition:** A word or brief phrase, often in parentheses, that gives only a synonym or other minimal information about the term.
- **Formal definition:** A full sentence that distinguishes the term from other similar terms and includes these three parts: the term itself, a class to which the term belongs, and distinguishing features of the term.
- **Expanded definition:** A lengthy explanation that begins with a formal definition and is developed into several paragraphs or more.

Guidelines 2 through 5 show you when to use these three options and where to put them in your document.

>> Definition Guideline 2: Use Informal Definitions for Simple Terms Most Readers Understand

Informal definitions appear right after the terms being defined, usually as short phrases or one-word synonyms in parentheses. They give just enough information to keep the reader moving quickly. Therefore, they are best used with simple terms that can be defined adequately without much detail.

One situation in which an informal definition would apply is as follows: M-Global has been hired to examine a possible shopping-mall site. The buyers, a group of physicians, want a list of previous owners and an opinion about the suitability of the site. As legal assistant at M-Global, you must assemble a list of owners for your part of the team-written report. You want your report to agree with court records, so you decide to include real-estate jargon such as *grantor* and *grantee*. For your nontechnical readers, you include parenthetical definitions such as these:

All *grantors* (persons from whom the property was obtained) and *grantees* (persons who purchased the property) are listed on the following chart, by year of ownership.

This same M-Global report has a section describing creosote pollution found at the site. The chemist writing the contamination section also uses an informal definition for the readers' benefit:

At the southwest corner of the mall site, we found 16 barrels of *creosote* (a coal tar derivative) buried under about three feet of sand.

The readers do not need a fancy chemical explanation of creosote. They need only enough information to keep them from getting lost in the terminology. Informal definitions perform this task nicely.

>> Definition Guideline 3: Use Formal Definitions for More Complex Terms

A formal definition appears in the form of a sentence that lists (1) the *term* to be defined, (2) the *class* to which it belongs, and (3) the *features* that distinguish it from other terms in the same class. Use the formal definition when your reader needs more background than an informal definition provides. Formal definitions include three parts:

- First, they identify the term being defined.
- Second, they place the term in a *class* (group) of similar items.
- Third, they list *features* (characteristics) of the term that separate it from all others in that same class.

In the list of sample definitions that follows, note that some terms are tangible (like *pumper*) and others are intangible (like *arrest*). Yet you can define them all by first choosing a class and then selecting features that distinguish the term from others in the same class.

<i>Term</i>	<i>Class</i>	<i>Features</i>
An <i>arrest</i> is	restraint of persons	that deprives them of freedom of movement and binds them to the will and control of the arresting officer.
A <i>financial statement</i> is	a historical report about a business	prepared by an accountant to provide information useful in making economic decisions, particularly for owners and creditors.
A <i>triaxial compression test</i> is	a soils lab test	that determines the amount of force needed to cause a shear failure in a soil sample.
A <i>pumper</i> is	a firefighting apparatus	used to provide adequate pressure to propel streams of water toward a fire.

This list demonstrates three important points about formal definitions. First, the definition itself must not contain terms that are confusing to your readers. The definition of *triaxial compression test*, for example, assumes readers understand the term *shear failure* that is used to describe features. If this assumption is incorrect, then the *shear failure* must be defined. Second, formal definitions may be so long that they create a major distraction in the text. (See Guideline 5 for alternative locations.) Third, the class must be narrow enough so that you do not have to list too many distinguishing features.

>> Definition Guideline 4: Use the ABC Format for Expanded Definitions

Sometimes a parenthetical phrase or formal sentence definition is not enough. If readers need more information, use an expanded definition. An expanded definition can provide background information and details that help readers understand important terms. Use the ABC format to organize long definitions.

ABC Format: Expanded Definitions

- **ABSTRACT:** Overview at the beginning and information about how you will focus the definition
 - Usually includes a formal sentence definition
- **BODY:** Supporting information using headings and lists as helpful format devices for the reader
- **CONCLUSION:** Reminder to the reader of the definition's relevance to the whole document, or an explanation of the importance of the term

Following are seven ways to expand a definition, along with brief examples:

1. **Background or history of term**—Expand the definition of *triaxial compression test* by giving a dictionary definition of *triaxial* and a brief history of the origin of the test.
2. **Applications**—Expand the definition of *financial statement* to include a description of the use of such a statement by a company about to purchase controlling interest in another.
3. **List of parts**—Expand the definition of *pumper* by listing the parts of the device, such as the compressor, the hose compartment, and the water tank.
4. **Graphics**—Expand the description of the *triaxial compression test* with an illustration showing the laboratory test apparatus.
5. **Comparison/contrast**—Expand the definition of a term like *management by objectives* (a technique for motivating and assessing the performance of employees) by pointing out similarities and differences between it and other management techniques.
6. **Basic principle**—Expand the definition of *ohm* (a unit of electrical resistance equal to that of a conductor in which a current of 1 ampere is produced by a potential of 1 volt across its terminals) by explaining the principle of Ohm's law (that for any circuit, the electrical current is directly proportional to the voltage and inversely proportional to the resistance).
7. **Illustration**—Expand the definition of CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing—computerized techniques to automate the design and manufacture of products) by giving examples of how CAD/CAM is changing methods of manufacturing many items, from blue jeans to airplanes.

Obviously, long definitions might seem unwieldy within the text of a report, or even within a footnote. For this reason, they often appear in appendixes, as noted in the next guideline. Readers who want additional information can seek them out, whereas other readers are not distracted by digressions in the text.

>>Definition Guideline 5: Choose the Right Location for Your Definition

Short definitions are likely to be in the main text; long ones are often relegated to footnotes or appendixes. However, length is not the main consideration. Think first about the *importance* of the definition to your reader. If you know that decision makers reading your report need the definition, then place it in the text—even if it is fairly lengthy. If the definition provides only supplementary information, then it can go elsewhere. You have these five choices for locating a definition:

1. **In the same sentence as the term**, as in an informal, parenthetical definition
2. **In a separate sentence**, as in a formal sentence definition occurring right after a term is mentioned

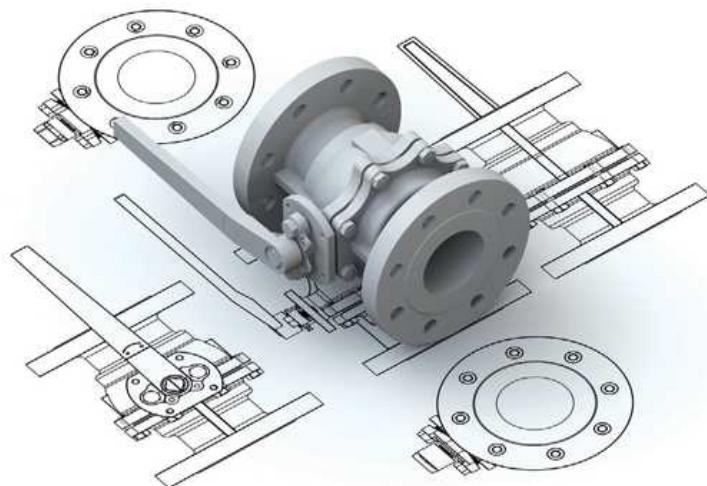
3. **In a footnote**, as in a formal or expanded definition listed at the bottom of the page on which the term is first mentioned
4. **In a glossary** at the beginning or end of the document
5. **In an appendix at the end of the document**, for example, used for an expanded definition that would otherwise clutter the text of the document

Example of an Expanded Definition

Sometimes your readers may need a longer and more expanded definition. Expanded definitions are especially useful in reports from technical experts to nontechnical readers. M-Global's report writers, for example, must often explain environmental, structural, or geologic problems to concerned citizens or nontechnical decision makers. Model 7–1 on pages 208–209 is an example of an expanded definition. The definition begins with a note that this is one possible definition of cloud computing, but that there are other models and definitions of the term. It identifies the characteristics that separate cloud computing from similar technologies, and it explains where cloud computing can be found. The definition closes with information about the importance of the term.

Definition Guidelines

- Keep it simple
- Use informal definitions for simple terms most readers understand
- Use formal definitions for more complex terms
- Use the ABC format for expanded definitions
- Choose the right location for your definition



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>> Guidelines for Writing Descriptions

Like definitions, descriptions are important for establishing a common foundation to help readers understand terms and concepts. Descriptions may be included in longer documents, but they often appear alone. A catalog is a collection of product descriptions. These descriptions may be short, as in a consumer seed or clothing catalog, or they may be fairly lengthy, as in a catalog for expensive construction equipment. Technical descriptions are common in the medical field, as well. You may have used the Internet to find a description of a medical condition, or to find out about the effects and side effects of a prescription drug. Every day, we read descriptions that help us understand advances in science and technology.

When your readers benefit from detailed information about parts, functions, or other elements of objects and places, you should write a description. These five guidelines help you write accurate, detailed descriptions. Follow them carefully as you prepare assignments in this class and on the job.

>> Description Guideline 1: Remember Your Readers' Needs

The level of detail in a technical description depends on the purpose a description serves. Give readers precisely what they need—but no more. In the study of locations for a new swimming and surfing park in Model 7–4 on page 213–214, the commissioners do not want a detailed description of soil samples taken from borings. That level of detail is

reserved for a few sites selected later for further study. Instead, they want only surface descriptions. Always know just how much detail will get the job done.

>> Description Guideline 2: Be Accurate and Objective

More than anything else, readers expect accuracy in descriptions. Pay close attention to details. (As noted previously, the *degree* of detail in a description depends on the *purpose* of the document.) In the asbestos analysis example on page 195, you should describe every possible location of asbestos in the school basement. Because the description becomes the basis for a cost proposal to remove the material, accuracy is crucial.

Along with accuracy should come *objectivity*. This term is more difficult to pin down, however. Some writers assume that an objective description leaves out all opinion. This is not the case. Instead, an objective description may very well include opinions that have these features:

- They are based on your professional background and experience.
- They can be supported by published research.
- They can be supported by details from the site or object being described.

For example, your description of the basement pipes mentioned in the site analysis example might include a statement such as “Because there is asbestos wrapping on the exposed pipes above the boiler, my experience suggests that asbestos wrapping probably also exists around the pipes above the ceiling—in areas that we were not able to view.” This opinion does not reduce the objectivity of your description; it is simply a logical conclusion based on your experience.

ABC Format: Descriptions

- **ABSTRACT:** Overview at the beginning and information about how you will focus the description
 - Often includes a formal sentence definition
- **BODY:** Supporting information using headings and lists as helpful format devices for the reader
- **CONCLUSION:** Placement of the description in the context of the whole document, or explanation of the importance of understanding the object or location

>> Description Guideline 3: Use the ABC Format for Descriptions

Like other patterns discussed in this chapter, technical descriptions usually make up only parts of documents. Nevertheless, they must have an organization plan that permits them to be read as self-contained, stand-alone sections. Indeed, a description may be excerpted later for separate use. Use the ABC format as a basic organization plan.

Following are three common ways to describe physical objects and locations. In all three cases, a description should move from general to specific—that is, you begin with a view of the entire object, and in the rest of the description, you focus on specifics. Headings may be used, depending on the format of the larger document.

1. **Description of the parts:** For many physical objects, like sonar equipment, basement floor, and printers in Model 7–4 on page 213–214, you simply organize the description by moving from part to part.
2. **Description of the functions:** Often the most appropriate overall plan relies on how things work, not on how they look. In the sonar example, the reader was more interested in the way that the sender and receiver worked together to provide a map

of the seafloor. This function-oriented description should include only a brief description of the parts. For more on explanations of processes, see Chapter 8.

3. **Description of the sequence:** If your description involves events, as in an investigator's description of an equipment failure at a work site, you can organize ideas around the major occurrences, in their correct sequence. As in any list, it is best to break up a series of many items into just a few groups. It is much easier for readers to comprehend four groups of 5 events each than a single list of 20 events.

>> Description Guideline 4: Use “Helpers” Like Graphics and Analogies

The words of a technical description must come alive. Because your readers may be unfamiliar with the item, you must search for ways to connect with their experience and with their senses. Two effective tools are graphics and analogies.

Graphics respond to the desire of most readers to see pictures along with words. As readers move through your part-by-part or functional breakdown of a mechanism, they can refer to your graphic aid for assistance. The illustration helps you, too, of course, in that you need not be as detailed in describing the locations and dimensions of parts when you know the reader has easy access to a visual. Note how the diagrams in Models 7–3 and 7–4 on pages 211–214 give meaning to the technical details in the verbal descriptions.

Analogies, like illustrations, give readers a convenient handle for understanding your description. Put simply, an analogy allows you to describe something unknown or uncommon in terms of something that is known or more common. A brief analogy can sometimes save you hundreds of words of technical description. This paragraph description contains three analogies:

M-Global, Inc., is equipped to help clean up oil spills with its patented product, SeaClean. This highly absorbent chemical is spread over the entire spill by a helicopter that makes passes over the spill, much as a lawnmower covers the complete surface area of a lawn. When the chemical contacts the oil, it acts like sawdust in contact with oil on a garage floor—that is, the oil is immediately absorbed into the chemical and physically transformed into a product that is easily collected. Then our nearby ship can collect the product, using a machine that operates much like a vacuum cleaner. This machine sucks the SeaClean (now full of oil) off the surface of the water and into a sealed container in the ship's hold.

Notice that the description refers to common machines (a lawnmower and a vacuum cleaner) and to a common material (sawdust). These analogies work because of the similarities that can be emphasized—the movement of the lawnmower, the purpose of the vacuum cleaner, and the absorptive qualities of the sawdust.

>> Description Guideline 5: Give Your Description the “Visualizing Test”

After completing a description, test its effectiveness by reading it to someone unfamiliar with the material—someone with about the same level of knowledge as your intended reader. If this person can draw a rough sketch of the object or events while listening to your description, then you have done a good job. If not, ask your listener for sugges-



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Description Guidelines

- Remember your readers' needs
- Be accurate and objective
- Use the ABC format for descriptions
- Use "helpers" like graphics and analogies
- Give your description the "visualizing test"

tions to improve the description. If you are too close to the subject yourself, sometimes an outside point of view will help refine your technical description.

Example of a Description

Fahdi Ahmad, Director of Procurement at M-Global's office in Saudi Arabia, is changing his buying procedures. He has decided to purchase some basic lab supplies from companies in nearby developing nations rather than from firms in industrialized countries. For one thing, he thinks this move may save some money. For another, he believes it will help the company get more projects from these nations, for M-Global will become known as a firm that pumps back some of its profits into the local economies.

As a first step in this process, Fahdi is providing potential suppliers with descriptions of some lab equipment used at M-Global, such as pH meters, spectrometers, hydrometers, and drying ovens. Model 7–4 on pages 213–214 presents a moderately detailed description of one such piece of equipment—a soil grinder. Fahdi selected a soil grinder model that is being successfully used at many M-Global labs in the United States. The Model 7–4 description can serve as a starting point for suppliers. However, M-Global and the suppliers realize that soil grinders will have slightly different features, depending on the manufacturer.

>>> Chapter Summary

- Definitions and descriptions help establish a common language, so that readers and writers understand terms and concepts in the same way.
- Definitions generally focus on terms and concepts.
- Descriptions generally focus on objects and locations. They often include formal definitions and may even be considered a special type of definition.
- Definitions can be classified as informal, formal, or expanded.
- Definitions should be as simple as they can be and still provide all of the information necessary for readers.
- The ABC format can help writers develop expanded definitions.
- Short definitions are placed in the body of documents, but longer definitions may be placed in notes or in glossaries.
- Descriptions should be only as complex as necessary to meet the needs of readers.
- Descriptions should be accurate and objective.
- The ABC format can help writers organize descriptions.
- Graphics and analogies can help readers understand descriptions.

>>> Learning Portfolio

Communication Challenge Biofuels Brainstorm: Describing New Technologies

Sylvia Barnard, manager of the Denver branch of M-Global, has a special interest in the energy industry. As a geologist working in oil and gas exploration, she joined M-Global to contribute to its construction projects in the oil and gas industry, such as oil fields and refineries. Sylvia wants to see M-Global respond to changes in the energy industry by diversifying into work on biofuels projects. This case study explains her approach to the problem. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Research

As a first step in developing a proposal for Jim McDuff, Sylvia wants to learn more about the biofuels industry and biofuels technology. Although she has read about biofuels in newspapers and general news magazines, she knows that to propose that M-Global enter the field, she must have more specialized knowledge about what biofuels are. With a better understanding of the technology, she will be able to focus her proposal on the areas in which M-Global's experience in the oil and gas industry can be transferred to construction projects in the biofuels industry. After her research, she decides to focus on the following types of fuels:

- Biodiesel
- Bioalcohols
- Biogas
- Cellulosic biofuels

The Report

Before she writes her proposal, Sylvia decides to create a report that compares refineries and refinery construction needs for biofuels to the oil and gas refineries that M-Global has worked on in the past. The report will be primarily descriptive. It must define biofuels and describe the equipment and site construction needs of biofuels refineries.

Sylvia knows that M-Global has a history of looking to environmental issues for business opportunities. In the 1970s, the company (then McDuff, Inc.) began work in hazardous waste disposal. (See Model 1-1 on pages 25–34.) At the time, however, it was clear that there was a need for such services, and that the technology was rapidly

developing. Sylvia is concerned that her enthusiasm for biofuels may be premature. Although there are companies building biofuel refineries, many of them seem more focused on the environmental issues than on long-term profitability. Her research also suggests that the technology is in its early stages. She worries that it might be too early for M-Global to get into the biofuels industry, but she decides to write the report anyway.

Questions and Comments for Discussion

1. How can Sylvia use her knowledge of M-Global's history, especially Rob McDuff's interest in environmental issues, to make her report appealing to Jim McDuff? Should Sylvia let Jim know that she plans to follow this report with a proposal? If so, why and what should she tell him?
2. What must Jim McDuff understand about biofuels before he can make a decision about exploring the opportunity further? What illustrations might help him make his decision?
3. What terms must Sylvia define? What kinds of definitions should she write, and where should they be included in the report?
4. Should Sylvia include her concerns about the fact that the biofuels industry is in its early stages? If so, what should she say? Should she even send the report, or should she save it until the biofuels industry is better established?

Write About It

Sylvia has assigned you the task of writing a short description of biofuels that she can include in various documents related to her biofuels proposal. Write a one-page description of biofuels that could be used or adapted to a variety of documents related to the biofuels initiative at M-Global. You should define biofuels and describe them. You may decide to describe the different types of biofuels that Sylvia has decided to focus on (classification), or you may decide to compare them to oil and gas products (comparison/contrast). Use illustrations as appropriate. Include a list of references on a separate page.

Collaboration at Work Analyzing the Core

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use team time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Whereas some terms are easily defined, others, including abstract concepts, are quite challenging. This means that it is essential that abstract terms be clearly defined, because not all readers will understand the term the way that you do. This assignment asks your team to define the abstract concept of a college or university education.

Like other colleges and universities, your institution may require students to complete a core curriculum of required subjects. Some cores are virtually identical for students in all majors; others vary by major. Following is one example of a core curriculum:

1. **Essential skills (9 credits):** Includes two freshman composition courses, communication studies, and college algebra.
2. **Humanities/Fine arts (9 credits):** Includes courses such as literature surveys, art appreciation, music appreciation, and foreign language.

3. Science, mathematics, and technology (10–11 credits):

Includes laboratory and nonlab classes in fields such as physics, chemistry, computer science, and calculus.

4. Social sciences (12 credits):

Includes courses such as American history, world history, political science, and religion.

5. Western civilization (6 credits):

Includes Western civilization courses that combine history, philosophy, and literature.

6. Non-Western civilization (6 credits):

Includes courses in philosophy, history, religion, and literature of non-Western cultures.

Core curricula or general studies requirements like these suggest a definition of a college or university education. In this example, the required courses suggest that the university values developing intellectual curiosity and an understanding of communication, critical thinking, cultural awareness, and scientific reasoning.

Team Assignment

Examine the core curriculum at your institution and decide how it suggests what your school defines as a university education. Write an extended definition that could be used on your school's Web site in materials that your school sends to potential students to help identify its philosophy and goals for its students.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?

- Who are your readers and what will they want from your document?
- What method of organization is most useful?

Part 1: Short Assignments

1. Analysis: Definition

Using the guidelines in this chapter, discuss the relative effectiveness of the following short definitions. Speculate on the likely audience the definitions are addressing.

- a. **Afforestation**—the process of establishing trees on land that has lacked forest cover for a very long period of time or has never been forested
- b. **Carbon cycle**—the term used to describe the flow of carbon (in various forms such as carbon dioxide [CO₂], organic matter, and carbonates) through the atmosphere, ocean, terrestrial biosphere, and lithosphere
- c. **Feebates**—systems of progressive vehicle taxes on purchases of less efficient new vehicles and subsidies for more efficient new vehicles

- d. **Greenhouse gases**—gases including water vapor, CO₂, CH₄, nitrous oxide, and halocarbons that trap infrared heat, warming the air near the surface and in the lower levels of the atmosphere
- e. **Mitigation**—a human intervention to reduce the sources of or to enhance the sinks of greenhouse gases
- f. **Permafrost**—soils or rocks that remain below 0°C for at least two consecutive years
- g. **Temperate zones**—regions of the Earth's surface located above 30° latitude and below 66.5° latitude
- h. **Wet climates**—climates where the ratio of mean annual precipitation to potential evapotranspiration is greater than 1.0

Adapted from U.S. Climate Change Science Program. (2007). *The first state of the carbon cycle report (SOCCR): The North American carbon budget and implication for the global carbon cycle* (pp. 195–197). Asheville, NC: National Climate Data Center. Retrieved from <http://www.climatechange.gov/Library/sap/sap22/final-report>.

2. Analysis: Definition

Look up brownfields at <http://epa.gov/brownfields/overview/glossary.htm>. Next, search the Internet for other definitions of brownfields. What definitions do you find? How do they use the language of the “official” definition? Be prepared to discuss the reasons Web site sponsors might have for using the definitions that you found.

3. Analysis: Description

Read the description below of agile development. Identify the formal definition in the description. What other information is included in the description? Are there terms that you would like to see defined? Search for those terms and for *agile development* in your library’s database of periodicals. Compare the descriptions that you find to this one. This description was written in a magazine for technical communicators. Be prepared to discuss whether or not this description is appropriate for the audience.

4. Analysis: Description

Find three Web sites that describe organic food or organic farming. Look for sites sponsored by:

1. The U.S. Department of Agriculture
2. Large commercial food companies
3. Small local farms or co-ops

Compare how these sites describe organic food or organic farming. Why is a clear understanding of what makes food “organic” important to the organizations that sponsor the Web sites that you found? Compare your analysis to that of other students in the class.

5. Practice: Definition

Create formal sentence definitions of the following terms. Remember to include the class and distinguishing features:

- Automated teller machine (ATM)
- Digital video disc (DVD)
- Web site
- Job interview

6. Practice, M-Global Context: Definition

Write definitions of the following words for the glossary mentioned in the “Forestry” example in Model 7–4 on page 213–214.

- Silviculture
- Biodiversity
- Watershed management
- Fuel reduction

7. Practice, M-Global Context: Definition

As part of its petroleum refinery construction work, M-Global builds equipment for cracking. Write a one-paragraph

The Agile Development Process

Agile software development is a conceptual framework for undertaking software engineering projects. A number of agile methods exist, including extreme programming and feature-driven development, but most agile methods seek to minimize risk to developing software iterations, each typically lasting one to four weeks. Each iteration is a miniature software project, including all the tasks necessary to release new functionality in small increments.

The principles of agile development are spelled out in the Agile Manifesto, which can be found at www.agilealliance.org. According to the manifesto, practitioners of agile methods value:

- individuals and interactions over processes and tools
- working software over comprehensive documentation
- customer collaboration over contract negotiation
- quick response to change over the following of a static plan

definition of cracking, in the context of oil refining, that could be used in all M-Global documents about the subject. Include a one-sentence formal definition.

8. Practice: Description

Write a description of a piece of equipment or furniture located in your classroom or brought to class by your instructor—for example, a classroom chair, an overhead projector, a three-hole punch, a mechanical pencil, or a computer mouse. Write the description for a reader who is unfamiliar with the item.

9. Practice, M-Global Context: Description

As part of its nuclear power plant construction work, M-Global builds cooling pools for nuclear waste. Write a one-paragraph description of a nuclear waste cooling pool. Your description should include a formal sentence definition and information about the construction of cooling pools. Emphasize the role of the cooling pool in keeping nuclear waste safe.

Part 2: Longer Assignments

These assignments test your ability to write the two patterns covered in this chapter: definitions and descriptions. Specifically, follow these guidelines:

- Write each exercise in the form of a letter report or memo report, as specified.
- Follow the organization and design guidelines given in Chapter 4, especially concerning the ABC format (Abstract/Body/Conclusion) and the use of headings. Chapters 10 and 11 give guidelines for short reports, but such detail is not necessary to complete the assignments here.
- Fill out a Planning Form (at the end of the book) for each assignment.

10. Practice: Technical Definitions in Your Field

Select a technical area in which you have taken course work or in which you have technical experience. Now assume that you are employed as an outside consulting expert, acting as a resource in your particular area for an M-Global manager not familiar with your specialty. For example, a nutritionist might provide information related to the dietary needs of oil workers working on an offshore rig for three months; a business or management expert might report on a new management technique; an electronics expert might explain the operation of some new piece of equipment that M-Global is considering buying; a computer programmer might explain some new piece of hardware that could provide supporting services to M-Global; and a

legal expert might define sexism in the workplace for the benefit of M-Global's human resources professionals.

For the purpose of this report, develop a context in which you have to define terms for an uninformed reader. Incorporate one expanded definition and at least one sentence definition into your report.

11. Practice: Description of Equipment in Your Field

Select a common piece of laboratory, office, or field equipment with which you are familiar. Write a thorough physical description of the equipment that could be used in a training manual for those who must understand how to use, and perform minor repairs on, the equipment. For the body of your description, choose either a part-by-part physical description or a thorough description of functions.

12. Practice, M-Global Context: Description of a Position in Your Field

Interview a friend or colleague about the specific job that person holds. Make certain it is a job that you yourself have not had. On the basis of data collected in the interview, write a thorough description of the person's position—including major responsibilities, reporting relationships, educational preparation, and experience required.

Now place this description in the context of a letter report to Karrie Camp, Vice President for Human Resources at M-Global. Assume she has hired you, a technical consultant to M-Global, to submit a letter report that contains the description. She is preparing to advertise such an opening at M-Global but needs your report to write the job description and the advertisement. Because she has little firsthand knowledge of the position about which you are writing, you should avoid technical jargon.

13. Practice, M-Global Context: Definition

Model 7-2 is part of a packet explaining employee benefits. Write an expanded definition of one of the following employee benefits that could be included in the same package:

- ESOP (Employee Stock Ownership Plan)
- 401K retirement plan
- HSA (Health Savings Account)

14. Practice, M-Global Context: Description

As a Web site developer on the M-Global Publications Development team, you are concerned with the accessibility of computers to those with visual disabilities. Write a description of one kind of adaptive technology that can help those with visual disabilities use computers or access Web sites more easily.

U.S. Geological Service, National Wetlands Research Center

Global Warming—An increase of the earth's temperature by a few degrees resulting in an increase in the volume of water which contributes to sea-level rise.

“The Fragile Fringe: Glossary,” <http://www.nwrc.usgs.gov/fringe/glossary.html>.

U.S. Environmental Protection Agency

Global warming is an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, “global warming” often refers to the warming that can occur as a result of increased emissions of greenhouse gases from human activities.

“Basic Information, Climate Change,” <http://www.epa.gov/climatechange/basicinfo.html>.

Minnesota Pollution Control Agency

Global Warming—An increase in the Earth's temperature caused by human activities, such as burning coal, oil and natural gas. This releases carbon dioxide, methane, and other greenhouse gases into the atmosphere. Greenhouse gases form a blanket around the Earth, trapping heat and raising temperatures on the ground. This is steadily changing our climate.

“MPCA Glossary” <<http://www.pca.state.mn.us/gloss/glossary.cfm?alpha=G&header=1&glossaryCat=0>>.

Pew Center on Global Climate Change

The progressive gradual rise of the Earth's average surface temperature thought to be caused in part by increased concentrations of GHGs [greenhouse gasses] in the atmosphere.

“Glossary of Key Terms,” http://www.pewclimate.org/global-warming-basics/full_glossary.

Now place this description in the context of a memo to Karrie Camp, Vice President for Human Resources at M-Global. Explain how the technology will make it possible for M-Global to hire qualified applicants with visual impairments.

15. Ethics Assignment

Although definitions and descriptions may appear neutral, they may be used to promote a point of view or to advance an argument on a controversial issue. Examine the following definitions of *global warming* from various sources on the Internet, and find and read each organization's home page. Can you see implied biases in the definition, or does the definition appear neutral? Does this bias or neutrality support the general goals of the organization that published the definition?

In a short essay, compare the definitions and identify the source of each one as well as any apparent bias in the original source. Discuss whether the definitions have been written to support their sources' points of view.

16. International Communication Assignment

In the global marketplace, companies are using illustrations and images to avoid expensive translation. Find examples of descriptions that use illustrations extensively. If possi-

ble, find descriptions in multiple languages, such as those in owner's manuals. (Focus on the descriptions of objects, not on instructions.) Analyze the illustrations for their effectiveness as descriptions. How important is text to the illustrations? Could the illustrations serve as descriptions without the text? If you have a document that is in multiple languages, do the illustrations differ from one version to the next? Write an essay that discusses the relationship of text and illustrations in descriptions. Include a discussion of whether you think companies should try to make their descriptions text-free.

17. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Colleges and universities work hard to foster good relationships with their surrounding communities. Sometimes referred to as town/gown relations, this connection between the institution and the community is important for the obvious reason that both entities inhabit the same environment and depend on each other. For this assignment, select a project that you believe would improve or nurture town/gown relations in your community. Depending on the instructions you are given, prepare an oral or written report that describes the project. Your instructor may also ask you to use the description in the context of an argument for why the project would be useful.

The NIST Definition of Cloud Computing

Authors: Peter Mell and Tim Grance

Version 15, 10-7-09

National Institute of Standards and Technology, Information Technology Laboratory.

Note 1: Cloud computing is still an evolving paradigm. Its definitions, use cases, underlying technologies, issues, risks, and benefits will be refined in a spirited debate by the public and private sectors. These definitions, attributes, and characteristics will evolve and change over time.

Note 2: The cloud computing industry represents a large ecosystem of many models, vendors, and market niches. This definition attempts to encompass all of the various cloud approaches.

Definition of Cloud Computing:

Overview, including formal sentence definition of term

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential **characteristics**, three **service models**, and four **deployment models**.

Essential Characteristics:

List of components

On-demand self-service. A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service's provider.

Broad network access. Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).

Resource pooling. The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, network bandwidth, and virtual machines.

Rapid elasticity. Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.

Measured service. Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the

■ Model 7-1 ■ Expanded Definition

Source: National Institute of Standards and Technology Computer Security Division, Computer Security Resource Center. <http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-v15.doc>.

type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported providing transparency for both the provider and consumer of the utilized service.

Service Models:

Cloud Software as a Service (SaaS). The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email). The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

Cloud Platform as a Service (PaaS). The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment configurations.

Cloud Infrastructure as a Service (IaaS). The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

Deployment Models:

Private cloud. The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.

Community cloud. The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.

Public cloud. The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.

Hybrid cloud. The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

Note: Cloud software takes full advantage of the cloud paradigm by being service oriented with a focus on statelessness, low coupling, modularity, and semantic interoperability.

Information about context

Summary of value of model

Your M-Global Benefits

Flexible Spending Accounts (FSAs)

Starts with a sentence definition

What is a Flexible Spending Account?

A Flexible Spending Account (FSA) is a pretax savings account that can be used for an employee's qualifying out-of-pocket expenses.

Emphasizes benefits to employees

An FSA allows employees to set up an account that can be used for dependent care and health costs. FSAs are pretax benefits, meaning that they allow employees to designate an amount that will be withheld from their paychecks before taxes are figured. Taxes are then withheld based on the amount after the deduction for the FSA. As a result, participants can save as much as 35 percent on their federal income taxes.

Briefly explains how to use the account.

At M-Global, Flexible Spending Accounts can be used for child care and for health costs that are not covered by insurance, including deductibles, coinsurance, and copays. Reimbursement is also available for out-of-pocket medical expenses such as prescriptions, orthodontia, and laboratory services. Details of employee benefits are available in the Employee Benefit Information packet distributed each November, in Employee Orientation materials, and on M-Global's Human Resources Web site.

Points reader to documents and Web site for further information

Employees who have a reimbursable expense should submit the appropriate form to their branch Human Resources Office. Reimbursement forms are available on M-Global's Human Resources Web site. Reimbursement checks will generally be available one week after the form is submitted.

Meets legal requirement that limitations be explained

Are there any drawbacks to a Flexible Spending Account?

Contributions to an FSA will result in a decrease in take home pay, and child care costs are not eligible for child care credit on federal income tax if they are reimbursed through a Flexible Spending Account. In addition, FSAs are a "use it or lose it" plan. That is, any money that remains in the employee's account at the end of the plan year may be forfeited. Reimbursement requests must be submitted within 90 days of the end of the plan year.

Closes with advice for using plan effectively

How can I get the most benefit from a Flexible Spending Account?

It is important to estimate your deductions carefully. Figure your out-of-pocket expenses from the previous year. Then estimate any changes carefully. Keep track of your spending throughout the year to make sure that you use your Flexible Spending Account effectively.

■ **Model 7-2** ■ Brief description (with formal definition included)

The front panel

Your printer's front panel is located on the front of the printer, on the right hand side. Use it for the following functions:

- Use it to perform certain operations, such as loading and unloading paper.
- View up-to-date information about the status of the printer, the ink cartridges, the printheads, the maintenance cartridge, the paper, the print jobs, and other parts and processes.
- Get guidance in using the printer.
- See warning and error messages, when appropriate.
- Use it to change the values of printer settings and the operation of the printer. However, settings in the Embedded Web Server or in the driver override changes made on the front panel.

Starts with overview of important functions.

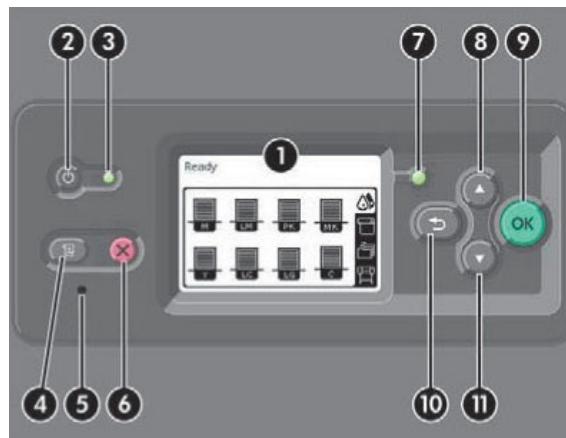


Illustration focuses on parts being described

The front panel has the following components:

1. The display area shows information, icons, and menus.
2. The Power button turns the printer on and off. If the printer is in sleep mode, this button will wake it up. (This is different from the hard power switch on the back of the printer. See Turn the printer on and off on page 21.)
3. The Power light is off when the printer is off. This light is amber when the printer is in sleep mode, green when the printer is on, green and flashing when the printer is in transition between off and on.
4. The Form Feed and Cut button normally advances and cuts the roll. Here is a list of its other functions:
 - If the printer is waiting for more pages to be nested, this button cancels the waiting time and prints the available pages immediately.
 - If the printer is drying the ink after printing, this button cancels the waiting time and releases the page immediately.
 - If the take-up reel is enabled, this button advances the paper 10 cm (3.9 inches), but does not cut the paper.

Numbers correspond to parts in illustration.

Integrates description of parts with operating instructions.

5. The Reset button restarts the printer (as if it were switched off and switched on again). You will need a non-conductive implement with a narrow tip to operate the Reset button.
6. The Cancel button cancels the current operation. It is often used to stop the current print job.
7. The Status light is off when the printer is not ready to print: the printer is either off, or in sleep mode. The Status light is green when the printer is ready and idle, green and flashing when the printer is busy, amber when a serious internal error has occurred, and amber and flashing when the printer is awaiting human attention.
8. The UP button moves to the previous item in a list, or increases a numerical value.
9. The OK button is used to select the item that is currently highlighted.
10. The Back button is used to return to the previous menu. If you press it repeatedly, or hold it down, you return to the main menu.
11. The Down button moves to the next item in a list, or decreases a numerical value.

To *highlight* an item on the front panel, press the Up or Down button until the item is highlighted.

To *select* an item on the front panel, first highlight it and then press the OK button.

The four front-panel icons are all found on the main menu. If you need to select or highlight an icon, and you do not see the icons in the front panel, press the Back button until you can see them.

Sometimes this guide shows a series of front panel items like this: **Item1 > Item2 > Item3**. A construction like this indicates that you should select **Item1**, select **Item2**, and then select **Item3**.

Refers user to more detailed information.



You will find information about specific uses of the front panel throughout this guide.

■ Model 7-3 ■ continued

M-Global uses soil grinders in all of its soil-testing laboratories. This technical description provides information regarding the background of the Barri Soil Grinder 500 and its main parts:

- Motor
- Hopper
- Chute
- Sieve

Background

A soil grinder is a mechanism that transforms clumpy and hardened soil into soft, particle-sized soil that can be used to test soil compositions. The first grinder was introduced in the late 1800s for agricultural uses. During the industrial revolution the grinder was used in factories, and over time it became a popular piece of equipment used in the soil-testing process. M-Global uses the Barri Soil Grinder 500 for all of its soil samples.

Note: The soil grinder will not grind rocks, but rocks will not damage the grinding mechanism.

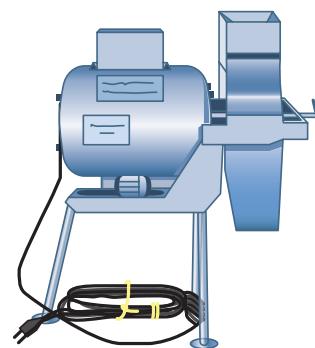
Motor

The motor is mounted on three support legs and rests on a sturdy platform. The base of the motor is made of steel with zinc plating. The main features of the motor include:

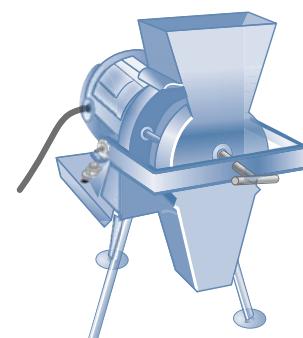
- 110V/60Hz electric motor
- 1-hp engine
- Dustproof stainless steel cover

Hopper

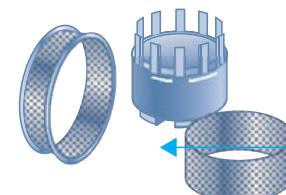
The stainless steel hopper, located on the top of the machine, is where the soil is placed for grinding. The model used in M-Global labs can accept several quarts of soil and grind it at 1 pint per second. The hopper in this model is 10" x 11" wide.



Notes sections that follow.



Gives formal sentence definition and general information about history and use.



Note identifies important information.

Uses bullets for technical detail.

■ Model 7-4 ■ Technical description (with definition included): Soil grinder

Uses analogy with mortar and pestle to explain operation.

Chute

The chute, located on the bottom of the machine, is where the soil is deposited after grinding. The chute is attached to the hopper and is made of stainless steel.

Includes information about capacity to help reader identify normal use.

Sieve

Inside the hopper and chute is the sieve, which is designed to grind and sift the soil into particle-sized pieces that are ready for testing. The sieve consists of stainless steel hammers and mesh screens. The hammers in the grinding chamber work like a mortar and pestle to pulverize the soil.

The level of coarseness or fineness of the soil particles can be adjusted by changing the sieve screens.

The motor is connected to the hopper and chute. A collection pan is placed under the chute. Once ground, soil is ready for testing and analysis.

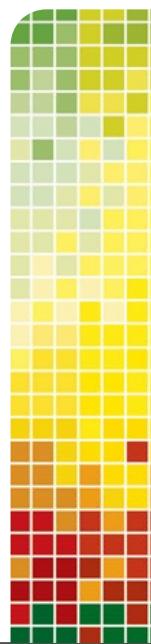
Summarizes purpose of the mechanism.

The assembled grinder measures 27" long, 12" wide, and 17" high.

Model 7-4 continued



Chapter | 8 | Process Explanations and Instructions



>>> Chapter Objectives

In this chapter, students will

- Learn the similarities and differences between process explanations and instructions
- Be introduced to guidelines for writing process explanations
- Learn the ABC format for process explanations
- Be introduced to guidelines for writing instructions
- Be introduced to usability testing of instructions
- Learn the ABC format for instructions
- Be introduced to point-of-use documentation
- Read and analyze model process explanations and model instructions

M-Global's Denver office, like other M-Global offices, recently installed an updated electronic mail system. Shortly before the installation date Jenny Vir, Office Services Manager, met with a representative of the company that would install the system. To help others who would be using this new system, Jenny wrote a memo to her boss, Leonard Schwartz, summarizing the installation process (Model 8–1 on page 240). She also wrote a memo to all employees, giving them instructions about how to access e-mail messages in the new system (Model 8–2 on page 241).

This brief M-Global case study demonstrates two types of technical communication you will often cre-

ate and use: process explanations and instructions. Although technical communicators are creating a widening variety of documents, a survey of technical communication managers found that procedural materials such as manuals and online help remain the most common and most important documents in the field.¹

Although process explanations and instructions are similar in organization, they differ in purpose, audience, and format. This Chapter (1) explores these similarities and differences, with specific reference to M-Global applications; (2) gives specific guidelines for developing both types; and (3) provides models to use in your own writing.

>>> Process Explanations Versus Instructions

In the M-Global example just given, Jenny's first memo (Model 8–1) explained the process by which the vendor installed electronic mail. Her second memo (Model 8–2) gave users the directions needed to read e-mail. In other words, you write a process explanation to help readers *understand* what has been, is being, or will be done, whereas you write instructions to show readers how to *perform* the process themselves.

Process explanations and instructions have an important common bond. Both are types of *procedural writing*, so they must accurately describe a series of steps leading toward a specific result. The first task in all procedural writing is to identify the main steps or stages in the process. One technique to help you identify the steps or stages in a process is to begin at the end, with the final result. Then, ask yourself, what the step or stage immediately preceded the end result? Work your way back through previous steps, identifying each along the way. After you have identified all of the steps, work your way forward through them in order, to make sure that you haven't left any steps out of the chronology.

Process explanations can describe actions performed by people, by machines, or in nature. They are appropriate when the reader must be informed about the action but does not need to perform it. When you write process explanations, it is important to think about whether the reader is simply seeking to understand the action or if the reader needs to evaluate it. If you suspect a reader may in fact be a *user* (i.e., someone who uses your document to perform the process), always write instructions. Whereas process explanations are often written as paragraphs, instructions are always written

¹K. T. Rainey, R. K. Turner, & D. Dayton. (2005). Do curricula correspond to managerial expectations? Core competencies for technical communicators. *Technical Communication*, 52(3), 321–352.

Figure 8-1
Process explanations versus instructions

PROCESS DESCRIPTIONS

- Purpose:** Explain a sequence of steps in such a way that the reader understands a process
- Format:** Use paragraph descriptions, listed steps, or some combination of the two
- Style:** Use an *objective* point of view (“2. The operator starts the engine ...”), as opposed to a *command* point of view (“2. Start the engine ...”)

INSTRUCTIONS

- Purpose:** Describe a sequence of steps in such a way that the reader can *perform* the sequence of steps
- Format:** Employ numbered or bulleted lists, organized into subgroups of easily understandable units of information
- Style:** Use a *command* point of view (“3. Plug the phone jack into the recorder unit”), as opposed to an *objective* point of view (“3. The phone jack is plugged into the recorder unit”)

as numbered steps. When writing instructions, remember that you are helping your readers accomplish a task that they want to successfully complete. Figure 8–1 provides a list of contrasting features of process explanations and instructions; the two subsections that follow give these features some realism by briefly describing some M-Global contexts.

Process Explanations at M-Global

Process explanations provide information for interested readers who do not need instructional details. At times, explaining a process may be the sole purpose of your document, as in Model 8–1. More often, however, you use process explanation as a section within a document with a larger purpose. The following M-Global examples (1) show the context in which process explanations might appear and (2) reinforce the difference between process explanations and instructions.

■ **Accounting:** As an accountant at M-Global’s corporate office, you have just finished auditing the firm’s books. Now you must write a report to the vice president for business and marketing on the firm’s compliance with Generally Accepted Accounting Principles (GAAP). Along with your findings, the vice president wants an overview of the procedure you followed to arrive at your conclusions.

■ **Human Resources:** As a nurse in M-Global’s Munich branch, you are preparing materials about an upcoming Wellness Fair. The Munich Human Resources office will distribute this information to all employees in the branch. This year, the fair will include an ultrasound test for osteoporosis that will be conducted on-site. To encourage



© Junial (Nikolay Mamluke)/Dreamstime.com

employees to take advantage of the test, you write an explanation of the process that emphasizes how quick and easy the test will be.

- **Laboratory work:** As lab supervisor at the St. Louis office, you spent all day Saturday in the lab assembling a new gas chromatograph needed to analyze gases. To justify the overtime hours, you write a memo to your manager explaining the assembly process.
- **Welding inspection:** As a nondestructive testing (NDT) expert at M-Global's San Francisco office, you were hired by a California state agency to x-ray all welds at a bridge damaged by an earthquake. The text of your report gives test results; the appendixes explain the procedures you followed.
- **Marketing:** As M-Global's marketing manager, you devised a new procedure for tracking contacts with prospective clients (from first sales call to signing the contract). You must write a memo to M-Global's two vice presidents for operations, briefly explaining the process. Their approval is needed before the new marketing technique can be introduced at the 16 branch offices.

In each case, you are writing for a reader who wants to know what has happened or will happen, but who does not need to perform the process.

Instructions at M-Global

Think of instructions this way: They provide users with a road map to *do* the procedure, not just understand it—that is, someone must complete a task on the basis of words and pictures you provide. Clearly, instructions present you, the writer, with a much greater challenge and risk than process explanations. The reader must be able to replicate the procedure without error and, most important, with full knowledge of any dangers. The M-Global situations that follow reflect this challenge. Note that they parallel the case studies presented for process explanations.

- **Accounting:** As M-Global's lead accountant for the past 20 years, you have always been responsible for auditing the firm's books. Because you developed the procedure yourself over many years, there is no comprehensive set of instructions for completing it. Now you want to record the steps so that other company accountants besides you can perform them.
- **Human Resources:** As a nurse in M-Global's Munich branch, you are preparing materials about an upcoming Wellness Fair. The Munich Human Resources office will distribute this information to all employees in the branch. The tests available to employees include cholesterol screening, which requires fasting before the test. You write instructions so that employees who will be having their cholesterol screened will prepare appropriately.
- **Laboratory work:** As lab supervisor for M-Global's St. Louis office, you have assembled one of the two new gas chromatographs just purchased by the company. You are supposed to send the other unit to the Tokyo branch, where it will be put together by Japanese technicians. Unfortunately, the manufacturer's instructions are

poorly written, so you plan to rewrite them for the English-speaking technicians at the Tokyo office.

- **Welding inspection:** As M-Global's NDT expert at the San Francisco office, you have seen a large increase in NDT projects. Given California's aging bridges and constant earthquake activity, you have persuaded your branch manager to hire several NDT technicians. Now you must write a training manual that instructs these new employees on methods for inspecting bridge welds.
- **Marketing:** As M-Global's marketing manager, you have suggested a new approach for tracking sales leads. Having had your proposal approved by the corporate staff, you must now explain the marketing procedure to technical professionals at all 16 offices. Your written set of instructions must be understood by technical experts in many fields and with little if any marketing experience.

In each case, your instructions must explain steps so thoroughly that the reader will be able to replicate the process without having to speak in person with the writer of the instructions. The next two sections give rules for preparing both process explanations and sets of instructions.

>> Guidelines for Process Explanations

You have already learned that process explanations are aimed at persons who must understand the process, not perform it. Process explanations often have the following purposes:

- Describing an experiment
- Explaining how a machine works
- Recording steps in developing a new product
- Describing procedures to ensure compliance with regulations
- Describing what will happen during a medical procedure

In each case, use the following guidelines to create first-rate process explanations:

>> Process Guideline 1: Know Your Purpose and Your Audience

Your intended purpose and expected audience influence every detail of your explanation. Following are some preliminary questions to answer before writing:

- Are you supposed to give just an overview, or are details needed?
- Do readers understand the technical subject, or are they laypersons?
- Do readers have mixed technical backgrounds?
- Does the process explanation supply supporting information (perhaps in an appendix), or is it the main part of the document?

Process explanations are most challenging when directed to a mixed audience. In this case, write for the lowest common denominator—that is, for your least technical

ABC Format: Process Explanations

■ ABSTRACT: Overview and background

- Purpose statement
- Underlying theory
- Main stages of process
- Definition of terms
- List of materials, equipment, or training needed
- Context in which process is found

■ BODY: Stages of the process

- Parallel structure emphasizes related steps
- Definitions, descriptions of materials, length of time are included in each step
- Progress is clearly identified throughout the explanation

■ CONCLUSION: Result of the process

- Significance of the process
- Successful outcome

readers. It is better to write beneath the level of your most technical readers than to write above the level of your nontechnical readers.

For example, the process explanation in Model 8–3 on page 242 is directed to a mixed audience of city officials—some technical staff and some nontechnical political officials. It is contained in an appendix to a long M-Global report that recommends immediate cleanup of a toxic waste dump. Note that the writer either uses nontechnical language or defines any technical terms used.

>> Process Guideline 2: Follow the ABC Format

In Chapter 4, you learned about the ABC format (*Abstract/Body/Conclusion*), which applies to all documents. The abstract gives a summary, the body supplies details, and the conclusion provides a wrap-up or leads to the next step in the communication process. Whether a process explanation forms all or part of a document, it usually subscribes to the version of the three-part ABC format shown on the left.

Model 8–3 includes all three parts of the ABC format. The abstract opens with a purpose statement that places the explanation in the context of the entire document. The abstract ends with a separate list of equipment or materials.

The body of the process explanation moves logically through the steps of the process. By definition, all process explanations follow a *chronological*, or step-by-step, pattern of organization. These steps can be conveyed in two ways:

1. **Paragraphs:** This approach weaves steps of the process into the fabric of typical paragraphs, with appropriate transitions between sentences. Use paragraphs when your readers would prefer a smooth explanation of the entire process, rather than emphasis on individual steps.
2. **List of steps:** This approach includes a list of steps, usually with numbers or bullets. Much as in instructions, a listing emphasizes the individual parts of the process. Readers prefer it when they must refer to specific steps later on.

Both paragraph and list formats have their place in process explanations. In fact, most explanations can be written in either format.

Figure 8–2 compares M-Global examples of both a paragraph and a list explanation for the same process of laying a concrete patio. As a public service gesture, M-Global, Inc., produced a pamphlet that briefly explains simple home improvements and is intended to help home owners decide whether to complete renovations themselves or hire a contractor. If home owners are interested in one of the projects, they can find detailed

A. PARAGRAPH OPTION

The home owner should select rough-grade 2 × 4s for building the wooden form for the patio. The form is just a box, with an open top and with the ground for the bottom, into which concrete will be poured. First, the four sides are nailed together, and then the form is leveled with a standard carpenter's level. Finally, 2 × 4 stakes are driven into the ground about every 2 or 3 feet on the outside of the form to keep it in place during the pouring of the concrete.

Steps of process are embedded in paragraph.

B. LIST OPTION

Building a wooden form for a home concrete patio can be accomplished with some rough-grade 2 × 4s. This form is just a box with an open top and the ground for the bottom. Building involves three basic steps:

After brief lead-in, steps of process are placed in list format.

1. Nailing 2 × 4s into the intended shape of the patio
2. Leveling the box-shaped form with a standard carpenter's level
3. Driving stakes (made from 2 × 4 lumber) into the ground every 2 or 3 feet at the outside edge of the form to keep it in place during the pouring of the concrete

■ **Figure 8-2** ■ Two options for process explanation

instructions at the URL listed in the pamphlet. Building a concrete patio is one project covered; the process explanation contains a subsection about constructing the wooden form into which concrete is poured.

The conclusion of a process explanation keeps the process from ending abruptly with the last step. Here you should help the reader put the steps together into a coherent whole. When the process explanation is part of a larger document, you can show how the process fits into a larger context, as in Model 8–3.

>> **Process Guideline 3: Use an Objective Point of View**

Process explanations describe a process rather than direct how it is to be done. Therefore they are written from an objective point of view—not from the personal *you* or *command* point of view common to instructions. Process explanations use third-person terms like *the user* or *the operator*, or they use the passive voice. (For more on appropriate use of the passive voice, see Chapter 17.) Note the difference in these examples:

Process: The concrete is poured into the two-by-four frame.

or

The technician pours the concrete into the two-by-four frame.

Instructions: Pour the concrete into the two-by-four frame.

The process excerpts *explain* the steps, whereas the instructions excerpt *gives a command* for completing the activity.

>> Process Guideline 4: Choose the Right Amount of Detail

Only a thorough audience analysis will tell you how much detail to include. Model 8–3 (p. 242), for example, could contain much more technical detail about the substeps for testing air quality at the site; however, the writer decided that the city officials would not need more scientific and technical detail.

In supplying specifics, be sure to subdivide complex information for easy reading. In paragraph format, headings and subheadings can be used to make the process easier to grasp. In list format, an outline arrangement of points and subpoints may be appropriate. When such detail is necessary, remember this general rule of thumb: *Place related steps in groups of from three to seven points.* Readers find several groupings with subpoints easier to remember than one long list. Following are two rough outlines for a process explanation that was created to encourage consistency in the hiring process at all M-Global branches. The second is preferred because it groups the many steps into three easily grasped categories.

Employment Interview Process

1. Interviewer reviews job description.
2. Interviewer analyzes candidate’s application.
3. Candidate and interviewer engage in “small talk.”
4. Interviewer asks open-ended questions related to candidate’s résumé and completed application form.
5. Interviewer expands topic to include matters of personal interest and the candidate’s long-term career plans.
6. Interviewer provides candidate with information about the position (salary, benefits, location, etc.).
7. Candidate is encouraged to ask questions about the position.
8. Interviewer asks candidate about her or his general interest, at this point, in the position.
9. Interviewer informs candidate about next step in hiring process.

Employment Interview Process

■ Preinterview Phase

1. Interviewer reviews job description.
2. Interviewer analyzes candidate’s application.

■ Interview

3. Candidate and interviewer engage in “small talk.”
4. Interviewer asks open-ended questions related to candidate’s résumé and completed application form.
5. Interviewer expands topic to include matters of personal interest and the candidate’s long-term career plans.
6. Interviewer provides candidate with information about the position (salary, benefits, location, etc.).
7. Candidate is encouraged to ask questions about the position.

■ Closure

8. Interviewer asks candidate about his or her general interest, at this point, in the position.
9. Interviewer informs candidate about next step in hiring process.

>> Process Guideline 5: Use Scripts and Flowcharts for Complex Processes

When processes include steps or stages that must be performed by different people or different machines, as in a manufacturing process, one way to clearly outline the steps is to use a script format like the one in Figure 8–3. This script follows a format recommended by the Food and Drug Administration for standard operating procedures (SOPs). Notice that each step, including substeps, is assigned to a different person or team. SOPs like these are used in industry to ensure compliance with best practices and with state and federal regulations.

Some process explanations contain steps that are occurring at the same time. In this case, you may want to supplement a paragraph or list explanation with a flowchart. Such charts use boxes, circles, and other geometric shapes to show progression and relationships among various steps. Model 8–4 on page 243, for example, shows a flowchart and an accompanying process explanation at M-Global. Both denote services that M-Global’s London branch provides for oil companies in the North Sea. The chart helps to demonstrate that the geophysical study (mapping by sonar equipment) and the engineering study (securing and testing of seafloor samples) take place at the same time. Such simultaneous steps are difficult to show in a list of sequential steps.



Branislav Senic/Shutterstock

Process Guidelines

- Know your purpose and your audience
- Follow the ABC format
- Use an objective point of view
- Choose the right amount of detail
- Use scripts and flowcharts for complex processes

>>> Guidelines for Instructions

Rules change considerably from process explanations to instructions. Although both patterns are organized by time, the similarity stops there. Instructions walk readers through the process so that they can do it, not just understand it. It is one thing to explain the process by which a word-processing program works; it is quite another to write a set of instructions for using that word-processing program. This section explores the challenge of writing instructions by giving you some basic writing and design guidelines.

These guidelines for instructions also apply to complete operating *manuals*, a document type that many technical professionals will help to write during their careers. Those manuals include the instructions themselves, as well as related information such as (1) features, (2) physical parts, and (3) troubleshooting tips. In other words, manuals are complete documents, whereas instructions can be part of a larger piece.

NATIONAL CANCER INSTITUTE® Procedure Description

SUBJECT: Data Operations for ISS & ISE
Study Reporting under the caBIG™
Program

SOP No.: CR-012
Version No.: 1.0
Effective Date: 12/11/2006
Page 1 of 1 Pages

Step	Action
1	Study Statistician creates, reviews, revises, and approves the ISS/ISE shell A. Produce the list of tables for the ISS/ISE and construct the ISS/ISE shell format to meet regulatory reporting/submission guidelines. B. Review the ISS/ISE shell with members of the clinical study team. C. After consultation with the appropriate clinical study team members, revise the ISS/ISE shell in line with review comments, as appropriate. D. Sign off and approve the ISS/ISE shell.
2	Programmer creates and develops analysis programs in required FDA format A. Create, test, and release new programs for the ISS/ISE reporting format. B. Run analysis programs to produce relevant results in shell format. C. Review the results and identify and address any potential issues identified in the program. D. Finalize and update ISS/ISE shell if adjustments to the programming are required.
3	Clinical Study Team collects the relevant information and the results of the analyses are complied in the applicable study report A. Provide information on safety and efficacy findings, or changes to the shell, where required. B. Provide feedback to programmer and statistician, if applicable.
4	Local QA reviews the ISS/ISE A. Perform quality controls to ensure compliance with the ICH eCTD, relevant company documentation, and the SOP.

■ **Figure 8–3** ■ Standard operating procedures (SOPs) in script format

Source: https://cabig.nci.nih.gov/...SOPs/CR012_SOP_Study_Reports.pdf.

>> Instructions Guideline 1: Select the Correct Technical Level

This guideline is just another way of saying you must know exactly who will read your instructions. Are your readers technicians, engineers, managers, general users, or some combination of these groups? Once you answer this question, select language that every reader can understand. If, for example, the instructions include technical terms or names of objects that may not be understood, use the techniques of definition and description discussed in Chapter 7.

>> Instructions Guideline 2: Follow the ABC Format

Like process explanations, instructions follow the ABC format (*Abstract/Body/Conclusion*) described in Chapter 4. The introduction (or abstract) should provide all of the information needed to successfully perform the instructions. It may include background information such as definitions, or tips. The body includes clearly numbered steps, as well as helpful illustrations and warnings. The conclusion should identify the successful result of following the instructions. It may emphasize the importance of following the instructions exactly.

>> Instructions Guideline 3: Use Numbered Lists in the Body

A simple format is crucial to the body of the instructions—that is, the steps themselves. Most users constantly go back and forth between these steps and the project to which they apply. Thus you should avoid paragraph format and instead use a simple numbering system. Model 8–5 on pages 244–245 shows a “before and after” example. The original version is written in paragraphs that are difficult to follow; the revised version includes nine separate numbered steps.

>> Instructions Guideline 4: Group Steps Under Task Headings

Readers prefer that you group together related steps under headings, rather than present an uninterrupted “laundry list” of steps. Model 8–6 on pages 246–248 shows how this technique has been used in a fairly long set of instructions for operating a scanner. Given the number of steps in this case, the writer has used a separate numbering system within each grouping.

Groupings provide two main benefits. First, they divide fragmented information into manageable chunks that readers find easier to read. Second, they give readers a sense of accomplishment as they complete each task, on the way to finishing the whole activity.

ABC Format: Instructions

- **ABSTRACT:** Background information necessary for completing the task
 - Purpose statement, including result of the operation
 - List of the main stages of the operation
 - List of tools and materials
 - List of special preparations needed, such as preparation of the work area
 - Cautions and warnings that apply to the whole operation
- **BODY:** Stages of the operation
 - Clearly numbered steps
 - Steps grouped for clarity
 - Illustrations referenced in text
 - Cautions and warnings for individual steps
 - Comments about outcomes of individual steps
 - Tips for troubleshooting
- **CONCLUSION:** Explanation of successful outcome of the operation
 - Results of successful completion of the operation
 - Summary of main steps
 - Importance of the operation

>> Instructions Guideline 5: Place Only One Action in Each Step

A common error is to bury several actions in a single step. This approach can confuse and irritate readers. Instead, break up complex steps into discrete units, as shown next:

■ Original:

Step 3: Fill in your name and address on the coupon, send it to the manufacturer within two weeks, return to the retail merchant when your letter of approval arrives from the manufacturer, and pick up your free toaster oven.

■ Revision:

Step 3: Fill in your name and address on the coupon.

Step 4: Send the coupon to the manufacturer within two weeks.

Step 5: Show your retail merchant the letter of approval after it arrives from the manufacturer.

Step 6: Pick up your free toaster oven.

>> Instructions Guideline 6: Lead Off Each Action Step With a Verb

Instructions should include the *command* form of a verb at the start of each step. This style best conveys a sense of action to your readers. Models 8–5 and 8–6 on pages 244–248 use command verbs consistently for all steps throughout the procedures.

>> Instructions Guideline 7: Remove Extra Information From the Step

Sometimes you may want to follow the command sentence with an explanatory sentence or two. In this case, distinguish such helpful information from actions by giving it a label, such as *Note* or *Result* (e.g., see Model 8–2, page 241).

>> Instructions Guideline 8: Use Bullets or Letters for Emphasis

Sometimes you may need to highlight information, especially within a particular step. Avoid using numbers for this purpose, because you are already using them to signify steps. Bullets work best if there are just a few items; letters are best if there are many, especially if they are in a sequence. The revised version in Model 8–5 shows the appropriate use of letters, and Model 8–6 shows the use of letters and bullets.

In particular, consider using bullets at any point at which users have an *option* as to how to respond. The following example uses bullets in this way; it also eliminates the problem of too many actions being embedded in one step.

Part of Procedure for Firing Clay in a Kiln

(Note: A *pyrometric cone* is a piece of test clay used in a *kiln*, an oven for baking pottery. The melting of the small cone helps the operator determine that the clay piece has completed the firing process.)

■ Original

Step 6: Check the cone frequently as the kiln reaches its maximum temperature of 1850°F. If the cone retains its shape, continue firing the clay and checking the cone frequently. When the cone begins to bend, turn off the kiln. Then let the kiln cool overnight before opening it and removing the pottery.

■ Revision

Step 6: Check the cone frequently as the kiln reaches its maximum temperature of 1850°F.

Step 7: Has the cone started to bend?

- If no, continue firing the piece of pottery and checking the cone frequently to see if it has bent.
- If yes, turn off the kiln.

Step 8: Let the kiln cool overnight after turning it off.

Step 9: Open the kiln and remove the pottery.

>> Instructions Guideline 9: Emphasize Cautions, Warnings, and Danger

Instructions often require alerts that draw attention to risks in using products and equipment. Your most important obligation is to highlight such information. Unfortunately, professional associations and individual companies may differ in the way they use and define terms associated with risk, so you should make sure that the alerts in your document follow the appropriate guidelines. You must be certain to use language or graphics your reader understands. If you have no specific guidelines, however, the following definitions can serve as “red flags” to the reader. The level of risk increases as you move from 1 to 3:

1. **Caution:** Possibility of damage to equipment or materials
2. **Warning:** Possibility of injury to people
3. **Danger:** Probability of injury or death to people

If you are not certain that these distinctions will be understood by your readers, define the terms *caution*, *warning*, and *danger* in a prominent place before you begin your instructions.

As for placement of the actual cautions, warnings, or danger messages, your options are as follows:

- **Option 1:** *In a separate section, right before the instructions begin.* This approach is most appropriate when you have a list of general warnings that apply to much of the procedure or when one special warning should be heeded throughout the instructions—for example: “WARNING: Keep main breaker on *off* during entire installation procedure.” Figure 8–4 shows both kinds of warnings. The first warning appears at the beginning of a manual for a portable table saw. The manual also includes warnings placed before and after each set of instructions.
- **Option 2:** *In the text of the instructions.* This approach works best if the caution, warning, or danger message applies to the step that immediately follows it. Thus users are warned about a problem *before* they read the step to which it applies (Figure 8–5).
- **Option 3:** *Repeatedly throughout the instructions.* This strategy is preferable with instructions that repeatedly pose risk to the user. For example, Steps 4, 9, 12A, and 22—appearing on several different pages—may *all* include the hazard of fatal electrical shock. Your *danger* notice should appear in each step, as well as in the introduction to the document.

WARNING Read all instructions.

Failure to follow all instructions listed below may result in electric shock, fire, or serious injury.

INSTALLING THE SWITCH

WARNING DISCONNECT MACHINE FROM POWER SOURCE.

1. Place switch (A) Fig. 11, behind the lip of extension wing (B). Insert M8x30 hex head screw (C) through wing and then switch support. Place an M8 flat washer and an M8 lock washer on the screw. Thread an M8 hex nut (D) onto screw and tighten nut securely.

2. Insert switch cord with female end through hole (F) Fig. 12 in upper left corner of the saw. Open motor cover and route the switch cord (F) Fig. 13 behind the cord guard (G) and then plug into motor cord (H), as shown in Fig. 13.

3. Make sure the slack is pulled down and rests on the dust chute as shown in Fig. 13.

WARNING MAKE SURE CORD DOES NOT COME IN CONTACT WITH BLADE, BELT OR PULLEYS

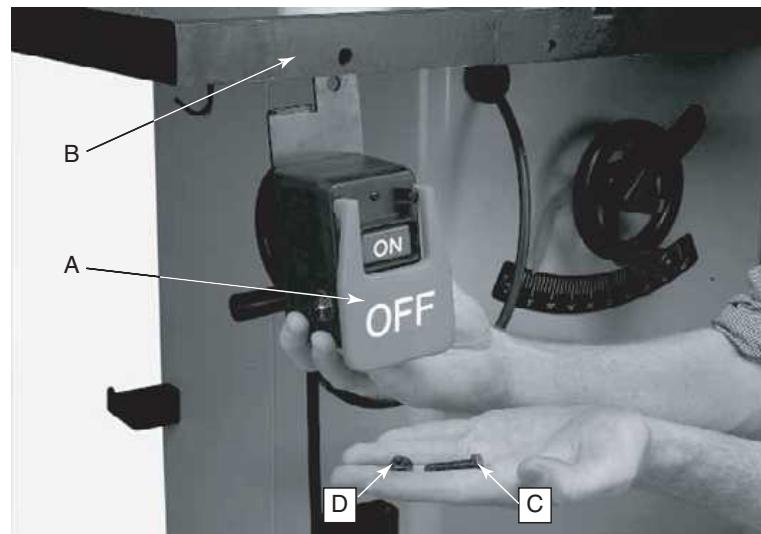


Fig. 11



Fig. 12

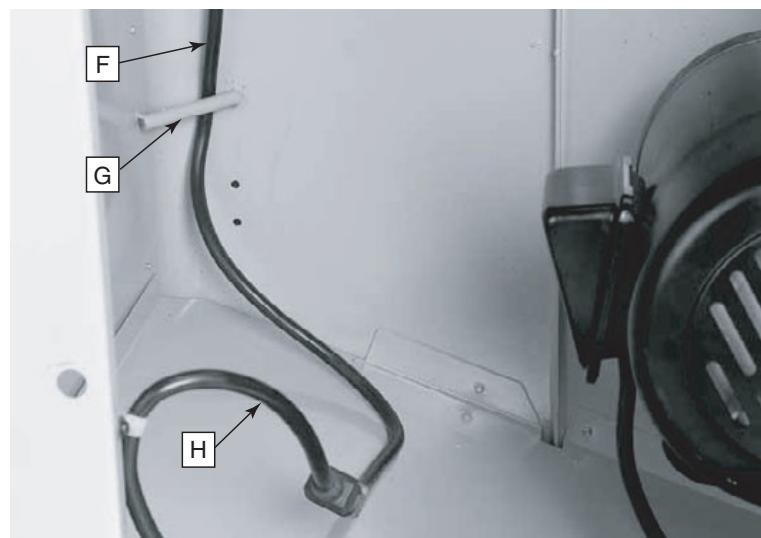


Fig. 13

Figure 8-4

Example of safety “warning”

Source: Courtesy of Delta International Machinery Co.

Give information about potential risks *before* the operator has the chance to make the mistake. Also, the caution, warning, or danger message can be made visually prominent by using one of the following techniques:

Underlining:	<u>Warning</u>	
Bold:	Warning	
Full Caps:	WARNING	
Italics:	<i>Warning</i>	
Oversized Print:	Warning	
Boxing:	<table border="1"><tr><td>Warning</td></tr></table>	Warning
Warning		
Color:	Warning	
Combined Methods:	<i>Warning</i> WARNING WARNING	

Color graphics are another effective indicator of risk. You have probably seen examples such as the ones in Figure 8–6.

The International Organization for Standardization (ISO) established international standards for safety alerts in ISO 3864, and the American National Standards Institute (ANSI) established domestic standards for safety alerts in ANSI Z535. If the organization you work for complies with ISO or ANSI, you should make sure that you are using the most recent version of the appropriate standards to reinforce the message in your text about cautions, warnings, and dangers.

Clearing User Data



CAUTION: This deletes all user-entered information.

1. Hold your finger on the lower-right corner of the nüvi's screen while turning on the nüvi.
2. Keep your finger pressed until the message appears.
3. Touch **Yes** to clear all user data.

All original settings are restored. Any items that you have saved are erased.

■ **Figure 8–5** ■ Example of a “caution” in a step

Source: Copyright 2011 Garmin Ltd or its subsidiaries.
All Rights Reserved.



■ **Figure 8–6** ■
Warning icons

>> Instructions Guideline 10: Keep a Simple Style

Perhaps more than any other type of technical communication, instructions must be easy to read. Readers expect a no-nonsense approach to writing that gives them required information without fanfare. Following are some useful techniques:

- Keep sentences short, with an average length of fewer than 10 words.
- Use informal definitions (parenthetical, like this one) to define any terms not understood by all readers.
- Never use a long word when a short one will do.
- Be specific and avoid words with inexact interpretations (*frequently, seldom, occasionally*, etc.).

>> Instructions Guideline 11: Use Graphics

Illustrations are essential for instructions that involve equipment. Place an illustration next to every major step when (1) the instructions or equipment is quite complicated or (2) the audience may be global, to avoid the cost of translating documents into multiple languages. Such word-picture associations create a page design that is easy to follow.

In other cases, just one or two diagrams may suffice for the entire set of instructions. The one reference illustration in Model 8–6 (pp. 246–248) helps the user of a scanner locate parts mentioned throughout the instructions.

Another useful graphic in instructions is the table. Sometimes within a step you must show correspondence between related data. For example, the instructions that follow would benefit from a table:

■ Original

Step 3: Use pyrometric cones to determine when a kiln has reached the proper temperature to fire pottery. Common cone ratings are as follows: a Cone 018 corresponds to 1200°F; a Cone 07 corresponds to 1814°F; a Cone 06 corresponds to 1859°F; and a Cone 04 corresponds to 1940°F.

■ Revision

Step 3: Use pyrometric cones to determine when a kiln has reached the proper temperature for firing pottery. Common cone ratings are as follows:

Cone 018	1200°F
Cone 07	1814°F
Cone 06	1859°F
Cone 04	1940°F

Instructions Guidelines

- Select the correct technical level
- Follow the ABC format
- Use numbered lists in the body
- Group steps under task headings
- Place only one action in each step
- Lead off each action step with a verb
- Remove extra information from the step
- Use bullets or letters for emphasis
- Emphasize cautions, warnings, and danger
- Keep a simple style

Usability Testing of Instructions

Testing instructions for *usability* ensures that your users are able to follow them easily. More information about usability and Web sites can be found in Chapter 14, but

understanding some of the basics of designing for usability will help you create effective instructions.² When you design for usability, you should be focused primarily on the user, not the product itself. This is true whether you are designing a document, software, a computer interface, or a piece of machinery. Products that are usable have the following qualities:

- Learning them is easy.
- Operating them requires the minimum number of steps.
- Remembering how to use them is easy.
- Using them satisfies the user's goals.

Usability does not happen automatically but should be a concern from the earliest stages of the design of products and documentation.

Professional writers often test their instructions on potential users before completing the final draft. The most sophisticated technique for such testing involves a *usability laboratory*, where test subjects are asked to use the instructions or manual to perform the process, often while speaking aloud their observations and frustrations (if any). The writers or lab personnel unobtrusively observe the process from behind a one-way mirror. Later, they may review audio- or videotaped observations of the test subjects, or they may interview these persons. This complex process helps writers anticipate and then eliminate many of the problems that users confront when they follow written instructions.

Of course, you may not have access to a usability laboratory to test your instructions. However, you can adapt the following user-based approach to testing assignments in this class and projects in your career. Specifically, follow these four steps:

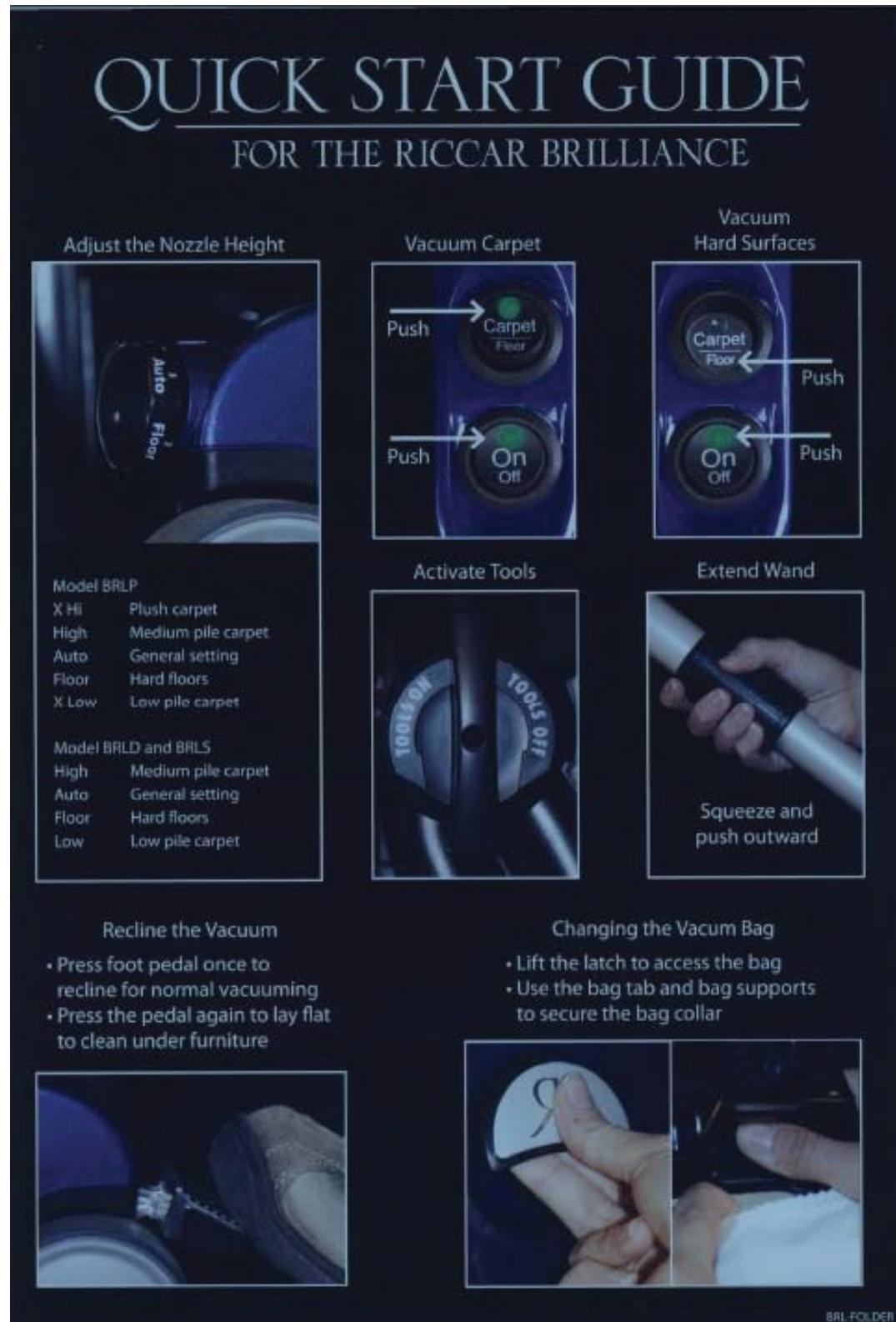
1. Team up with another class member (or a colleague on the job). This person should be unfamiliar with the process and should approximate the technical level of your intended audience.
2. Give this person a draft of your instructions and provide any equipment or materials necessary to complete the process. For the purposes of a class assignment, this approach works only for a simple process with little equipment or few materials.
3. Observe your colleague following the instructions you provide. You should record both your observations and any responses this person makes while moving through the steps.
4. Revise your instructions to solve problems your user encountered during the test.

Point-of-Use Instructions

While it is common to think of instructions as a booklet or sheet of paper with steps, instructions are also created in formats that provide users the information that they need when and where they need it. These *point-of-use* instructions can come in the form of pop-ups on a computer screen, computer help files, quick-start guides, and posters or decals.

- **Pop-ups.** Many software programs include pop-up boxes of text that explain elements on the computer screen. They may offer users alternatives for an operation, such as keystrokes for formatting text, or they may guess what you are trying to do and offer suggestions. The most notorious of these was Microsoft Word's Clippy the Paperclip.

²Adapted from C. M. Barnum. (2002). *Usability testing and research*. New York, NY: Longman.



■ Figure 8-7 ■

Quick-start guide

Source: Courtesy of Tacony Corporation, Fenton, MO.

Newer versions of Microsoft Word no longer use Clippy; many users complained that it took too much time to load, and that it appeared whether users wanted the help or not. Today, most pop-up boxes consist of short text explanations, although some include links to Web sites or to further information stored in Help files.

- **Help files.** Help files can be considered a sort of user's guide, and some companies have started making user's guides available only in this format. However, because users turn

to help files to solve specific problems, they are written a bit differently than full-length user's guides. Each topic is designed to be self-contained, although topics may include links to additional information in other topics in the Help file. (For more information about writing modular documents like Help files, see Chapters 3 and 4.)

■ **Quick-start guides.** Many manufacturers include a quick-start guide, in addition to a longer owner's manual. Quick-start guides are usually a single large card. Sometimes they are designed to be posted where the equipment or appliance is used. Figure 8–7 is a quick-start guide for a vacuum cleaner.

■ **Posters and decals.** Instructions may also be made available as posters or decals. For example, a microwave with programs for operations like making popcorn or reheating beverages may include a guide above the controls or inside the door. Most gasoline pumps have a decal nearby with instructions and warnings for properly filling your car. Many restaurants have posters in the kitchen with information about food safety or performing the Heimlich maneuver. These instructions are designed to serve as references and reminders at the point where they will be needed.

>>> Chapter Summary

- Process explanations and instructions are *procedural writing*, so they both use chronological organization.
- Readers use process explanations to understand or evaluate a procedure.
- Process explanations use the objective point of view, characterized by third-person subjects or passive voice.
- Process explanations are usually written in paragraph form.
- Scripts and flowcharts can help readers visualize complex processes.
- The ABC format can help writers organize process explanations.
- Readers use instructions to help them perform a task.
- Instructions should be written with language and detail that are appropriate to the reader's level of expertise.
- Instructions use the command point of view, characterized by the imperative mood of the verb.
- Instructions are written in numbered steps. Steps may be grouped to make complex instructions easier to follow.
- Cautions, warnings, and danger information should be clearly displayed.
- Instructions should be tested for their usability.
- The text of instructions should include clear references to illustrations.
- The ABC format for instructions can help writers organize instructions.
- Point-of-use documentation provides instructions when and where users need them.



Photodisc/Thinkstock

>>> Learning Portfolio

Communication Challenge M-Global's Home of Hope: The Good, the Bad, and the Ugly?

Recently M-Global's Atlanta office decided to change its approach to charitable giving at the branch. Instead of supporting various regional charities, employees could participate in a local project of their own—converting an abandoned building into a homeless shelter called Home of Hope. The idea seemed to be a creative way to make a personal contribution to the community. This case study describes the stages of the project. It ends with questions and comments for discussion followed by an assignment for a written response to the Challenge.

Project Planning

The process of making Home of Hope a reality began at M-Global-Atlanta's annual employee meeting last year. The human resources manager suggested that the office try a new approach to annual giving, and the office supervisors agreed to investigate. Eventually, the office decided to purchase an abandoned brick building on an acre lot in downtown Atlanta, in an area where homeless people often congregated.

M-Global conducted a preliminary study of the land and building, calculating that the project would cost about \$150,000. Management developed a formula by which the company would pay a 20 percent mortgage down payment from its savings and carry the monthly mortgage note. Then over a one-year period, the employees—through their annual financial contributions and personal labor—would renovate the house and add landscaping. The managers developed a suggested sliding scale for what money employees should contribute, based on their salaries. Managers and supervisors were also asked to meet individually with each employee to encourage contributions.

Once M-Global bought the land, the firm began benefiting from excellent publicity on local radio and in the papers. The media championed this effort by an Atlanta employer.

Site Problems

It appeared that nothing could go wrong—but something did. Ironically, considering that M-Global does environmental work, the firm found an environmental problem with the land that had not been detected before purchase. Apparently, part of the site had been used as a dump-

ing ground for old car batteries and for chemicals from a nearby dry cleaners. Both the batteries and a large portion of soil would have to be removed, adding \$15,000 to the cost of the project.

Just as bad were the environmental surprises in the building itself. The company found some asbestos and lead paint that had not been detected before purchase. Removal would cost about \$5,000. The increase in the total project cost irritated many employees, some of whom had been skeptical about the project from the start.

Employee Involvement

What did seem to go well were the weekend work groups that the company set up for the coming year. A group of 5 to 10 employees worked a half day on each Saturday, meaning that most employees would end up working three or four Saturdays during the entire year-long project. Employees were strongly encouraged to participate, and about 85 percent of them signed up for the groups.

As noted previously, through meetings with managers and other means, employees were encouraged to contribute the amount suggested on the sliding scale. About 75 percent agreed to the amount suggested, 10 percent pledged more, 10 percent pledged less, and 5 percent pledged nothing. Pledges were drawn from paychecks over the one-year period.

Community Involvement

Once the lot was purchased and the renovation designed, M-Global worked with groups in the surrounding community, making sure that local people were informed about the project. One home owners' group from this working-class neighborhood raised questions about the project attracting even more homeless people to the area. The group worried that the possibility of increasing crime would lower the value of their homes. M-Global decided that an open community meeting was in order.

At the meeting at a local school, M-Global produced speakers who suggested that the home would actually help decrease crime by giving shelter, meals, and activities to people who otherwise would be vagrants. Although the answers seemed to satisfy many, M-Global officials were on the defensive and wished they had done more networking with local residents.

Final Preparations

Once the home and yard were finished, M-Global hired two permanent staff members and set up a group of volunteers from the community. Retired people were especially active as volunteers. The company also asked for, and received, an ongoing commitment of \$17,000 a year from the city to pay half the salary of the Home of Hope director.

With these details handled, the home took in its first 25 residents several months ago. M-Global arranged for media coverage of the opening celebration, inviting a diverse group of community leaders. Of course, the company also made sure the event was covered in the M-Global corporate newsletter and by EnviroNews, a national news magazine in engineering and science.

Questions and Comments for Discussion

1. The M-Global corporate managers have expressed interest in the charity model developed by the Atlanta office. Specifically, they want the Atlanta human resources director to write a process explanation for the Home of Hope project. The explanation will be reviewed by all M-Global branch managers. What major points should be included in this process explanation? How should it differ from the way information is presented in the case just described?
2. Assume M-Global's corporate office has actually adopted a community-based charity option such as that reflected by the Home of Hope project. Now it wants

to provide project instructions for other urban offices that may want to build shelters. What major points should be emphasized in the instructions and in what order? What particular problems did the Atlanta office encounter, and how can the instructions be written to help other offices avoid such problems? In other words, how should the ideal set of instructions differ from the actual process that was performed?

3. Answer these questions first with regard to M-Global employees and second with regard to the community surrounding Home of Hope. What tactical mistakes, if any, were made by M-Global management in the process of promoting, communicating, and running this project? How could the problems have been avoided?
4. Are there any ethical problems revealed in the process explained in this case? Specifically, how do you feel about the manner by which employees are encouraged to contribute to such causes?
5. Several large charity groups were disturbed that M-Global dropped them and instead involved employees in the Home of Hope. Give what you think would be the charities' point of view about the process explained in this case.

Write About It

Assume the role of the Atlanta human resources director. Write the process explanation for M-Global corporate managers that is described in Question 1.

Collaboration at Work A Simple Test for Instructions

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Writing instructions presents a challenge. The main problem is this: Although writers may have a good understanding of the procedure for which they are designing instructions, they have trouble adopting the perspective of a reader unfamiliar with the procedure. One way to test the effectiveness of instructions is to conduct your own usabil-

ity test. The following exercise determines the clarity of instructions written by your team by asking another team to follow the instructions successfully.

Team Assignment

In this exercise, your team prepares a list of instructions for drawing a simple figure or object. The purpose is to write the list so clearly and completely that a classmate could draw the figure or object without knowing its identity. Following are instructions for completing the assignment:

1. Work with your team to choose a simple figure or object that requires only a relatively short set of instructions to draw. (Note: Use a maximum of 15 steps.)
2. Devise a list of instructions that your team believes cannot be misunderstood.
3. Test the instructions within your own team.

4. Exchange instructions with another team.
5. Attempt to draw the object for which the other team has written instructions. (Note: Perform this test without knowing the identity of the object.)
6. Talk with the other team about problems and suggestions related to the instructions.
7. Discuss general problems and suggestions with the entire class.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. Your instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: School-related Process Explanation

Use the Student Handbook or Web sites for your campus to find an explanation of a process. Be sure that you have identified a process explanation, not a set of instructions.

Possible processes include:

- Registering as a campus organization
- Holding an event on campus
- Reserving a room for a campus meeting
- Appealing a grade in a course

Evaluate the process explanation using the guidelines in this chapter. Is the explanation clear? Should the stages have been written as a process, or would they have been more helpful as a set of instructions? Be prepared to explain your analysis.

2. Analysis: Process Explanation

Using a textbook in a technical subject area, find an explanation of a process—for example, a physics text might explain the process of waves developing and then breaking at a beach; an anatomy text might explain the process of blood circulating; or a criminal justice text might explain the process of a criminal investigation.

Keeping in mind the author's purpose and audience, evaluate the effectiveness of the process explanation as presented in the textbook. Submit your evaluation in the form of a memo report to your instructor in this writing course, along with a copy of the textbook explanation.

For the purposes of this assignment, assume that your writing instructor has been asked to review the textbook you have chosen. The textbook's publisher wants your in-

structor to evaluate the book as an example of good or bad technical writing. Your instructor will incorporate comments from your memo report into his or her comprehensive evaluation of the textbook.

3. Analysis: Instructions

Find a set of operating or assembly instructions for a DVD player, microwave oven, remote control, timing light, or other electronic device. Evaluate all or part of the document according to the criteria for instructions in this chapter.

Write a memo report on your findings and send it, along with a copy of the instructions, to Natalie Bern. As a technical writer at the company that produced the electronic device, Natalie wrote the set of instructions. In your position as Natalie's supervisor, you are responsible for evaluating her work. Use your memo report either to compliment her on the instructions or to suggest modifications.

4. Analysis: Document With Embedded Instructions

An M-Global lab supervisor, Kerubo Awala, has very little time to train a new group of lab trainees who have little if any industrial lab experience. Although she has given the new recruits a detailed description of a soil grinder (see Model 7–4 on page 213–214), she also wants them to have a short, easy-to-read document that focuses on use and safety. For that purpose, she has quickly assembled and distributed the following document. Evaluate its effectiveness for her intended purpose and audience. How could it be improved?

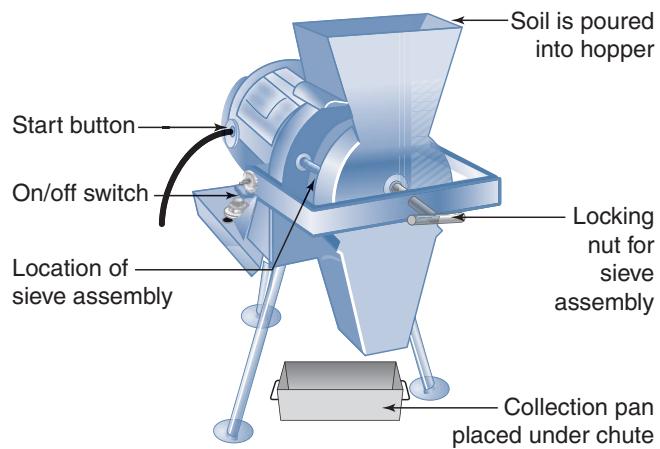
SOIL GRINDER

Purpose The soil grinder is used to prepare soil for testing in the laboratory.

Warning The sieve assembly must be properly locked after sieve screens are changed.

- Mesh screens should be stored in their protective case.
- Ask your lab instructor to check the sieve assembly after you have changed screens.
- Ask your lab supervisor to check the installation of the sieve assembly in the soil grinder.

Controls The diagram shows where the on/off switch is located and where the soil is placed in the hopper.



after each interview and then sends a copy to corporate and to the employee, and the original remains in the personnel files of that respective supervisor's branch. If for any reason a PAR interview and report form are not completed in the required month, the supervisor must send a memo of explanation to the corporate Human Resources Department, with a copy to the supervisor's branch manager.

6. Practice: School-related Process Explanation

Conduct a brief research project in your campus library. Specifically, use company directories, annual reports, or other library sources to find information about a company or other organization that might hire students from your college.

In a memo report to your instructor, (a) explain the process you followed in conducting the search and (b) provide an outline or paragraph summary of the information you found concerning the company or organization. Assume that your report will become part of a volume your college is assembling for juniors and seniors who are beginning their job search. These students will benefit both from information about the specific organization you chose and from an explanation of the process that you followed in getting the information, because they may want to conduct research on other companies.

7. Practice, M-Global Context: Process Explanation

As a project manager for M-Global's Atlanta office, you just found out that your office has been selected as one of the firms to help renovate Kiddieworld, a large amusement park in the Southeast. Before Kiddieworld officials sign the contract, however, they want you to report on the process M-Global uses to report and investigate accidents (because the project involves some hazardous work). You found the following policy in your office manual, but you know it is not something you would want to send to a client. Take this stilted paragraph and convert it into a process explanation for your clients in the form of a letter report. Remember: The readers are not performing the process; they only want to understand it.

Practice Assignments

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

5. Practice, M-Global Context: Instructions

As an employee at the corporate office of M-Global, you just received the job of writing a set of instructions for completing performance appraisal reviews (PARs). The instructions are included in a memo that goes to all supervisors at all branches of the firm, along with related forms. To help you get started on the instructions, you have been given a narrative explanation of the process (see the following). Your task is to convert this narrative into a simple set of instructions to go into the memorandum to supervisors.

Performance appraisal reviews (PARs) are conducted annually for each employee during the anniversary of the month in which the employee was originally hired. Several days before the month in which the PARs are to be conducted, the corporate office sends each supervisor a list of employees in that supervisor's group who should receive PARs. The main portion of the PAR process is an interview between the supervisor and the employee receiving the PAR. Before this interview takes place, however, the supervisor should give the employee a copy of the *M-Global PAR Discussion Guide*, which offers suggestions for the topics and tone of a PAR interview. The supervisor completes a PAR Report Form

Accident reporting and investigation are an important phase of operations at M-Global, Inc. The main purpose of an accident investigation and report is to gain an objective insight into facts surrounding the accident in order to improve future accident control measures and activities as well as to activate the protection provided by our insurance policies. It is therefore imperative that all losses, no matter how minor, be reported as soon as possible, prefer-

ably within 48 hours, to the proper personnel. Specifically, all accidents must be reported orally to the immediate supervisor. For minor accidents that do not involve major loss of equipment or hospitalization, that supervisor has the responsibility of filling out an M-Global accident report form and then sending the form to the safety personnel at the appropriate branch office, who later send it to the safety manager at the corporate office. For serious accidents that involve major loss of equipment or hospitalization of any individuals involved, the supervisor must call or fax the safety personnel at the appropriate branch office, who then should call or fax the safety manager at the corporate office. (A list of pertinent telephone numbers should be kept at every job site.) These oral reports are followed up with a written report.

tion (along with warnings or cautions, if appropriate). If possible, conduct a user test before completing the final draft.

11. Practice, Team Project With M-Global Context: Writing Instructions

M-Global's increasing international work has generated interest among the corporate staff in gaining ISO 9000 certification. (Based in Geneva, Switzerland, the International Organization for Standardization [ISO] helps organizations around the world develop standards in quality.) Your team will conduct some research on this topic of growing interest. Write a set of instructions for a company, like M-Global, that wishes to gain such certification. You may either (a) provide a generalized overview for completing the entire process or (b) focus on one limited, specific part of the process, such as the process for gaining certification for a particular product or service.

12. Ethics Assignment

Examine a set of instructions for a household or recreational device that—either in assembly or use—poses serious risk of injury or death. Evaluate the degree to which the manufacturer has fulfilled its ethical responsibility to inform the user of such risk. You may want to consider the following questions:

- A. Are the risks adequately presented in text and/or graphic form?
- B. Are the risk notices appropriately placed in the document?
- C. Is the document designed in such a way that a user reading quickly can easily locate cautions, warnings, or dangers?

If you have highlighted any ethical problems, also suggest solutions to these problems.

13. International Communication Assignment

Sets of instructions may reflect the *cultural bias* of a particular culture or country. Such a bias may be acceptable if the audience for the instructions shares the same background. However, cultural bias presents a problem when (a) the audience represents diverse cultures and backgrounds or (b) the instructions must be translated into another language by someone not familiar with cultural cues in the instructions. Following are just a few categories of information that can present cultural bias and possibly cause confusion:

- Date formats
- Time zones

8. Practice: User Test of Instructions

Find a relatively simple set of instructions. Then ask another person to follow the instructions from beginning to end. Observe the person's activity, keeping notes on any problems she or he encounters.

Use your notes to summarize the effectiveness of the instructions. Present your summary as a memo report to Natalie Bern, using the same situational context as described in Assignment 3—that is, as Natalie's boss, you are to give her your evaluation of her efforts to produce the set of instructions.

9. Practice: Writing Simple Instructions

Choose a simple office procedure of 20 or fewer steps (e.g., changing a printer cartridge, filling a mechanical pencil, adding dry ink to a copy machine, adding paper to a laser printer). Then write a simple set of instructions for this process in the form of a memo report. Your readers are assistants at the many offices of a large national firm. They are new employees who have no background or experience in office work and no education beyond high school. You are responsible for their training.

10. Practice, Team Project: Writing Complex Instructions, with Graphics

Complete this assignment as a team project (see the guidelines for teamwork in Chapter 3). Choose a process connected with college life or courses—for example, completing a lab experiment, doing a field test, designing a model, writing a research paper, getting a parking sticker, paying fees, or registering for classes.

Using memo report format, write a set of instructions for students who have never performed this task. Follow all the guidelines in this chapter. Include at least one illustra-

- Types of monetary currency
- Units of measurement
- Address and telephone formats
- Abbreviations
- Holidays
- Conventions for use of colors, symbols, and icons
- Figures of speech
- Conventions for document content and organization
- Legal information
- Page size and orientation

Source: Adapted from D. L. Major & A. Yoshida. (2007). Crossing national and corporate cultures: Stages in localizing a pre-production meeting report. *Journal of Technical Writing and Communication*, 37, 167–181.

Choose a set of instructions that reflects several types of cultural bias, such as those included in the previous list. Point out the examples of bias and explain why they might present problems to readers outside a particular culture.



14. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Many campuses and communities now have a number of recycling options. Your community may have a recycling center that accepts a variety of materials. Some private companies and retail outlets may offer recycling for scrap metal or computers, cell phones, and other electronics. Often these materials must be prepared in some way before they can be recycled. Create a set of instructions for your campus or community that identifies locations for recycling and provides instructions for recycling specific materials. Your instructions should be directed to a broad audience, of course; moreover, they should give the kinds of details that allow the reader to act without having to get more information.

To get information for this report, you might consider (a) calling individuals in the waste management department of your local government, (b) reading relevant information on local waste management Web pages, and (c) contacting local businesses and organizations that offer recycling.

MEMORANDUM

TO: Leonard Schwartz
FROM: Jenny Vir
SUBJECT: New E-mail System
DATE: November 7, 2012

States purpose clearly. → Yesterday I met with Jane Ansel, the installation manager at BHG Electronics, about our new e-mail system. She explained the process by which the system will be installed. As you requested, this memo summarizes what I learned about the setup process.

BHG technicians will be at our offices on November 18 to complete the following tasks:

1. Removing old cable from the building conduits
2. Laying cable to link the remaining unconnected terminals with the central processing unit in the main frame
3. Installing software in the system that gives each terminal the capacity to operate the new e-mail system
4. Testing each terminal to make sure the system can operate from that location
5. Instructing selected managers on the use of the system

Describes five main tasks, using parallel grammatical form.

Confirms the follow-up activities they have already discussed.

Gives reader opportunity to respond.

→ As you and I have agreed, when the installation is complete, I will send a memo to all office employees. That memo will discuss setup procedures that each employee must complete before she or he is able to use the new e-mail accounts.

→ Please let me know if you have further suggestions about how I can help make our transition to the new e-mail system as smooth as possible.

■ Model 8-1 ■ M-Global process explanation: E-mail

MEMORANDUM

TO: All Employees With Access to New E-mail System
FROM: Jenny Vir
SUBJECT: Instructions for Setting Up New E-mail Account
DATE: November 20, 2012

Earlier this month, we had a new e-mail system installed that will be used beginning December 1, 2012. This memo provides instructions on how to set up your new e-mail account and how to migrate all of your archived e-mail so that it will be ready for use when the new system goes into effect.

Please follow the step-by-step instructions below for proper setup of your e-mail and migration of your saved e-mail to the new system:

1. Double-click the **E-mail** icon.
2. Use the **Username** and **Password** that you have used most recently with the old e-mail system.
3. Select the **Accounts** menu.
4. Select the **Account Options** submenu.

RESULT: A window will open that prompts an **Account Name** and **Account Type**.

5. Enter a name (e.g., "Mail").
6. Use the drop-down menu to select **IMAP4** as the account type.
7. Click **Next**.

RESULT: You will be prompted to enter an **Incoming** and **Outgoing Mail Server**.

8. Enter as follows:
Incoming: www imap mgglobal com
Outgoing: www smtp mgglobal com
9. Click **Next**.

RESULT: You will be asked for your **e-mail address**.

10. Use: yourlastname@mgglobal.com
11. Click **Next**.
12. Click the radio button that reads: **Connect through my local area network (LAN)**.
13. Click **Next**.
14. Name your "New Folder" (e.g., "Old Mail")
15. Click the **Finish** button.

Your new account access should now be available, and your old e-mails will move to the new folder that you just named.

If you encounter any problems while performing the steps listed above, please contact a member of our IT staff for assistance.

Gives clear purpose.

Identifies result of steps.

Limits each step to one action.

Separates results from actions.

Gives results if instructions have been followed correctly.

Shows reader how to get more information.

APPENDIX A: ON-SITE MONITORING

Abstract begins with purpose statement and summary of appendix.

- The purpose of monitoring the air is to determine the level of protective equipment needed for each day's work. This appendix gives an overview of the process for monitoring on-site air quality each day. Besides describing the main parts of the process, it notes what other relevant information is to be recorded and how the data will be logged.

Abstract ends with list of equipment used in process that follows.

- This process requires the following equipment:
- Organic vapor analyzers (OVAs)
 - Combustible-gas instruments
 - Personal sampling devices

Body section of this process uses paragraph format and is aimed at nontechnical audience.

- The project manager at the site is responsible for supervising the technician who performs the air quality tests. At the start of every day, a technician uses an OVA to check the quality of air at selected locations around the site. Throughout the workday (at times specified by the project manager), the technician monitors the air with combustible-gas instruments and personal sampling devices. This monitoring takes place at the following locations:

- 1. Around the perimeter of the site
 2. Downwind of the site (to determine the extent of migration of vapors and gases)
 3. Throughout the site
 4. At active work locations within the site

Then at the end of every workday, the technician uses the OVA to monitor the site for organic vapors and gases.

Conclusion part of ABC format puts this process in larger context.

- Besides the air quality data, the following information is collected by the technician at each sampling time:

- percentage relative humidity
- wind direction and speed
- temperature
- atmospheric pressure

The project manager keeps records of air quality and weather conditions in dated entries in a bound log.

COMBINED SITE INVESTIGATION

In helping to select the site for an offshore oil platform, M-Global recommends a combined site investigation. This approach achieves the best results by integrating sophisticated geophysical work with traditional engineering activities.

As the accompanying flowchart shows, a combined site investigation consists of the following main steps:

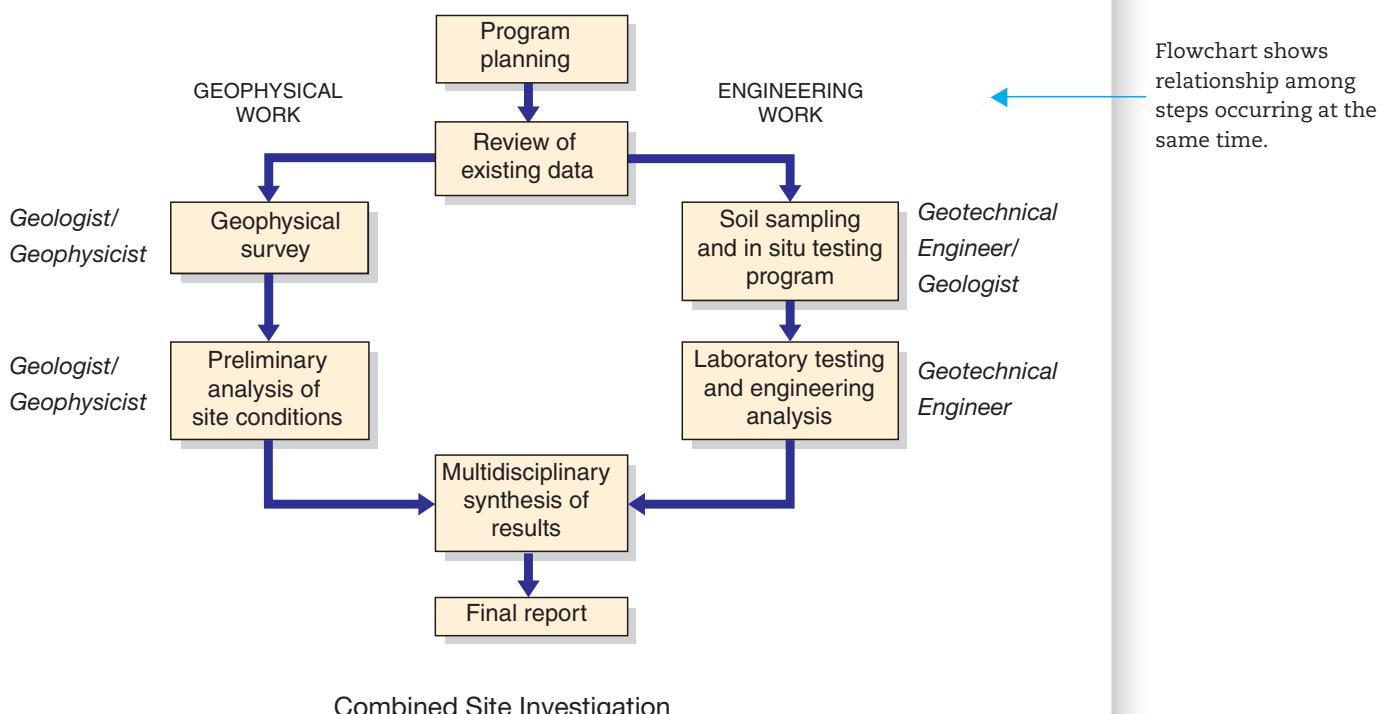
1. Planning the program, with M-Global's scientists and engineers and the client's representatives
2. Reviewing existing data
3. Completing a high-resolution geophysical survey of the site, followed by a preliminary analysis of the data
4. Collecting, testing, and analyzing soil samples
5. Combining geophysical and engineering information into one final report for the client

Steps 1 and 2 are shown in top center portion of flowchart.

Steps 3 and 4 are shown in left and right portions of flowchart, respectively.

Step 5 is shown in bottom center portion of flowchart.

The report from this combined study will show how geologic conditions at the site may affect the planned offshore oil platform.



■ **Model 8-4** ■ M-Global process explanation with a flowchart (both are included in an appendix to a report to a client)

MAKING TRAVEL ARRANGEMENTS *(Original Version)*

Paragraph format makes it difficult for reader to locate individual steps.

When you're making travel arrangements, ask the person taking the trip to give you most of the details needed—dates, destinations, flight times hotel requirements, rental car requirements, purpose of trip, and account number. Before proceeding, the first thing I do is confirm the flight information in the Official Airline Guide (OAG). You'll find the OAG on top of the credenza. The next step is to call Turner Travel (555-566-0998). Although I've had great luck with all the people there, ask for Bonnie or Charlie—these two are most familiar with our firm. Turner Travel will handle reservations for flights, hotels, and rental cars. Remind them that we always use Avis midsize cars.

After you have confirmed the reservations information, fill out the M-Global travel form. Here's where you need to know the purpose of the trip and the traveler's M-Global account number. Blank forms are in the top drawer of my file cabinet in the folder labeled "Travel Forms—Blank." Once the form is complete, file the original in my "Travel Forms—Completed" folder, also in the top drawer of the file cabinet. Give the copy to the person taking the trip.

When you get the ticket in the mail from Turner Travel, check the flight information against the completed travel form. If everything checks out, give the ticket to the traveler. If there are errors, call Turner.

Also, when making any reservations for visitors to our office, call either the Warner Inn (555-566-7888) or the Hasker Hotel (555-567-9000). We have company accounts at each one, which will bill us directly.

■ Model 8-5 ■ Instructions for making travel arrangements

MAKING TRAVEL ARRANGEMENTS

(Revised Version)

Arranging Travel for Employees

To make travel arrangements for employees, follow these instructions:

Step Action

1. Obtain the following information from the traveler:

- a. Dates
- b. Destinations
- c. Flight times
- d. Hotel requirements
- e. Rental car requirements
- f. Purpose of trip
- g. Account number

2. Confirm flight information in the Official Airline Guide (OAG).

Note: The OAG is on the credenza.

3. Call Turner Travel (555-566-0998) to make reservations.

Note: Ask for Bonnie or Charlie.

Note: For car rental, use Avis midsize cars.

4. Complete the M-Global travel form.

Note: Blank forms are in the folder labeled "Travel Forms—Blank," in the top drawer of my file cabinet.

5. Make one copy of the completed travel form.

6. Place the original form in the folder labeled "Travel Forms—Completed," in the top drawer of my file cabinet.

7. Send the copy to the person taking the trip.

8. Check the ticket and the completed travel form after the ticket arrives from Turner Travel.

9. Do the ticket and the completed travel form agree?

- a. If yes, give the ticket to the traveler.
- b. If no, call Turner Travel.

Action steps all begin with a *command verb*. Letters are used to show long list of subpoints for easy reference.

Notes are used to provide reader with extra information, separate from action of steps.

Although closely related, Steps 5–7 are best separated—for convenient reference by reader.

As noted in Instructions Guideline 8, the two subpoints in Step 9 show reader what options exist.

Arranging Hotel Reservations for Visitors

To make reservations for visitors, call the Warner Inn (555-566-7888) or the Hasker Hotel (555-567-9000). M-Global has company accounts at each one, and they will bill us.

MEMORANDUM

TO: Employees Receiving New Scanners
FROM: June Hier, Purchasing Agent
SUBJECT: Instructions for New Scanners
DATE: October 31, 2012

INTRODUCTION

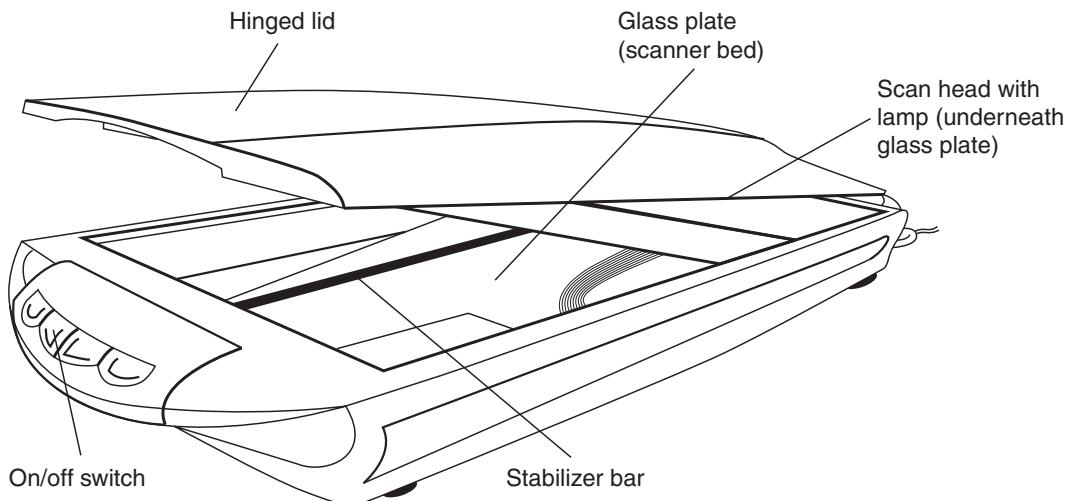
Abstract places instructions in a context.

When we received our new flatbed scanners last week, it was brought to our attention that the accompanying instructions for setting up and operating the scanners had been lost. To help you begin using your scanner, I have written basic instructions. Before setting up your scanner, please make sure you have the following pieces:

- Scanner
- Black connecting cable
- Software CD

Purpose and overview information is given.

The following illustration identifies your scanner's basic parts and the steps you need to install the software, set up the scanner, and begin scanning.



■ **Model 8-6** ■ M-Global memo containing how-to instructions for a scanner

INSTALLING YOUR SCANNING SOFTWARE

Before you can use your scanner, you must install the appropriate software program. To install the software, insert the CD that came with the scanner into your computer's CD drive. The installation wizard should automatically run (if it does not, go to Start > My Computer, and double-click on MYSCNR). Follow these steps:

1. The installation wizard appears. Click **Begin**.
2. The wizard wants to know where it should install in the program.
Note: The default location should be Program Files. If not, click on the **Browse** button and go to My Computer > Local Disk (C:) > Program Files.
3. Click **OK**.
4. Click **Next**.
5. Make sure "Create Desktop Icon" is selected.
6. Click **Next**.
7. The wizard will install your program.
8. Click **Finish** when the installation is complete.

You have now successfully installed your scanner's software program. After installation, the program will run automatically. You can close it if you want to.

SETTING UP AND USING YOUR SCANNER

1. Hooking Up Your Scanner

- a. Plug the connecting cable into the back of the scanner.
- b. Plug the other end of the connecting cable into a wall socket.

2. Turning on Your Scanner

- a. Locate the on/off switch on the front of the scanner.
- b. Switch to the "on" position.

RESULT: Scanner's lamp will turn on and warm up. The scan head will move back and forth a few times.

3. Scanning

- a. Open the scanning program by double-clicking the desktop icon.
- b. Place a piece of paper on the scanner bed, in the upper-right-hand corner.
- c. Select **Scan Document**.
- d. Click **Preview Document**.

NOTE: The preview will take 15–20 seconds.

RESULT: A preview image will appear.

- e. Click and drag the edges of the crop box to fit the document.
- f. Click Scan.

RESULT: The scanner will scan the selected area of the preview image.

Main tasks are indicated in headings and subheads.

Note provides troubleshooting help.

Successful results are identified.

Similar actions are separated into two different steps, to keep actions distinct.

As with "notes," "results" should be separated from action in steps.

4. Saving Scanned Files

- a. To save your scanned file(s), go to File > Save.
- b. Enter a name for your document.
- c. Choose to save it as either a JPG (for pictures) or PDF (for text).
- d. Find the file that you want to save the document in.
- e. Click **Save**.

5. Turning Off Your Scanner

- a. Locate the on/off switch on the left side of the scanner.
- b. Switch to the “off” position.

Choosing Scanning Options

- 1. The scanner automatically scans in color. To scan in grayscale or black-and-white**
 - a. Follow Steps a through c in Step 3, above.
 - b. Look for the Options box above the **Preview Document** and **Scan** buttons.
 - c. Select grayscale, black-and-white, or color from the drop-down menu.

2. Scanning Multiple-Page Documents

- a. To scan more than one page per document, open the scanning program.
- b. Select **Scan Multiple-Page Document**.
- c. Follow Steps d through f of Step 3, above.

RESULT: A dialogue box will pop up asking you if you want to add more pages to your document.

- d. Click **Yes**.
- e. Scan another page.
- f. When you are done adding pages, click **No** on the dialogue box.
- g. Save as a PDF.

CONCLUSION

If for any reason you have trouble following these instructions or do not have all the parts needed to set up and begin using your scanner, please contact Jerry (ext. 1781). If you encounter problems using the scanner, please report them to Jerry, especially if:

- The scanner cannot be detected.
- The scanning program freezes while saving.
- The scanner refuses to turn on.

Conclusion of ABC format wraps up memo by telling readers what to do if they encounter problems.





Chapter | 9 | Technical Research



>>> Chapter Objectives

In this chapter, students will

- Learn how to focus a research project
- Learn how to identify sources that will help them answer their research questions
- Learn how to find and use published research
- Learn how to conduct primary research
- Learn how to use information from sources correctly
- Learn how to present their research findings to others
- Read and analyze a sample research report

Tanya Grant, who works in marketing at M-Global's Atlanta office, has just been given an important task. The company president, Jim McDuff, wants her to examine the feasibility of the company's switching to hybrid electric-powered cars in their American offices. McDuff believes the company's success in using these vehicles in their Asian offices is so significant that the company should consider using them in the U.S. offices. Success with hybrid electric cars could help address serious air quality issues and offset escalating petroleum prices. Also, Jim hopes his firm will become a major player in refining charging-station technology and fostering its use. In short, this move could serve as a public relations effort, a budgetary control, and a marketing tool for M-Global products.

Jim has told Tanya she should write a report investigating the advantages and disadvantages of hybrid electric cars. At an upcoming meeting, upper-level management will review the report. She should study the impending tax and other legislation affecting fuel-efficient vehicles. In addition, she should investigate economic feasibility of hybrid vehicles. Some of her report will look at start-up costs for switching

the vehicle fleet, employee needs, and other in-house matters.

In your classes, your teachers often assign you a general topic or question to research and write about. They may expect you to find your own narrow focus for your response, and they probably ask you to depend primarily on print sources available in the library or on the Internet. Research papers are an important way for teachers to see how you learn about and analyze an issue.

Research does not end with the last college term paper. In the workplace, you may write articles that are much like the papers you have written in school for professional journals, but much of the research you write about as part of your job will serve a different purpose than your writing in your classes. Figure 9–1 shows some of the differences between research in school and research in the workplace. Workplace research aims to explain an issue or help the reader solve a problem. Research may be assigned by managers, or writers may decide to conduct research and write the results as a report or presentation.

Even though your workplace research serves a different purpose and may be published in a different

Features	Writing prompt	Purpose	Audience	Sources	Publication format
Academic writing	General topic assigned by the teacher	Communicating what the student knows about the topic, to earn a high grade	The teacher who assigned the project	Secondary sources, for the most part	Academic papers Presentations and posters at academic conferences
Workplace writing	Specific workplace situation, question, or problem raised by the writer or by a supervisor	Providing information needed to answer a question or make a decision	Often several people with differing professional backgrounds	Secondary sources serve as foundation for primary research	Reports Proposals Workplace presentations Presentations and posters at professional conferences

■ **Figure 9–1** ■ Features of academic and workplace research projects

format than academic papers, it starts with the same review of published articles that you have learned to do in your college writing classes. In fact, your career will often require you to gather technical information from libraries, the Internet, and other sources. Such on-the-job research produces documents as diverse as reports, proposals, conference presentations, published papers, newspaper articles, Web sites, or essays in company magazines. Your professional reputation may depend on your ability to locate information, evaluate it, and use it effectively in everyday research tasks.

This chapter takes you through the research process practiced on the job. Specifically, the chapter has five main sections:

1. Getting started
2. Reviewing published research
3. Conducting primary research

4. Using borrowed information correctly
5. Reporting your research

A common thread throughout the chapter is the M-Global case study of Tanya Grant's project for Jim McDuff. We'll observe Tanya as she gathers research material. Like Tanya, in your career you will have to apply the research process on the job. It is one thing to read about doing research; it is quite another to dive into your project and work directly with the books, periodicals, electronic databases, Web sites, and other resources in the library and on the Internet. You should seek firsthand research experience as soon as you can.

Finally, remember that the best research writing smoothly merges the writer's ideas with supporting data. Such writing should (1) impress the reader with its clarity and simplicity and (2) avoid sounding like a strung-together series of quotations. These two goals present a challenge in research writing.

>>> Getting Started

In Chapter 2, you learned about the three phases of any writing project: planning, drafting, and revising. Research can occur in the planning stage, right before you complete an outline, and it can also occur again and again throughout the project. Before starting your research, ask yourself questions like the following to give direction for your work:

- What questions must be answered during the research phase?
- What *secondary sources*, including print, multimedia, and electronic sources, are most useful?
- What is the nature and extent of information that is needed? Should it be scholarly or popular? Current or historical?
- What are the best strategies and research tools for locating information?
- What *primary sources*, including interviews, surveys, field observations, and usability tests, will provide useful information?
- What are the best criteria for critically evaluating information for reliability, validity, accuracy, timeliness, or point of view or bias?
- What format must be used to document material borrowed from sources, and what copyright permissions must be acquired to use the information?

The following outline shows how Tanya answers the questions previously noted as she begins her research:

1. Main question: Should M-Global switch to hybrid electric vehicles?
2. Main types of information needed:
 - What are the advantages and disadvantages of this technology?
 - What is the research saying about the outlook of hybrid electric vehicles?
 - What tax or other legislation is pending at both state and federal levels?
 - Who are the current and potential consumers, and what do they think about hybrid electric cars?
 - What are the real costs in maintaining a fleet?
 - What could M-Global gain by the switch? What would it lose?
 - What impact would such a switch have on the competition, potential clients, or employees?
3. Possible sources:
 - Memos, reports, and other M-Global documents related to the use of hybrid cars in the organization's Asian offices
 - Directories (of periodicals, newsletters, newspapers, electronic journals, organizations)
 - Journal and newspaper articles found in indexes, abstracts, and electronic databases
 - Bibliographies and literature reviews
 - Government documents
 - Books
 - Web sites
 - Surveys
 - Interviews
4. Format for documentation: Tanya submits a short report to Jim McDuff, documenting her research using the *Publication Manual of the American Psychological Association's* (APA) system for citing borrowed information (the same format used by M-Global engineers and scientists in their research reports).

>>> Reviewing Published Research

All research draws in some way on research that has been conducted and published by others, so most researchers begin by reading these *secondary sources*. Secondary sources can be defined as follows:

Secondary sources: Information about a topic that has been shared through print, recorded media, or presentations. Secondary sources provide researchers and readers with the background information they need by establishing the professional and intellectual context for an issue or problem.

Even an internal report like Tanya Grant's needs to examine materials that have already been published about the topic. It may be that someone has already studied the issue and provided the data you need, or someone has recommended a solution. Even if the information that you find is specific to another organization, a published study may offer you a useful methodology to collect information that will address the situation in your own organization. With her basic plan in mind, Tanya can begin her work. Her first decision is where to start her research. Locations for secondary sources include the following:

- The public library
- Her corporate library
- The university library
- The World Wide Web

She eliminates the public library as too general, and the M-Global corporate library contains only a copy of the report about the Asian offices' use of hybrid vehicles. Jim McDuff has already given her a copy of this report. The remaining options are the Web and the local university libraries. Tanya must use both to do a thorough job of research. She uses the Web regularly for finding business information, news, entertainment, and discussion on just about anything. Although she is not a student at the university, Tanya has a borrower's card that gives her access to one library's databases and collections. She knows about the university's extensive print collections in science and technology, its Web-based online catalog, and its extensive collection of electronic databases. In addition, the staff in the reference department and the interlibrary loan office will help her identify and track down sources. The two, the Web and the library, work amazingly well together—they intersect, overlap, and complement one another, and each contributes unique sources, provided you know the basic research techniques and tools. A good researcher uses both the Web and the library to take advantage of the strengths and overcome the weaknesses of both.

A planning trip to the library can save you hours of time searching the Web in unfamiliar subject areas. However, a few hours' preparation online—for example, searching a library's Web-based catalog—can make your trip to the library more productive.

Tanya schedules two days the first week and one the next week to work in the library, and she begins her research from her computer in the office. The next sections introduce some of the strategies, tools, and basic concepts you need for searching library online catalogs, searching in the library, and searching on the Web.

Searching Online Catalogs

Both the library and the Internet can seem like intimidating places when you first start a project. Once you learn a few basics, however, you will become comfortable and even confident about using these



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resources. This section includes information on using online library catalogs to locate books, journals, and other resources. We look at the basics as well as more advanced techniques you need for searching not only library catalogs, but also most Web search engines and electronic databases.

Books and other printed sources provide well-supported and tested information about a topic, but by definition, the information is often dated. Even a book just published has information that is one to two years old, given the time it takes to put a book-length manuscript into print. Keep this limitation in mind as you search.

The library's catalog is a road map to its collection of books, periodicals, and other material; it is an alphabetical list by author, title, and subject. These days, the majority of college and university libraries offer sophisticated online catalogs that can be searched at the library or remotely from home or office. The online catalog often has additional features such as keyword and Boolean searching and information about whether a book is available or checked out. The rules for searching online catalogs vary depending on the computer program used by the library. The online catalog's Help screen is the best guide to search techniques. Following are some general strategies for effective searching.

Author or Title Search

If you know specific authors or titles of potentially useful books, conduct an author or title search to locate the library's call numbers. Study the catalog entry, especially the subject heading; similar books can be found if you search by subject using these terms. Often online catalogs feature automatic links to these terms.

Subject Search

Once you know the subject headings assigned to books or resources on your topic, searching by subject can be very efficient. Libraries select the subject headings from *The Library of Congress Subject Headings*. Unlike the Web, a library's catalog has subject terms that are controlled and very specific in order to bring all the material together. Knowing exactly which subject words to use can be a matter of trial and error, but once found, these headings can serve as powerful tools to gather information on your topic.

Keyword Search

This strategy is probably your best choice because it allows you to scan through all the fields in a book's library record—author field, title, subject headings, dates—to locate books that match your request. Pay close attention to the catalog's rules for keyword searches; you can often improve your results by limiting searches to particular fields. Figure 9–2 shows a typical keyword search.

Tip: One of the easiest ways to find material on your topic is to switch between keyword and subject searching. For example, begin with a keyword search, selecting the books that match your request and the subject headings used to describe those books. Then do a subject search.

Author	Anderson, Curtis D. (Curtis Darrel), 1947-	
Title	Electric and hybrid cars : a history / Curtis D. Anderson and Judy Anderson.	
Published	Jefferson, N.C. : McFarland, c2010.	
Edition	2nd ed.	
Reviews & More		
LOCATION	CALL #	STATUS
MWSU Stacks - Upstairs	TL220.A53 2010	AVAILABLE
 Send Call Number via Text 		
Description	x, 257 p. : ill ; 26 cm.	
Bibliography	Includes bibliographical references and index.	
Summary	"This illustrated history of electric and hybrid vehicles covers the companies that produced various models; the politics that have surrounded them; the environmental aspects of electric and hybrid vehicles versus internal combustion engines; efforts to overcome technological challenges associated with electric vehicles; marketing strategies through the decades; and public attitudes towards these vehicles throughout their existence"--Provided by publisher.	
Contents	Introduction : The birth of the automobile industry -- The evolution of the electric vehicle -- Politics -- Environment -- Technology -- Marketing -- Conclusion -- Appendix : Hybrids defined.	
LC SUBJECT	Electric automobiles. Hybrid electric cars.	
ISBN	9780786433018 (softcover : alk. paper) 0786433019 (softcover : alk. paper)	
Standard #	NZ1 13287211 CDX 10371845 AU@000045360163 NLGGC 327216263	
OCLC #	424560321	

■ Figure 9–2 ■ Results of a typical keyword search

Source: Missouri Western State University Library Catalog.

Advanced Search Techniques

A library catalog may also include advanced strategies such as Boolean searching, positional operators, and truncation. Many times you may not be aware that you are using these tools because they are built into the catalog's search functions. However, learning to use these techniques is important because they are used in library catalogs, most periodical databases, and Web search engines. Look for the Help screens in your catalog that describe the advanced search options, and practice using them whenever possible; they can save you time and produce excellent results. Following is a brief description of some of the most common search options:

- A **Boolean search** outlines the relationship of words and phrases using simple AND, OR, NOT statements (Figure 9–3).
- **Positional operators** stipulate the relative location of each term within the record. For example, you can often specify that terms must be adjacent or within a certain number of words.
- **Truncation** allows for variant spelling or plurals. For example, in some catalogs entering *wom*n* retrieves records including either of the words *woman* and *women*.

Searching other library catalogs can sometimes be as simple as selecting a link from your library's Web site to a library consortium or union catalog of university

Boolean Searching

AND: Example: cars AND SUVs

Locates only those records where both terms are present.

Use this to narrow your search and reduce the number of matches.

OR Example: cars OR automobiles OR SUVs

Locates records in which any one of these terms can appear.

Use this to broaden or enlarge your search.

NOT: Example: SUVs NOT trucks

Eliminates records containing the excluded term.

Use this sparingly to narrow your search.

■ **Figure 9–3** ■ Boolean search examples

Tip: Cite your sources as you go. Keep close track of what you find and where you find it so that you don't waste your time searching for books on the shelves of your library when they are actually located elsewhere. Consult the reference department of your library to learn about your library's interlibrary loan service or borrowing privileges at other libraries.

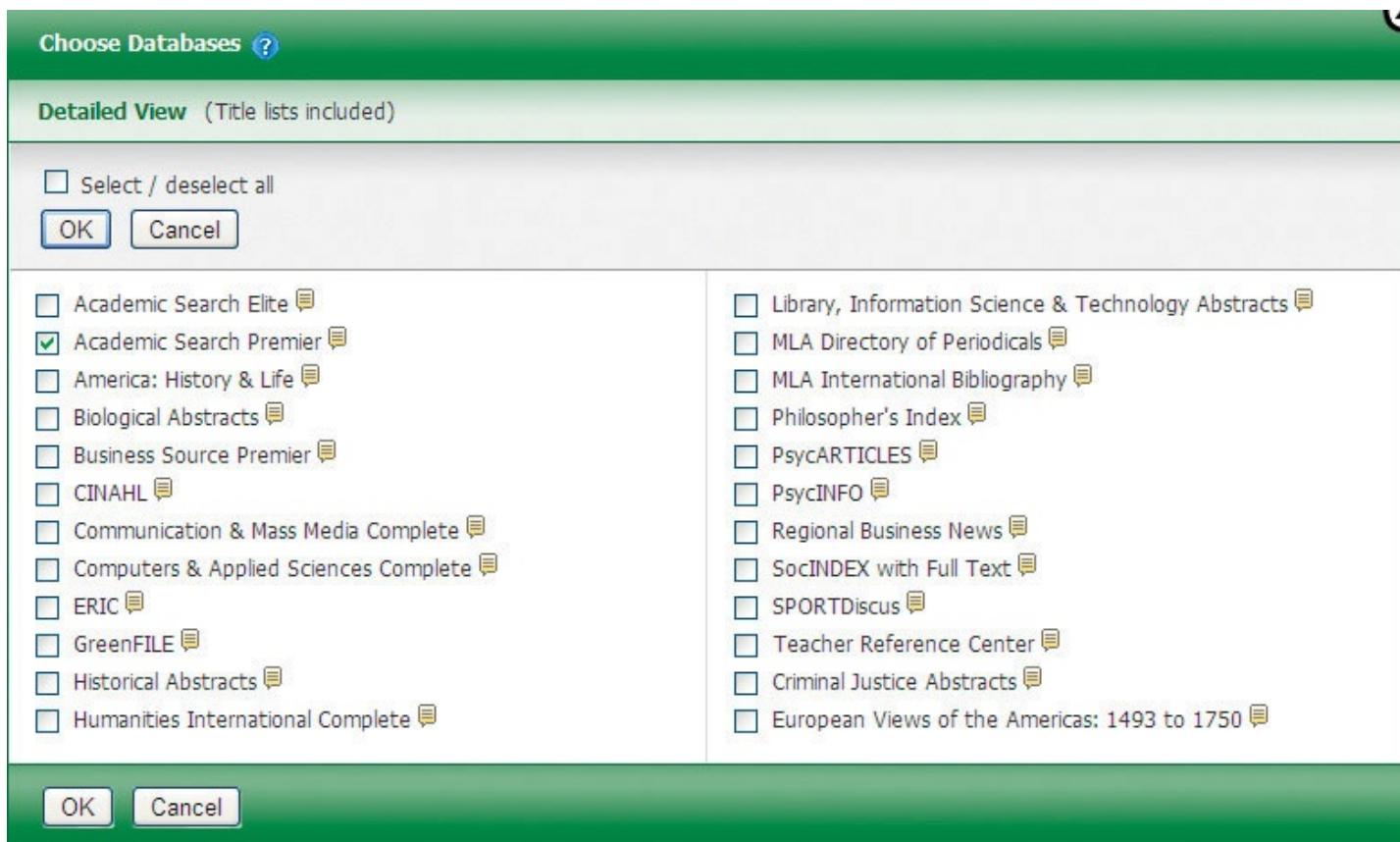
catalogs on the Web or ask your reference librarian if your library provides access to Worldcat (<http://www.worldcat.org>) or the Online Computer Library Center (OCLC) site (<http://www.oclc.org/us/en/global/default.htm>). Two Web directories of library catalogs that have been around for some time are Libcat: A Guide to Library Resources on the Internet—Libraries in the United States (<http://www.librarysites.info>) and Libweb: Library Servers (<http://lists.webjunction.org/libweb/>). (Keep in mind, however, that because of the transitory nature of the Web, they may have disappeared since this book was printed.)

When you use the Web for searching catalogs, remember to evaluate what you find as you search. Begin thinking critically as soon as you start, and work to keep this perspective throughout your research. For example, when looking at a reference to a book, a journal, an article, or a Web site, ask yourself the following questions:

- What are the author's academic or professional qualifications?
- Who is the publisher, and what is its reputation?
- What are the scope and content of the work?
- How does this information fit in with what you know about this topic?
- What are the trends in information on this topic, and how does this book, article, journal, or Web site fit in?
- How current is this information?

Finally, use your library's online catalog to find out what electronic databases are available to you. You may be able to search important research databases with access to periodicals, newspapers, encyclopedias, dictionaries, directories, statistics, and other

and college libraries within your region. Searching libraries close to home has the advantage of easier access to their collection, whether you visit in person or gain access through your library's interlibrary loan service. If you want to see "what's out there" in larger or more specialized libraries, try searching for library



■ **Figure 9–4** ■ Research databases available on one library’s Web site

Source: Missouri Western State University Library Online.

reference sources (Figure 9–4). Many of these databases can be searched remotely from your home or office, but some are restricted to in-library searching only. Policies governing who can search, from where, passwords, and whether searching is fee-based or free vary widely depending on the contracts between the library and the database vendor. The next section of this chapter covers electronic databases in more depth; for now, keep in mind that the quality of information you retrieve from research databases is usually superior to the material you may locate searching the vast World Wide Web. In addition, online catalogs may provide links to recommended high-quality Web sites you might not otherwise locate. Explore your online options and discuss your needs with the reference staff at your library.

Tanya Grant’s M-Global Project

Tanya Grant, for example, rightly thinks that books will not be her main source of information about hybrid electric cars because the topic has developed relatively recently, but she at least wants to see what range of sources the catalog offers. Tanya does a keyword search and determines that the correct subject heading is “hybrid electric vehicles.” Her own library’s holdings are somewhat limited, but one item is worth reviewing. She decides to search the online catalog from another local university with an automotive engineering school, where she finds a better selection of books, and because her library card gives her borrowing privileges



newphotoservice/Shutterstock

at all state university system libraries, she decides to take a trip to this library. Her final search is in OCLC and Webcat, databases that lead her to a few more noteworthy titles that she will borrow through her library's interlibrary loan department.

Searching in the Library

At some point during your search for secondary resources, you should visit an academic library. The library's services and collections of books, journals, electronic databases, microforms, and reference materials, although complex, support your research and help you locate information. Fortunately, academic and research libraries are organized along similar principles,

and the skills you gain from using one library can generally be used at other libraries as well. This section highlights some of the services and resources you can expect to find as you conduct your research in the library.

✓ **Library Resources**

This section includes information on the following resources: books; periodicals; newspapers; company directories; and dictionaries, encyclopedias, and other general references.

>> **Resource 1: Books**

As previously discussed, the library catalogs these days are generally automated. Once you locate the exact book for which you are searching, browse through the books located beside this title. You are likely to find other useful and related material. You may also find that the book you need is available as an e-book. Your library's Web site will have information about how to check out, download, and open e-books. Ask for assistance at the reference or circulation desk if you cannot locate the books on your topic or if you don't have access to an e-book that you need.

>> **Resource 2: Periodicals**

Periodicals are publications that are issued on a regular basis, usually weekly, monthly, or quarterly. The term encompasses

- Popular magazines that take commercial advertising, such as *Time*, *Science*, and *National Geographic*
- Professional and scholarly journals such as *IEEE Transactions on Professional Communication* and *Technical Communication Quarterly*

Your key tool for locating information within periodicals is an electronic database of periodical indexes or abstracts. By looking up your subject in the index, you can find articles that provide the information you need. Some databases, like Academic Search Premier

include popular periodicals. Others, like the Engineering Index, deal with a broad range of technical information. Still others, like Mechanical Engineering Abstracts, focus on periodicals, books, Web sites, and papers in specialized technical fields. The periodicals covered in the index or abstract are listed in the volumes or in the online information screen, along with the inclusive dates of the issues indexed.

Sometimes an abstract, or a summary of the article, is all that is available to you; it provides a brief description of articles so that you can decide whether the entire article is worth finding. Abstracts are especially useful when the article being summarized is not available in your library. The abstract can help you decide whether to (1) visit another library, (2) order the article through the interlibrary loan service, or (3) disregard the article altogether.

Increasingly, electronic databases provide full-text copies of the periodical articles. Some libraries permit you to search these databases from your home or office, whereas other libraries, because of the license requirements of the database vendors, permit searching within the library only. Still other libraries provide professional search services where, for a fee, the research staff conducts the search for you.

The rules for searching electronic databases vary widely. Each database has unique features and searching requirements. You must invest time and energy to learn these rules to take full advantage of the information the database offers. Start your search by reading the Help screens and the instructional materials about the database or any support materials that the library provides. You will save yourself time and improve your search results if you understand the basic search strategies and have a grasp of the scope of the database. At a minimum, make sure that you know the rules for printing, e-mailing, or saving to disk the results of your search before you get too far into your research.

Most of the electronic databases have search strategies similar to what you may have encountered when searching the online catalog for books, and they are likely to include subject searching, keyword searching, advanced search techniques using Boolean and positional operators, truncation options, and language- and date-limiting options. Also common are options to limit searches to scholarly or peer-reviewed journals, or to full-text journals. The more you practice, the better your searching and the more precise your results.

There are hundreds of electronic databases and print indexes or abstracts available. Many libraries provide guides to these resources. Ask the reference staff to help you locate the most appropriate ones for your topic. Following is a list of a few of the well-known titles available in print or electronically:

- Academic Search Premier
- Applied Science and Technology Abstracts (print title: *Applied Science and Technology Index*)
- ABI/Inform Complete at ProQuest
- BIOSIS: Biological Abstracts

Tip: E-mailing results from a search in an electronic database is an efficient and accurate way to collect the information you need to document your research and build your works-cited page.

- CSA: Cambridge Scientific Abstracts
- CAS: Chemical Abstracts
- Computer Abstracts International Database
- Current Contents
- EI: Engineering Information
- General Science Abstracts (print index: *General Science Index*)
- GPO Monthly Catalog (index to government documents)
- Inspec, the database of the Institution of Engineering and Technology
- Lexis-Nexis Academic Universe
- PsycINFO (print title: *Psychological Abstracts*)
- Science Citation Index, Social Science Citation Index, Arts & Humanities Citation Index (online through the Web of Science)

Tanya Grant's M-Global Project

Tanya decides to consult a few of the electronic databases recommended by the reference librarian.

1. She conducts a search using GreenFILE, which the library subscribed to electronically. The scope and content of the abstract are exactly what she wants because they target the technological and engineering aspect of hybrid electric vehicles. Because the database is new to her, she spends time learning how to conduct a search and save her results. She limits her search to scholarly and peer-reviewed articles from the last few years. The search not only retrieves useful articles but also provides links to six high-quality Web sites. Scanning the results, she selects the most promising articles and Web site and e-mails a copy to herself and prints a copy of the list to use for locating the periodicals in the library. Figure 9–5 shows Tanya's primary search.

2. Next she consults ABI/Inform Global, an online database that covers business and management trade journals produced by ProQuest. She's interested in looking at business viewpoints on hybrid vehicles. Her search produces 72 items published since 2008, many of which have full-text copies of the article available for her to read immediately. After sampling a few articles, she flags those she wants and e-mails them to herself. Tanya decides to redo her search and narrow it to peer-reviewed articles only. The nine articles she retrieves in her second search have undergone review and evaluation by experts in the field prior to publishing. These articles will be particularly noteworthy.

3. Finally, Tanya consults Academic Search Premier, a comprehensive, general-purpose database. It covers almost 4,000 periodicals, 2,300 of which are scholarly. Again, she is able to narrow her search to peer-reviewed articles and locates some very current and useful information. One of the full-text articles refers to an organization she wants to investigate further, the Partnership for a New Generation of Vehicles. Figure 9–6 shows Tanya's search.

Searching: GreenFILE | Choose Databases »

hybrid in Select a Field (optional) AND electric in Select a Field (optional) AND vehicles in Select a Field (optional)

Search | Clear | ? | Add Row

Basic Search | Advanced Search | Visual Search | Search History

Search Options

Search modes ?	<input checked="" type="radio"/> Boolean/Phrase <input type="radio"/> Find all my search terms <input type="radio"/> Find any of my search terms <input type="radio"/> SmartText Searching Hint	Apply related words <input type="checkbox"/>
		also search within full text articles <input type="checkbox"/>

Limit your results

Full Text <input type="checkbox"/>	References Available <input type="checkbox"/>
Scholarly (Peer Reviewed) Journals <input checked="" type="checkbox"/>	Publication <input type="text"/>
	Publication Date Month: <input type="text"/> Year: <input type="text"/> to Month: <input type="text"/> Year: <input type="text"/>
Publication Type <input type="button" value="All"/> <input type="button" value="Academic Journal"/> <input type="button" value="Book/Monograph"/> <input type="button" value="Essay"/>	Document Type <input type="button" value="All"/> <input type="button" value="Abstract"/> <input type="button" value="Article"/> <input checked="" type="button" value="Bibliography"/>

Searching: GreenFILE | Choose Databases »

hybrid in Select a Field (optional) AND electric in Select a Field (optional) AND vehicles in Select a Field (optional)

Search | Clear | ? | Add Row

Basic Search | Advanced Search | Visual Search | Search History

Page: 1 2 3 4 5 Next | Relevance Sort | Page Options | Alert / Save / Share

110 Results for... Boolean/Phrase: hybrid and electric and vehicles

Limiters

- Scholarly (Peer Reviewed) Journals
- Publication Date: 2008/10/1 - 2011/12/31

Refine your results

- Full Text
- References Available
- Scholarly (Peer Reviewed) Journals

2008 Publication Date 2011

Update Show More

1. Effect of hybrid system battery performance on determining CO₂ emissions of hybrid electric vehicles in real-world conditions. [View Article](#)

By: Alvarez, Robert; Schlinger, Peter; Welenmann, Martin. Energy Policy, Nov2010, Vol. 38 Issue 11, p6919-6925, 7p; DOI: 10.1016/j.enpol.2010.07.008

Subjects: HYBRID electric vehicles; CARBON dioxide; EMISSIONS; ELECTRIC vehicles; DYNAMOMETER

Database: GreenFILE

Add to folder | Relevancy: | Cited References: (1)

Check Article Linker for Text

Notes: This title is not held locally

2. Integration of plug in hybrid electric vehicles in a regional wind thermal power system. [View Article](#)

By: Gjerrasson, Lisa; Karlsson, Sten; Johnson, Filip. Energy Policy, Oct2010, Vol. 38 Issue 10, p5482-5492, 11p; DOI: 10.1016/j.enpol.2010.04.001

Subjects: PLUG-in hybrid electric vehicles; HYBRID electric vehicles; WIND power; EMISSIONS; ATMOSPHERIC carbon dioxide

Database: GreenFILE

Add to folder | Relevancy:

■ **Figure 9–5** ■ Results of a search conducted in GreenFILE through a library's Web site

Source: GreenFILE through Missouri Western State University Library.

The screenshot shows a search interface for the Academic Search Premier database. The search terms entered are "hybrid" AND "electric" AND "vehicles". The search mode is set to Boolean/Phrase. The results are filtered by Scholarly (Peer Reviewed) Journals and Full Text. The publication date range is from 2008 to 2011. The publication type is set to All. The results list three articles:

- Classification and Review of Control Strategies for Plug-In Hybrid Electric Vehicles.** By Wirsching, Svenja G.; Emadi, Al. *IEEE Transactions on Vehicular Technology*, 01/01/2011, Vol. 60 Issue 1, p111-122; 12p. 11 Charts, 11 Graphs; DOI: 10.1109/TVT.2010.2096026. Subjects: HYBRID electric vehicles; ELECTRIC vehicles; HYBRID electric cars; ENERGY consumption; POWER electronics. Database: Academic Search Premier.
- Battery, Ultracapacitor, Fuel Cell, and Hybrid Energy Storage Systems for Electric, Hybrid Electric, Fuel Cell, and Plug-In Hybrid Electric Vehicles: State of the Art.** By Khaligh, Amin; Zhai, Li. *IEEE Transactions on Vehicular Technology*, 01/01/2010, Vol. 59 Issue 6, p2806-2814; 9p. Subjects: ELECTRIC batteries; FUEL cells; ENERGY storage; PLUG-in hybrid electric vehicles; HYBRID electric vehicles; Primary battery manufacturing; SUPERCAPACITORS. Database: Academic Search Premier.
- Light Fuel-Cell Hybrid Electric Vehicles Based on Predictive Controllers.** By: Vitorino, Rui; Laike, Park; Yamming, Xing; Sangwon, Kwon. *IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY*, 01/01/2011, Vol. 60 Issue 1, p297-307; 10p. 9 Figures, 1 Chart, 9 Graphs; DOI: 10.1109/TVT.2010.2087045. Subjects: FUEL cells; HYBRID electric vehicles; ELECTRIC vehicles; HYBRID power; POWER resources. Database: Academic Search Premier.

Abstract: The fuel economy and all-electric range (AER) of hybrid electric vehicles (HEVs) are highly dependent on the onboard energy-storage system (ESS) of the vehicle. Energy-storage devices charge during low power demands and discharge during high-power demands, acting as catalysts to provide energy boost. Batteries are the primary energy-storage devices in ground vehicles, increasing the AER of vehicles by 15% almost doubles the incremental cost of the ESS. This is due to the fact that the ESS of HEVs requires higher peak power while preserving high energy density. Ultracapacitors (UCs) are the option with higher power densities in comparison with batteries. A hybrid ESS composed of batteries, UCs, and/or fuel cells (FCs) could be a more appropriate option for advanced hybrid vehicle ESSs. This paper presents state-of-the-art energy-storage topologies for HEVs and plug-in HEVs (PHEVs). Battery, UC, and FC technologies are discussed and compared in this paper. In addition, various hybrid ESSs that combine two or more storage devices are presented. (Amin KHALIGH; HUAI AU; HUIK)

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■ **Figure 9-6** ■ Results of a search conducted in Academic Search Premier database through a library's Web site

Source: Academic Search Premier through Missouri Western State University Library.

>> Resource 3: Newspapers

If your research topic demands the most current information, newspapers provide an excellent source. One disadvantage is that newspaper information has not “stood the test of time” to the same extent as information in journals and books. Despite this drawback, newspaper articles can give you insight, facts, and opinion on many contemporary issues.

Two particularly noteworthy newspapers are the *New York Times* and the *Wall Street Journal*. These well-respected newspapers have a long tradition of high-quality journalism. Both titles are thoroughly indexed, and many libraries either provide access through an electronic database or keep print indexes and back issues in microfilm or microfiche.

Many other regional, national, and international newspapers have established Web sites at which you can frequently locate the archives or find additional information not available in the print version. Two significant electronic databases for newspapers are Lexis-Nexis' Academic Universe, a full-text index to some 5,000 publications, including newspapers, wire services, legal news, and government publications and ProQuest Newspapers, an index to five major newspapers. Check in your library's online catalog to see if it provides additional links to some of the Web-based news services.

Tanya Grant's M-Global Project

Tanya decides to see what kind of newspaper coverage hybrid electric cars are receiving and try to uncover some of the tax legislation being proposed by each state. Her first search in the Lexis-Nexis Academic Universe locates 964 newspaper articles—some written just the previous week. With her second search, Tanya adds the concept “tax” and uncovers 135 articles from major newspapers from around the world describing various tax legislation efforts under way. She is able to search articles in specific newspapers and finds seven articles in the *New York Times* and one article in the *Mobile [Alabama] Register*. These articles serve as a starting point for studying the complex tax legislation being proposed by various state legislatures. Figure 9–7 shows Tanya’s search results.

>> Resource 4: Company Directories

Often your research needs may require that you find detailed information about specific firms. For example, you could be completing research about a company that may hire you, or you may seek information about companies that compete with your own. Today, you can find many databases of company information online. In addition, most companies now produce sophisticated Web sites about their services and products. Although not without bias, these can be an excellent source of information. The following is a small sample of some useful directories that are available; ask the reference librarian to recommend others and to assist you in using the online versions of these and other directories.

Compact D/SEC

Corp Tech Directory of Technology Companies

D & B Million Dollar Directory

Mergent Online

Standard & Poor's Register of Corporations, Directors, and Executives

Ward's Business Directory of U.S. Private and Public Companies

Who's Who in Science and Engineering

LexisNexis® Academic

The screenshot shows the LexisNexis Academic search interface. At the top, there's a navigation bar with links for Home, Help, and Clear. Below the navigation is a search bar with the placeholder text "Use of this service is subject to Terms and Conditions". To the left, there's a sidebar with sections for General Searching (Easy Search™, Power Search), a Tip about headings, and News links. The main search area has three boxes: "Search the News" (with fields for search term, source type like Newspapers, and source title like New York Times), "Look up a Legal Case" (with fields for citation, parties, and topic), and "Get Company Info" (with fields for name and ticker). Below these are links to "Cases", "Landmark Cases", "Company Dossier", and "Search & Results List".

LexisNexis® Academic

This screenshot shows the search results for "hybrid electric vehicles" in LexisNexis Academic. The results are listed in a table with columns for the result number, a checkbox, the title, and a brief description. The results are numbered 1 through 16. The titles include various news articles from different publications like The Straits Times, National Post, and Chicago Sun-Times, all discussing hybrid vehicles and their benefits or challenges.

Results		Selected Group: Newspapers (View All Results)
1.	<input type="checkbox"/> How the road tax on Lexus RX400h is denied	The Straits Times (Singapore), January 30, 2007 Tuesday, 344 words, Naleeza Ebrahim (Ms)Deputy Director, Media Relations Land Transport Authority IRS to phase out tax break for hybrid vehicles: Honda, Toyota benefiting (all but Vancouver edition headline); IRS to phase out tax break for hybrid vehicles: Honda, Toyota to benefit (Vancouver edition headline.)
2.	<input type="checkbox"/> National Post (Canada), May 22, 2002 Wednesday National Edition, Financial Post: World; Pg. FP20, 353 words, Alison Fitzgerald	Chicago Sun-Times, December 27, 2004 Monday, AUTOTIMES; Pg. 4, 208 words
3.	<input type="checkbox"/> Ford Escape hybrid qualifies for IRS break	Calgary Sun (Alberta), July 30, 2010 Friday, AUTONET; Pg. A16, 792 words, BY WHEELBASE COMMUNICATIONS
4.	<input type="checkbox"/> Shift: Changing attitudes on vehicles and driving	The Oklahoman, January 19, 2006 Thursday, BUSINESS; Pg. 2B, 227 words
5.	<input type="checkbox"/> TRANSPORTATION UPDATE: Bill would give hybrid buyers a tax credit	Post-Bulletin (Rochester, Minnesota), August 1, 2006 Tuesday, STATE AND REGIONAL NEWS, 337 words, Chelsey Perkins, Post-Bulletin, Rochester, Minn.
6.	<input type="checkbox"/> Hybrid-car owners might qualify for tax credit	GREEN GLOW AT AUTO SHOW: Carmakers take aim at eco-friendly with 7 new offerings
7.	<input type="checkbox"/> Chicago Sun-Times, February 10, 2011 Thursday, NEWS; Pg. 19, 733 words, Sandra Guy, sguy@suntimes.com	Chicago Sun-Times, February 10, 2011 Thursday, NEWS; Pg. 19, 733 words, Sandra Guy, sguy@suntimes.com
8.	<input type="checkbox"/> FOLLOW ARNIE ON THE HYBRID HIGHWAY	The Independent (London), April 4, 2006 Tuesday, FEATURES; Pg. 3, 663 words, Edmund King
9.	<input type="checkbox"/> ON THE ROAD : Hybrids worth the money	San Antonio Express-News, April 11, 2000 Friday, DRIVE; Pg. 1G, 1425 words, G. Chambers Williams
10.	<input type="checkbox"/> Green machines: Reduced emissions, better mileage make hybrids popular choice	Green machines: Reduced emissions, better mileage make hybrids popular choice
11.	<input type="checkbox"/> Farmington Daily Times (New Mexico), August 5, 2007 Sunday, BUSINESS, 868 words, — Special to The Daily Times —	Hybrid cars get green light from consumers
12.	<input type="checkbox"/> Now Orleans CityBusiness (New Orleans, LA), June 16, 2006, NEWS, 860 words, Thomas Leggett	New Orleans CityBusiness (New Orleans, LA), June 16, 2006, NEWS, 860 words, Thomas Leggett
13.	<input type="checkbox"/> Behind the wheel	Monterey County Herald (California), March 3, 2006 Friday, Z_BUSINESS, 651 words, BAnn M. Job
14.	<input type="checkbox"/> Monterrey County Herald (California), March 3, 2006 Friday, Z_BUSINESS, 651 words, BAnn M. Job	GM plans new kinds of hybrids in 2007
15.	<input type="checkbox"/> The Philadelphia Inquirer, November 30, 2006 Thursday, BUSINESS; Pg. D04, 463 words, From Inquirer Wire Services	The extra cost of buying a hybrid: \$5,000 to \$8,000 The money you'll save at the pump: About \$600 a year The opportunity to feel a little greener: Priceless: Auto makers investing in gas-electric vehicles are banking on buyers' environmental consciousness. Hybrid sales have risen by 960 per cent since 2000 and that's just the beginning, JEREMY CATO writes
16.	<input type="checkbox"/> The Globe and Mail (Canada), July 20, 2005 Thursday, GLOBE MEGAWHEELS; TECHNOLOGY; Pg. G12, 1695 words, JEREMY CATO	Making some room for the new, guilt-free SUV: General Motors will add to its gas-electric line to include sport utilities
	<input type="checkbox"/> The Vancouver Sun (British Columbia), November 6, 2003 Thursday Final Edition, Business BC; Pg. D13, S11 words, John Poretto	The Vancouver Sun (British Columbia), November 6, 2003 Thursday Final Edition, Business BC; Pg. D13, S11 words, John Poretto
	<input type="checkbox"/> The Bismarck Tribune, December 27, 2010 Monday, WIRE; Pg. 3B, 567 words, ALICIA WALLACE Daily Camera	The Bismarck Tribune, December 27, 2010 Monday, WIRE; Pg. 3B, 567 words, ALICIA WALLACE Daily Camera

■ **Figure 9-7** ■ Results of a search conducted in the Lexis-Nexis Academic through a library's Web site

Source: Lexis-Nexis Academic through Missouri Western State University Library.

>> Resource 5: Dictionaries, Encyclopedias, and Other General References

Sometimes you may need some general information to help you get started on a research project. In this case, you may wish to consult specialized dictionaries, handbooks, or encyclopedias. Most general encyclopedias are available in some electronic format, generally as Web-based products, such as the *Encyclopedia Britannica* online. There are, however, advantages to using a specialized subject-based encyclopedia or dictionary rather than a general one in that the articles target a more scholarly audience, assume greater subject expertise, and reference more scholarly materials in their bibliographies. Following is a list of a few specialized dictionaries, handbooks, and encyclopedias you may find in the reference collection:

Blackwell Encyclopedia of Management
CRC Handbook of Chemistry and Physics
Encyclopedia of Associations
Encyclopedia of Business Information Sources
Handbook of Industrial Engineering
Handbook of Technology and Operations
International Business Information
McGraw-Hill Encyclopedia of Science and Technology
Van Nostrand's Scientific Encyclopedia

Tanya Grant's M-Global Project

At this point, Tanya has spent many hours examining the library's online catalog, searching in online periodicals' indexes and abstracts and in newspaper indexes. She locates books and articles in scholarly and technical periodicals as well as articles in popular magazines and newspapers. Through interlibrary loans, she requests a few promising items not locally owned by the library. In the meantime, she has plenty to read and begin creating notes. She has a couple of leads to reliable Web sites from the library's online catalog and an organization she wants to research. She has a good start, and plenty of work ahead.

Searching the Web

Throughout this chapter you have seen references to the World Wide Web. The Web is the largest and fastest-growing portion of the Internet, with its appealing graphic interface, which incorporates text, images, and sound, and its ability to move from one Web page to another through hyperlinks. We next highlight some of the terms and concepts, challenges, and strategies associated with using the Web as a research tool and information source.

Fundamentals of Web Searching

Mining the Web for useful resources is always challenging and frequently frustrating, but it can yield terrific results. Why is searching such a challenge?

- The Web is huge; it contains tens of millions of documents and is growing at an astounding rate.
- The Web is constantly changing—sites appear, change, move, and disappear without warning.
- Search engines and subject directories don't work very well—they retrieve too much, they don't cover the entire Web, the relevancy ranking defies logic, and no two search engines work alike.
- The content of the Web is unregulated; anyone can add anything—fact, fiction, or fiction that looks like fact.

- There is no central index to the Web and few rules for describing Web pages.
- The process of searching, sifting through results, downloading pages, and evaluating each Web page critically is time-consuming.
- The Web is full of distractions that make it difficult to stay focused.

Despite these challenges, the Web offers access to extraordinary resources that often have no print counterpart. Because of the Web's sheer size, a search usually finds something on any topic—possibly something of value or perhaps something useless. Some studies have estimated that scholarly sites represent only 10 percent to 20 percent of the Web, but this number is still significant. Most people agree that the Web's strength lies in its information on current events, business and industry, popular culture, the government, computing, and technology, but all disciplines are represented in some way. Some resources you can find on the Web are

1. Directories of people, businesses, and organizations
2. Advertising, marketing materials, and product catalogs
3. Government documents
4. Periodicals, newspapers, and magazines
5. Books
6. Conference proceeding and reports
7. Reference tools like guides, indexes to periodicals, and dictionaries
8. An increasing number of “by subscription only” information sources
9. Sound and video clips
10. Images

>> Using Your Evaluation Skills

When you search the Web, be prepared to invest time and effort in evaluating critically what you find. Unlike books and journal articles, which undergo a rigorous editing and review process, any Web site can be loaded directly onto the Internet. You will encounter misinformation, grossly biased content, and poor text and graphic design. Evaluate Web sources using the criteria discussed earlier in this chapter. However, because Web sources do not generally follow standard publishing practices, be prepared to invest your valuable research time determining the authority, timeliness, reliability, accuracy, point of view, and validity of the source. Once you develop a systematic approach to evaluating sources, you will quickly recognize both the high- and low-quality Web sources. Be particularly alert to the following:

- **Obscured authorship:** Often a Web designer is credited as the author when in fact an organization or a corporation is the real source.
- **Out-of-date information:** The Web is littered with abandoned and unmaintained Web sites. A high-quality Web site displays the date prominently.

- **Subtle and obvious bias:** Many Web sites are elaborate advertisements promoting products, services, causes, or points of view. Data manipulation, false arguments, and unsubstantiated opinions are common.
- **Poor-quality links:** Links from a high-quality Web site usually lead you to other valuable sites; links from a poor-quality site usually lead you to other poor-quality sites. Spending time examining the links helps you determine the quality of the site.
- **Flawed style and design:** Well-organized and accessible Web sites support the research process. Although there are many cases of good research in poorly designed sites, be aware that extracting the information from overly complex sites drains away your research time.

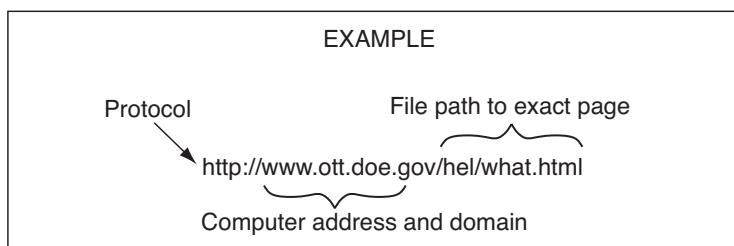
Spend time evaluating the source up front before you spend time reading the document. If you cannot determine the scope, authority, or date of the Web site, don't use it.

>> Learning the Basics

The Web is made up of millions of *Web pages*, each uniquely identified by an address or Uniform Resource Locator (URL). This *address* often contains important clues to the Web site's authorship, country of origin or domain, or the type of organization sponsoring the site. Figure 9–8 shows a list of common domains and examples.

Web browsers, such as Microsoft Internet Explorer and Mozilla Firefox, are software applications for viewing Web documents and navigating the Web. They have similar features: a line for entering URLs; options for creating *bookmark* (or *favorite*) sites; basic navigational features for moving forward and backward and stopping; and options for setting preferences to customize the browser.

com	Commercial organization (for profit)
edu	Educational institution
gov	Government organization (non-military)
int	International non-profit organizations
mil	Military organization (US)
net	Networking organization
org	Non-profit organization
ca	Canada (country of origin)
uk	United Kingdom (country of origin)



■ **Figure 9–8** ■ Common Internet domain extensions

Web Search Options

Searching the Web has become second nature for many of us. More than ever, we turn to the Web for basic news and information, to conduct business, and for entertainment. Invitations to “Visit our Web site” are everywhere, and companies have invested heavily to guarantee that their Web sites rank high in the results of a Web search. Developing effective Web research skill is critical and requires continuous updating as new techniques and search tools emerge. Options for searching include the following:

- Searching by a specific address, or URL
- Searching by keyword in an index-type *search engine* or *meta-search engine*
- Drilling through a subject category using a *subject directory*
- Using guides to reviewed and recommended Web sites

Tip: Competition among search engines is high, and new features and applications appear regularly. To keep up with search engine development and testing, try Search Engine Watch at <http://searchenginewatch.com>

Figure 9–9 lists some of the most popular search tools. Keep in mind that Web address changes or improved applications may have appeared since this list was created.

>> Searching by URL: Uniform Resource Locator

Searching by a specific Web address, or URL, is a very effective strategy, provided you have complete information and the Web page still exists. References to URLs are

■ **Figure 9–9 ■**
Popular search engines and subject guides

Web		
AltaVista	http://www.altavista.com	Keyword, directory
Ask.com	http://www.ask.com	Keyword and subject prompting using natural language
Bing	http://www.bing.com	Keyword, subject directory
Dogpile	http://www.dogpile.com	Metasearch engine
DuckDuckGo	http://www.duckduckgo.com	Keyword
Google	http://www.google.com	Keyword results based on links
Google Scholar	http://scholar.google.com	Keyword search of scholarly publications
Internet Public Library	http://www.ipl.org	Subject guide plus
Mahalo	http://www.mahalo.com	Keyword, subject All results checked by human editors
WebCrawler	http://www.webcrawler.com	Metasearch engine Keyword, subject directory
Yahoo!	http://www.yahoo.com	Keyword, subject directory

regularly included in books, journals, television and radio broadcasts, and marketing and advertising literature. One good Web site can lead you to other well-written and -maintained Web sites.

>> Searching by Keywords Using Search Engines and Meta-Search Engines

Hundreds of search engine companies on the Web have created massive databases of Web sites and provide keyword searching. Keep in mind that these search engine companies are actually in the business of selling advertising, leasing keywords, and attracting potential customers for the companies that pay to advertise.

Search engine databases are usually built without human intervention using computer programs called *robots* or *spiders* that move throughout the Web. No single search engine indexes the entire Web, and there is fierce competition among companies for the distinction of having the largest, most current, or most useful database.

The value of a search engine from a research viewpoint depends on the relevancy ranking of the results, speed, quantity, and currency of information it retrieves. The best search engines provide simple and clear instructions that allow you to refine the results. Pay particular attention to the advanced-search features.

Meta-search engines simultaneously use the databases of a number of search engines to respond to a request. The keyword search is forwarded to a variety of search engines; then the database results are collected and displayed. You can save time using a meta-search engine, particularly on narrow, well-defined topics, but you often lose the ability to refine a search using the features of the individual search engines.

There are hundreds of search engines, and a new and better one is always on the way. Second-generation search engines feature *intelligent agents* designed to help refine your question by providing suggestions and alternate lines of inquiry. Other second-generation search engines provide continual updating services using *push technology* that stores your search profile, runs searches, and reports results automatically.

Keeping up with developments in search engines is a challenge. Search for new ones periodically or ask colleagues to recommend one. Keep trying different ones until you find a few that meet your needs.

Tip: Master the features of one search engine before moving on to the next.

Tanya Grant's Web Search

Tanya begins her Web search using a URL that one of the M-Global engineers gave her, which leads her to a Web site maintained by the U.S. Environmental Protection Agency. This comprehensive site helps her organize the issues, policies, and research trends, as well as locate articles, reports, and other information sources on the subject. Next, she follows up on a reference to an organization she finds mentioned in a journal article. Using the advanced search feature in *Google*, she enters the organization's name as a phrase and locates the Website immediately. It is here that she locates a number of useful Canadian and international documents. She spends three or four hours reviewing the sites and following up the links.

Tanya spends half an hour searching for a guide to recommended and reviewed Web sites on the topic. First, she checks the library's online catalog subject guide to the World Wide Web. Although she does find a few useful guides on more general topics, there is nothing exactly on her topic. She next checks BUBL Information Service and Argus Clearinghouse for prepared guides, but neither has anything on target. Finally, she tries Ask.com and has better results. From here she is guided to the Web sites of a number of government agencies, private companies, and universities conducting studies on hybrid vehicles. She comes across a Web site for a local research center at a nearby university. She bookmarks the page and makes a note to contact the center later that day.

Tanya needs current and specific information on hybrid vehicles and tax incentives. This narrow search works well using the advanced search features of Google, Alta Vista, and Ask.com, which allow multiple domain limits such as .gov, .edu, and .org. Just to double-check, Tanya tries Dogpile, a meta-search engine; although she finds a few new sites, most of them are familiar. This is a sure sign that she has completed her Web research and should move on. Ultimately, because Tanya needs to be confident she locates the most accurate and current information, she returns to her library's online catalogs for a guide to government documents on the Web and is referred to USA.gov (www.usa.gov). Her search here is uncluttered and produces information that she can use confidently.

>>> Conducting Primary Research

Sometimes your research project may require conducting *primary research* to collect firsthand information yourself. Primary research can be defined as follows:

Primary research: Data collected by the researcher through interviews, focus groups, surveys, laboratory experiments, or field observations. Primary sources also include original works such as diaries, company reports, and correspondence, as well as documents that are the subject of analysis, such as user's manuals and Web sites.

The many ways of conducting primary research are generally divided into two methods: quantitative research and qualitative research. Surveys are often a combination of quantitative and qualitative research methods because they can present numerical data about people's opinions. Usability studies are one of the most important forms of primary research that technical communicators conduct in the workplace. This section provides an overview of basic methods of conducting primary research in technical communication.¹

¹A detailed discussion of research methods in technical communication can be found in M. A. Hughes & G. F. Hayhoe. (2008). *A research primer for technical communication: Methods, exemplars, and analysis*. New York, NY: Erlbaum. Hughes and Hayhoe's book is the source for some of the concepts in this chapter.

Quantitative Research

Quantitative research collects data that can be represented in numbers. In technical communication, this step often involves answering questions about how long it takes to perform a task, or how many clicks it takes to find information in a Help file. Technical communicators may also collect and analyze statistics from surveys and interviews. Quantitative research is judged by validity and reliability.

- Research is *valid* if it measures what it was designed to measure.
- Research is *reliable* if it can be repeated with the same results.

Qualitative Research

Qualitative research is common in technical communication. Qualitative data cannot be represented in numbers. Instead, qualitative research analyzes words, images, processes, or objects. In particular, technical communicators use the following methods to collect qualitative data:

- **Interviews.** Technical communicators often interview subject matter experts (SMEs) to learn about products or processes that they are documenting, and they should interview users to learn how to improve the usability of products or processes. Because many technical communication students conduct interviews as part of their research, this chapter provides detailed advice for preparing for interviews.
- **Focus groups.** Technical communicators may also meet with focus groups—that is, small groups of employees or clients—to learn about issues related to the design of products, Web sites, or documentation. Preparing to work with focus groups is much like preparing for interviews, although you will be recording discussion and interaction among the group members.
- **Field observations.** Technical communicators may go into the field to watch clients use equipment or software on-site, so that they can learn more about who their readers are and how their readers use equipment, software interfaces, or documentation. You should prepare for field observations by clearly identifying the goals of your research and developing a method to record and classify the information you need for your research question.
- **Document analysis.** Technical communicators may analyze documents for their quality, using theories of effective communication and usable document design. In your writing classes, you may have been asked to analyze the rhetorical or stylistic characteristics of an essay. This is one kind of document analysis.

Qualitative researchers classify and code their data to identify patterns that can help them understand the topic of their research. Qualitative research is judged by credibility, transferability, and dependability.

- Research is *credible* if the people interviewed or the processes or examples analyzed are typical of the people, processes, or examples being studied.
- Research is *transferable* if the findings can be applied to similar settings or objects.
- Research is *dependable* if different researchers would probably reach similar conclusions if they applied the same methods to similar populations, processes, or objects.



Ryan McVay/Thinkstock

Interviews

Interviews can be valuable primary sources of information in a research project. To achieve success in an interview, you must follow some common guidelines. Following are a few basic pointers for preparing, conducting, and recording the results of your interviews:

>> Step 1: Preparing for the Interview

Put at least as much effort into planning the interview as you do into conducting it. Good planning puts you at ease and shows interviewees that you value their time. Specifically, follow these guidelines:

- **Develop a list of specific objectives for the interview.** Know exactly what you want to accomplish so that you can convey this significance to the person you interview.
- **Make clear your main objectives when you make contact for the interview.** This conversation should (1) stress the uniqueness of the person's contribution, (2) put him or her at ease with your goals and the general content of the proposed discussion, and (3) set a starting time and approximate length for the interview. If handled well, this preliminary conversation will serve as a prelude to the interview, giving direction to the next meeting.
- **Prepare an interview outline.** People you interview understand your need for written reference during the interview. Indeed, they expect it of any well-prepared interviewer. A written outline should include (1) a sequential list of topics and subtopics you want to cover and (2) specific questions you plan to ask.
- **Show that you value your interviewee's time.** You can do this first by showing up a few minutes early so that the interview can begin on time. You also show this courtesy by staying on track and ending on time. Never go beyond your promised time limit unless it is absolutely clear that the person being interviewed wants to extend the conversation further than planned.

>> Step 2: Conducting the Interview

Your interview will be successful if you stay in control of it. Maintaining control has little to do with force of personality, so don't worry if you are not an especially assertive person. Instead, keep control by sticking to your outline and not letting time get away from you. If you find your interviewees straying, for example, gently bring them back to the point with another question from your list. Following are additional pointers for conducting the interview:

- **Ask mostly open-ended questions.** Open-ended questions require your respondent to say something other than yes, no, or other short answers. They are useful to the speaker because they offer an opportunity to clarify an opinion or a fact. They are useful to you because you get the chance to listen to the speaker, digest information, and prepare for the next question.

M-Global's Tanya Grant may ask questions such as "Could you describe two or three ways in which your expectations for hybrid vehicles have been met? For what purposes is your company currently using its fleet of hybrid vehicles?" or "I've been told that your company has a high commitment to environmental issues in the Atlanta area. How has purchasing and using hybrid vehicles been part of that commitment?"

- **Ask close-ended questions when you need to nail down an answer.** For example, Tanya may ask persons she interviews, "Would you be willing to meet with our fleet supervisor to discuss your experience with maintaining hybrid vehicles?" A yes or perhaps will give her an opening for calling this person several months later. A close-ended question works when commitment is needed.
- **Use summaries throughout the interview.** Brief and frequent summaries serve as important resting points during the conversation. They give you the chance to make sure you understand the answers that have been given, and they give your counterpart the chance to amplify or correct previous comments. For example, Tanya may comment to her interviewee, "So, in other words, you are saying that hybrid vehicles make most sense right now for in-city driving where only one or two people share the vehicle." This summary elicits either a yes or a clarification, either of which helps Tanya record the interview accurately.

>> Step 3: Recording the Results

You should take notes throughout the interview. The actual mechanics of this process may influence the accuracy of your note taking. Following are three possible approaches:

- **Option 1: Number reference:** Using this approach, you begin the interview with a list of numbered questions on your outline page; then, when you take notes, simply list the number of the question, followed by your notes. This approach gives you as much space as you want to write questions, but it does require that you move back and forth between your numbered question list and note page.
- **Option 2: Combined question-and-answer page:** For this approach, place a major question or two on each page, leaving the rest of the page to record answers to these and related questions that may be discussed. Although this strategy requires considerably more paper and separates your prepared list of questions, it does help you focus quickly on each specific question and answer.
- **Option 3: Split page:** Some interviewers prefer to split each page lengthwise, writing questions in the left column and corresponding answers in the right column. Some questions may have been prepared ahead of time, as in Option 2; others may be written as they are asked. In either case, you have a clear visual break between questions on one side and answers on the other. The advantage over Option 2 is that you have a visual map that shows you your progress during the conversation. Questions and answers are woven together into the fabric of your interview.

Interviews may be conducted as a follow-up to surveys. Researchers will ask to interview a few respondents to gain more detailed information about responses on surveys.

Research with Human Subjects

Much of the qualitative research that technical communicators do involves people or, in research terms, *human subjects*. If this research is being conducted through a university, you will need to comply with the institution's ethical guidelines and file the appropriate requests and reports with the Institutional Review Board (IRB). Some government research organizations and large research labs also have IRBs. In a university or other large research setting, you may be expected to file a research plan with the IRB even if your research is limited to interviews, surveys, or focus groups (although these types of research projects are usually awarded "exempt" status).

Even if your company does not have a formal IRB, it should have procedures in place to make sure that all research participants have been informed of their rights and any risks in the study, and that they have consented to participate. Participants may be asked to complete an informed-consent form like the one in Figure 9–10. Any research that may lead to publication should meet the requirements of informed consent; some journals require that article submissions be accompanied by consent forms.

Using Surveys

Surveys can combine qualitative research and quantitative research. Whereas survey results are reported in numbers, as statistics or percentages, survey questions usually ask for qualitative information, for opinions or personal experiences. They may even invite comments, which are collected, grouped, and classified. This section explains how to prepare, send out, and report the results of a survey.

Tanya Grant's M-Global Project

Recall that Tanya, who works in Marketing at M-Global, has been asked by the company president to write a report that examines the successes and failures of hybrid electric cars. This report will look at start-up costs for switching the vehicle fleet, tax and other incentives, and the potential of the technology.

Now, before reporting her findings to Jim McDuff, she wants to find out what corporate users of the technology think of its potential. She believes her best approach is to (1) send a survey to companies that have hybrid vehicle fleets and (2) personally interview three or four respondents, including employees at M-Global's Asian offices, who will help management decide on the company's direction.

Tanya Grant has the same challenge you would face in developing a survey. Like you, she receives many surveys herself. Most of them she tosses in the recycle bin because they don't warrant her time, are too long, or seem confusing. Now that the shoe is on the other foot, she wants to design a survey that attracts the attention of readers and entices them to complete it. To accomplish this feat, she goes through the following three-stage process:

>> Step 1: Preparing the Survey

Obviously, your survey is useful only if readers complete and return it. You must focus just as much on your readers' needs as you do on your own objectives. Before readers

GENERIC SAMPLE INFORMED CONSENT**Research Subject Informed Consent Form**

Prospective Research Subject: Read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

This is a generic sample form to help you address most situations. Please adapt as appropriate for your research protocol and institution. *Pending rulemaking for classified human subject research will require additional elements of consent.*

Project Information	
Project Title:	Project Number:
Site IRB Number:	Sponsor:
Principal Investigator:	Organization:
Location:	Phone:
Other Investigators:	Organization:
Location	Phone:

1. PURPOSE OF THIS RESEARCH STUDY

- Include 3-5 sentences written in nontechnical language (8th grade reading level)
"You are being asked to participate in a research study designed to . . ."

2. PROCEDURES

- Describe procedures: *"You will be asked to do . . .".*
- Identify any procedures that are experimental/investigational/non-therapeutic.
- Define expected duration of subject's participation.
- Indicate type and frequency of monitoring during and after the study.

3. POSSIBLE RISKS OR DISCOMFORT

- Describe known or possible risks. If unknown, state so.
- Indicate if there are special risks to women of childbearing age; if relevant, state that study may involve risks that are currently unforeseeable, e.g., to developing fetus
- If subject's participation will continue over time, state: *"any new information developed during the study that may affect your willingness to continue participation will be communicated to you."*
- If applicable, state that a particular treatment or procedure may involve risks that are currently unforeseeable (to the subject, embryo or fetus, for example.)

4. OWNERSHIP AND DOCUMENTATION OF SPECIMENS

- Describe ownership, use, disposal, and documentation (identification) procedures for specimens or samples taken for study purposes.

■ **Figure 9–10** ■ Sample informed-consent form

Source: <http://humansubjects.energy.gov/doe-resources/files/generic-sample-informed-consent-form.doc>.

5. POSSIBLE BENEFITS

- Describe any benefits to the subject that may be reasonably expected. If the research is not of direct benefit to the participant, explain possible benefits to others.

6. FINANCIAL CONSIDERATIONS

- Explain any financial compensation involved or state: "*There is no financial compensation for your participation in this research.*"
- Describe any additional costs to the subject that might result from participation in this study.

7. AVAILABLE TREATMENT ALTERNATIVES

- If the procedure involves an experimental treatment, indicate whether other non-experimental (conventional) treatments are available and compare the relative risks (if known) of each.

8. AVAILABLE MEDICAL TREATMENT FOR ADVERSE EXPERIENCES

- "*This study involves (minimal risk) (greater than minimal risk).*" In the event that greater than minimal risk is involved, provide the subject with the following information.
- If you are injured as a direct result of taking part in this research study, emergency medical care will be provided by [name] medical staff or by transporting you to your personal doctor or medical center. Neither the [your site name] nor the Federal government will be able to provide you with long-term medical treatment or financial compensation except as may be provided through your employers insurance programs or through whatever remedies are normally available at law.

9. CONFIDENTIALITY

- Describe the extent to which confidentiality of records identifying the subject will be maintained.

"Your identity in this study will be treated as confidential. The results of the study, including laboratory or any other data, may be published for scientific purposes but will not give your name or include any identifiable references to you."

"However, any records or data obtained as a result of your participation in this study may be inspected by the sponsor, by any relevant governmental agency (e.g., U.S. Department of Energy), by the(your site name) Institutional Review Board, or by the persons conducting this study, (provided that such inspectors are legally obligated to protect any identifiable information from public disclosure, except where disclosure is otherwise required by law or a court of competent jurisdiction. These records will be kept private in so far as permitted by law."

In addition, list steps to protect confidentiality such as codes for identifying data.

10. TERMINATION OF RESEARCH STUDY

You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate. You will be provided with any significant new findings developed during

the course of this study that may relate to or influence your willingness to continue participation. In the event you decide to discontinue your participation in the study,

- These are the potential consequences that may result: (list)
- Please notify (name, telephone no., etc.) of your decision or follow this procedure (describe), so that your participation can be orderly terminated.

In addition, your participation in the study may be terminated by the investigator without your consent under the following circumstances. (Describe) It may be necessary for the sponsor of the study to terminate the study without prior notice to, or consent of, the participants in the event that (Describe circumstances, such as loss of funding.)

11. AVAILABLE SOURCES OF INFORMATION

- Any further questions you have about this study will be answered by the Principal Investigator:

Name:

Phone Number:

- Any questions you may have about your rights as a research subject will be answered by:

Name:

Phone Number:

- In case of a research-related emergency, call:

Day Emergency Number:

Night Emergency Number:

12. AUTHORIZATION

I have read and understand this consent form, and I volunteer to participate in this research study. I understand that I will receive a copy of this form. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal fault of anyone who is involved in this study. I further understand that nothing in this consent form is intended to replace any applicable Federal, state, or local laws.

Participant Name (Printed or Typed):

Date:

Participant Signature:

Date:

Principal Investigator Signature:

Date:

Signature of Person Obtaining Consent:

Date:

complete a form, they must perceive that (1) it benefits them personally or professionally and (2) it is easy to fill out and return. Keep these two points in mind as you design the form and the cover letter. Following are some specific guidelines for preparing a reader-focused document:

1. **Write a precise purpose statement.** As in other documents, a one-sentence statement of purpose provides a good lead-in for your cover letter that accompanies the survey (see next section). For example, Tanya prepared the following purpose statement for her survey concerning hybrid electric vehicles: “The purpose of this survey is to find out how your experience with hybrid cars can benefit others.” As obvious as that statement sounds, it helps busy readers who don’t have time to wade through long rationales.

2. **Limit the number of questions.** Every question must serve to draw out information that relates to your purpose statement. For example, Tanya knows her questions must focus on the reader’s experience with hybrid electric vehicles. She must resist the temptation to clutter the survey with irrelevant questions on other alternative-fuel vehicles such as natural gas or electric cars.

3. **Ask mostly objective questions.** You must design your form so that (1) questions are easy to answer and (2) responses are easy to compile. Although open-ended questions yield more detailed information, the answers take time to write and are difficult to analyze. Instead, your goal is breadth, not depth, of response. With the exception of one or two open-ended questions at the end of your survey, reserve long-answer responses for personal interviews you conduct with a select audience. For example, Tanya decided to include an optional open-ended question at the end of her survey, where she asks hybrid users to recommend design improvements for hybrid electric vehicles.

Objective questions come in several forms. Four common types are described next, along with examples of each.

■ **Either/or questions:** Such questions give the reader a choice between two options, such as “yes” or “no.” They are useful only when your questions present clear, obvious choices.

Example: “Do you believe your hybrid vehicles accelerate well in all driving situations?” (followed by “yes” and “no” blocks), or “The hybrid accelerates well in all driving situations.”

■ **Multiple-choice questions:** These questions expand the range of possibilities for the reader to three or more, requiring a longer response time.

Example: “If you answered ‘yes’ to the preceding question [a question asking if the hybrid vehicle accelerates well], what is your typical driving terrain? (a) Flat; (b) Hilly; (c) Combination of flat and hilly; (d) Mountainous”

■ **Graded-Scale Questions:** By permitting degrees of response, these questions help gauge the relative strength of the reader’s opinion.

Example: “Using a hybrid vehicle has met our day-to-day driving needs. (a) Strongly agree; (b) Agree; (c) Disagree; (d) Strongly disagree; (e) Have no opinion”

■ **Short-Answer Questions:** Use these questions when the possible short answers are too numerous to list on your form.

Example: “List the makes of vehicles that your company has purchased in the last five years.”

4. **Provide clear questions that are easy to answer.** Like other forms of technical writing, surveys can frustrate readers when individual questions are unclear. Four common problems are (1) bias in phrasing, (2) use of undefined terms, (3) use of more than one variable, and (4) questions that require too much homework. Following are some examples of right and wrong ways to phrase questions, along with a brief comment on each problem:

Biased question:

Original question: “Are the federal and state government’s excessive tax credits for purchasing alternative-fueled vehicles affecting your purchasing decision?” (Words like *excessive* reflect a bias in the question, pushing a point of view and thus skewing the response.)

Revised question: “Do you believe that the federal and state tax credits affected your purchasing decision?”

Undefined technical terms:

Original question: “Are you familiar with the work of the PNGV on AFVs?” (Your reader may not know that PNGV is short for Partnership for a New Generation of Vehicles, or that AFV stands for Alternative Fuel Vehicle. Thus some “no” answers may be generated by confusion about terminology.)

Revised question: “Are you familiar with the work of the Partnership for a New Generation of Vehicles on alternative-fuel vehicles?”

Mixed variables:

Original question: “Were the dealer’s maintenance technicians prompt and thorough in their work?” (There are two questions here, one dealing with promptness and the other with thoroughness.)

Revised question: (two separate questions): “Were the dealer’s maintenance technicians prompt?” “Were the dealer’s maintenance technicians thorough?”

Question that requires too much homework:

Original question: “What other alternative fuel vehicles has your company researched, tested, or purchased in the last 10 years?” (This question asks the readers to conduct research for an accurate answer. If they do not have the time for that research, they may leave the answer blank or provide an inaccurate guess. In either case, you are not getting valid information.)

Revised question: “Has your company tried other alternative-fuel vehicles?”

5. **Include precise and concise instructions at the top of the form.** Your instructions can be in the form of an easy-to-read list of points that start with action verbs, such as the following list:

- Answer Questions 1–20 by checking the correct box.
- Answer Questions 21–30 by completing the sentences in the blanks provided.
- Return the completed form in the envelope provided by October 15, 2011.

Or if instructions are brief, they can be in the form of a short, action-centered paragraph, such as “After completing this form, please return it in the enclosed stamped envelope by October 15, 2011.”

6. **Apply principles of document design.** Although you must strive for economy of space when designing a survey, use adequate white space and other design principles to make the document attractive to the eye.

7. **Test the survey on a sample audience.** Some sort of “user test” is a must for every survey. For example, after completing her survey, Tanya decides to test it on three people:

- A fellow marketing colleague at M-Global who has conducted several surveys for the firm
- A psychologist Tanya knows through a local professional association
- A vehicle fleet manager whom she knows well enough to ask for constructive criticism on the form

Thus her user test will solicit views from people with three quite different perspectives.

>> Step 2: Conducting the Project

After you have designed a good form, the next task is to distribute it. Following are guidelines for selecting a good sampling of potential respondents, introducing the survey to your audience, and encouraging a quick response from a high percentage of readers.

1. **Choose an appropriate audience.** Selecting your audience depends on the purpose of your survey. If you manage a 100-employee engineering firm and want to gauge customer satisfaction with recent construction jobs, you might send your survey to all 156 clients you have served in the past two years. Restricting the mailing list would be unnecessary, because you have a small sample.

However, if you are in Tanya’s position at M-Global, with a mailing list totaling about 3,200 corporations that have purchased hybrid vehicles in 2010 and 2011, you must select a random sample. Tanya’s research suggests that she will receive about a 25 percent rate of return on her surveys. (Actually, this rate would be quite good for an anonymous survey.) Given that she wants about 200 returned forms, she must send out about 800 surveys in expectation of the 25 percent return rate.

With a client list of 3,200, she simply selects every fourth name from the alphabetized list to achieve a random list of 800 names. Note that the selection of client names from an alphabetized list preserves what is essential—that is, the random nature of the process.

Of course, you can create more sophisticated sampling techniques if necessary. For example, let’s assume Tanya wants an equal sampling of companies that purchased in each of the two years—2009 (with 1,200 names) and 2010 (with 2,000 names). In other words, she wants to send an equal number of forms to each year’s hybrid owners, even though the number of corporate hybrid owners varies from year to year. In this case, first she would select 400 names—or every third name—from the 1,200 alphabetized names for 2009. Then she would select the other 400 names—or every fifth name—from the 2,000 alphabetized names for 2010. As a result, she has done all she can do to equalize the return rate for two years.

This strategy helps you choose the audience for simple survey projects. You may want to consult a specialist in statistics if you face a sophisticated problem in developing an appropriate sampling.

2. Introduce the survey with a clear and concise cover letter. In 15 or 20 seconds, your letter of transmittal must persuade readers that the survey is worth their time. Toward this end, it should include three main sections (which correspond to the letter pattern presented in Chapter 6):

- **Opening paragraph:** State precisely the purpose of the survey and perhaps indicate why this reader was selected.
- **Middle paragraph(s):** State the importance of the project and strive to emphasize ways that it may benefit the reader.
- **Concluding paragraph:** Specify when the survey should be returned, even though this information will be included in the directions on the survey itself.

3. Encourage a quick response. If your survey is not anonymous, you may need to offer an incentive for respondents to submit the form by the due date. For example, you can offer to send them a report of survey results, a complimentary pamphlet or article related to their field, or even something more obviously commercial, when appropriate. Clearly, any incentive must be fitting for the context. Keep in mind also that some experts believe an incentive of any kind introduces a bias to the sample.

If the survey is anonymous or if complimentary gifts are inappropriate or impractical, then you must encourage a quick response simply by making the form as easy as possible to complete. Clear instructions, frequent use of white space, a limited number of questions, and other design features mentioned earlier must be your selling points.

>> Step 3: Reporting the Results

After you tabulate results of the survey, you must return to the needs of your original audience—the persons who asked you to complete the survey. They expect you to report the results of your work. Described next are the major features of such a report.

First, you must show your audience that you did a competent job of preparing, distributing, and collecting the survey; therefore the body of your report should give details about your procedures. Appendixes may include a sample form, a list of respondents, your schedule, extensive tabulated data, and other supporting information.

Second, you must reveal the results of the survey. This is where you must be especially careful. Present only those conclusions that flow clearly from data. Choose a tone that is more one of suggesting than declaring. In this way, you give readers the chance to draw their own conclusions and to feel more involved in final decision making. Graphs are an especially useful way to present statistical information (see Chapter 13).



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Finally, remember that your report and the completed surveys may remain on file for later reference by employees who know nothing about your project. Be sure that your document is self-contained. Later readers who uncover the “time capsule” of your project should be able to understand its procedures and significance from the report you have written.

Usability Testing

Usability typically involves setting goals, selecting criteria, developing test materials, soliciting participants, setting up the testing environment, conducting the test, and writing a results report. For more information on formal usability testing, three useful books are Jakob Nielsen’s *Usability Engineering*, Jeffery Rubin’s *Handbook of Usability: How To Plan, Design, and Conduct Effective Tests*, and Carol Barnum’s *Usability Testing Essentials: Ready, Set, Test*. Usability testing is such an important form of research that some companies employ full-time usability testers and have well-equipped usability labs. Like surveys, usability testing can combine quantitative research and qualitative research.

Almost any product or process can be tested for usability, but this chapter will focus on usability testing of print and digital documents. Usability testing of Web sites is discussed in Chapter 14. Procedural documents, including user guides, instructions, and Help files should all be tested for how usable they are. Procedures are considered usable if they are

- Easy to learn
- Efficient to use
- Easy to remember

The first step in usability testing, as in other research, is to identify the goal of the research. Usability testing can answer questions such as the following:

- How clear are the instructions?
- How quickly can a user find information in a Help file?
- How useful are the illustrations in a user’s guide?

Although many characteristics of a document may be tested, it is best to test only one characteristic at a time.

A usability-testing lab allows testers to observe and measure how actual users interact with objects, software, Web sites, or documents. These interactions may be monitored with cameras or one-way mirrors, or computers may record key strokes to see how users try to access information. Some labs even have equipment that allows testers to record users’ eye movements as they look for information on a computer screen.

While quantifiable characteristics, such as the number of clicks to complete a task, can be measured, it is just as important to measure users’ satisfaction with a product or document, that is, to measure how usable they *perceive* the document to be. Surveys, interviews, and focus groups can help technical communicators learn how users feel about their interactions with a product or document. One low-tech way of testing user interaction with a document is a *think-aloud protocol*. In this method, the user works through

a process such as finding information in a Help file or learning a new software program while speaking his thoughts aloud. The tester records the thoughts and makes notes about the user's actions. As in other qualitative research, it is important to sort the data gathered by these methods, and to classify them in ways that reveal how usable the item is.

>> Using Borrowed Information Correctly

In some workplace writing, issues of citation can become complicated, especially in collaborative projects that use documents published by the writer's organization, and that will be published under the organization's name. (See Chapter 3 for more on collaborative writing.) However, whenever you are using material that has been published in a book, periodical, or on another organization's Website, you should cite your sources.

Most errors in research papers occur in transferring borrowed information. This section has three goals: (1) to explain why you must acknowledge sources you have used, (2) to outline a research process from the point at which you identify sources of information, and (3) to provide sample documentation styles from three well-known style manuals.

✓ Avoiding Plagiarism

One basic rule underlies the mechanical steps described in the rest of this chapter:

With the exception of common knowledge, you should cite sources for all borrowed information used in your final document, including quotations, paraphrases, and summaries.

Common knowledge is information generally available from basic sources in the field. In the case of Tanya's research project, *common knowledge* is a definition of hybrid electric vehicles. When you are uncertain whether a piece of borrowed information is common knowledge, go ahead and cite the source. It is better to err on the side of excessive documentation than to leave out a citation and risk a charge of *plagiarism* (the intentional or unintentional use of the ideas of others as your own). Following are three main reasons for documenting sources thoroughly and accurately:

1. **Courtesy:** You owe readers the *courtesy* of citing sources where they can seek additional information on the subject. Sources should be given for quotations, paraphrases, and summaries.
2. **Ethics:** You have an *ethical* obligation to show your reader where your ideas stop and those of another person begin; otherwise, you are parading the ideas of others as your own.
3. **Law:** You have a *legal* obligation to acknowledge information borrowed from a copyrighted source. In fact, you should seek written permission for the use of borrowed information that is copyrighted when you plan to publish your document or when you are using your document to bring in profit to your firm (as in a proposal or report). If you need more specific information about copyright laws or about the legalities of documentation, see a research librarian.

Certainly some plagiarism occurs when unscrupulous writers intentionally copy the writing of others without acknowledging sources. However, most plagiarism results from sloppy work during the research and writing process. Described next are two common types of unintentional plagiarism. Although the errors are unintentional—that is, the writer did not intend to cheat—both result in the unacknowledged use of another person’s work. That’s plagiarism.

Mike Pierson, a supervisor at M-Global’s Cleveland office, has been asked to deliver a presentation at an upcoming conference on hybrid electric vehicles. In his last-minute rush to complete the presentation—which will be published in a collection of papers from the meeting—Mike is taking notes from a source in the company library. He hurriedly writes notes from a source on a note card but fails to indicate the source. Later, when he is writing the paper draft, he finds the card and does not know whether it contains information that was borrowed from a source or ideas that came to him during the research process. If he incorporates the passage into his paper without a source, he will have committed plagiarism.

In our second case, Mike transfers a direct quotation from a source into a computer document file but forgets to include quotation marks. If he were to incorporate the quotation into his presentation later *with* the source citation but *without* quotation marks, he would have plagiarized. Why? Because he would be presenting the exact words of another writer as his own paraphrase. The passage would give the appearance of being his own words that are supported by the ideas of another, when in fact the passage is a direct quote. Again, remember that the test for plagiarism is not one’s intent; it is the result.

The next section shows you how to avoid plagiarism by completing the research process carefully. In particular, it focuses on a methodical process that involves (1) bibliography notes, (2) a rough outline, (3) notes of three main kinds, (4) a final outline, and (5) drafts.

Selecting and Following a Documentation System

Documentation refers to the mechanical system you use to cite sources from which you borrow information. This section briefly compares documentation styles from three important style manuals—from the previously mentioned APA, the Modern Language Association (MLA), and the Council of Science Editors (CSE)—and provides examples for the most common citations. For complete details about a particular documentation system you are using, consult one of the manuals in the list that follows or consult the Web site of the organization that publishes the manual. Pay special attention to new guidelines these manuals may provide for documenting information from online databases and the Internet.

There are almost as many styles for documenting research as there are professional organizations, but all have the same goal of showing readers the sources from which you gathered information. One of your early steps in research is to determine which style manual to use. Often your instructors select a discipline-specific style manual. Style manuals guide the writer through the editorial rules governing everything from use of headers and pagination and graphic and text layout to managing data display and, of course, the rules for documenting sources. Style manuals are regularly revised by the organizations that publish them. One of the areas of greatest changes is the rules for citing electronic resources. As the variety and use of electronic materials continue to evolve, so, too, do the style manuals. Be sure to check the edition of the style manual you are using to make sure it is the latest available.

Following are just a few documentation manuals commonly used in business, industry, and the professions. You can often locate useful tips and examples at the Web sites maintained by each of these organizations in addition to the purchasing information or the style manual itself.

American Psychological Association (APA)

Publication Manual of the American Psychological Association, 6th ed. 2010.

Council of Science Editors (CSE)

Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers, 7th ed. 2006.

Modern Language Association (MLA)

MLA Handbook for Writers of Research Papers, 7th ed. 2009.

University of Chicago Press

A Manual for Writers of Research Papers, Theses, and Dissertations, 7th ed., 2007.

University of Chicago Press

Chicago Manual of Style, 16th ed. 2010. Also noteworthy:

University of Wisconsin's Writing Center

Writer's Handbook

Web site: <http://www.wisc.edu/writing/Handbook>

Purdue Online Writing Lab

Web site: <http://owl.english.purdue.edu>

We focus briefly on the APA, MLA, and CSE manuals and compare documentation styles for citing works. The three systems share some characteristics. Each uses parenthetical references in the body of the report that lead the reader to a separate works-cited or reference page. Each system cites the author's name and either the publication year (APA and CSE) or the relevant page number where the fact, quote, or observation can be located (MLA). Frequently, the content of the parenthetical references is blended into the text with perhaps only the date or page in parentheses. The works-cited or reference page is arranged alphabetically by the author's last name for APA and MLA. CSE uses a numbered bibliography system.

CSE offers three style choices: the *name–year* system, the *citation–sequence* system, and the *citation–name* system. The *name–year* system is similar to APA style, using a parenthetical reference to the date. In the *citation–sequence* system and the *citation–name* system, the parenthetical citation refers to a numbered list of citations at the end of the document. For the *citation–sequence* system, the sources in the bibliography are numbered sequentially in the order in which they appear in the document. In the *citation–name* system, the sources in the bibliography are alphabetized by the authors' last names, and then numbered in that order. When using CSE, you must determine which system is preferred—the *name–year* system, the *citation–sequence* system, or the *citation–author* system. Check with your instructor or editor.

There are significant and subtle variations in parenthetical entries and works-cited listings when the style manuals are closely compared. The Handbook in Appendix A offers a few basic examples. Writers must consult the style manual itself for a thorough discussion.



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>>> Reporting Your Research

Although you may occasionally conduct workplace research for your own use, you will usually be expected to share your results with others. The written formats for sharing research include reports, which are discussed in Chapters 10 and 11; proposals and white papers, which are discussed in Chapter 12; and presentations within your organization, to clients, or to other members of your profession, which are discussed in Chapter 15.

ABC Format for Technical Research

The ABC format offers an effective way to organize your presentation of your research, whether you are presenting it in a report, a proposal, an article in a professional magazine or journal, or even a presentation at a professional conference. The abstract identifies the problem you are discussing and provides your reader the background for the problem that

you are discussing. This should include a review of the published research, often referred to as a *literature review*. Many of the research papers you write for school will be literature reviews of articles and books you have read about a topic. The body explains your methodology, or how you gathered data from your primary sources, and presents, analyzes, and discusses your results. The conclusion identifies your most important findings. It may also recommend actions to be taken, or it may recommend further research.

See Model 9–1 on pages 295–299 for Tanya Grant’s complete memo report, which cites research.

ABC Format: Research

- **ABSTRACT:** Provides the background the reader needs to understand and evaluate the research.
 - Identifies the question, problem, or issue being researched.
 - Reviews the published research about the topic, or secondary sources.
 - Overviews the organizational plan of the document.
- **BODY:** Presents and discusses the findings.
 - Explains the methodology used to gather information from primary sources.
 - Presents the results, using tables, charts, and graphs as necessary.
 - Interprets the findings through analysis and discussion.
- **CONCLUSION:** Identifies the most important findings and explains the implications of the findings.
 - May include recommendations.
 - May make a prediction.

Writing Research Abstracts

The term *abstract* has been used throughout this book to describe the summary component of any technical document. As the first part of the ABC pattern, it gives decision makers the most important information they need. However, here we use *abstract* for a narrower purpose: It is a stand-alone summary that provides readers with a capsule version of a piece of research, such as an article or a book. This section (1) describes the two main types of research abstracts, with examples of each and (2) gives five guidelines for writing research abstracts.

Types of Abstracts

There are two types of abstracts: informational and descriptive. As the following definitions indicate, informational abstracts include more detail than descriptive abstracts:

Informational Abstract

- **Format:** This type of abstract includes the major points from the original document.
- **Purpose:** Given their level of detail, informational abstracts give readers enough information to grasp the main findings, conclusions, and recommendations of the original document.
- **Length:** Although longer than descriptive abstracts, informational abstracts are still best kept to one to three paragraphs.
- **Example:** A sentence from such an abstract might read, “The article notes that functional résumés should include a career objective, academic experience, and a list of the applicant’s skills.” (See corresponding example in definition of a descriptive abstract.)

Descriptive Abstract

- **Format:** This type of abstract gives only main topics of the document, without supplying supporting details such as findings, conclusions, or recommendations.
- **Purpose:** Given their lack of detail, descriptive abstracts can help readers decide only whether they want to read the original document.
- **Length:** Their lack of detail usually ensures that descriptive abstracts are no more than one paragraph.
- **Example:** A sentence from such an abstract might read, “The article lists the main parts of the functional résumé.” (See corresponding example in definition of an informational abstract.)

You may wonder when you’ll need to write abstracts during your career. First, your boss may ask you to summarize some research, perhaps because he or she lacks your technical background. Second, you may want to collect abstracts as part of your own research project. In either case, you must write abstracts that reflect the tone and content of the original document accurately.

Assume, for example, that your M-Global supervisor asked you to read some influential research on information design. Later, your boss plans to use your abstracts to get an overview of the field and to decide which, if any, of the original full-length documents should be read in full. The examples that follow show both informational and descriptive abstracts of an article by Janice Redish. The informational abstract appeared in a bibliographic article that listed important publications about technical communication. The descriptive abstract appeared at the beginning of Redish’s article in the journal *Technical Communication*. Note that the informational abstract summarizes Redish’s findings, whereas the descriptive abstract lists two key points in the article.

Informational Abstract:

Redish, Janice C. 2000. “What is information design?” *Technical communication* 47, no. 2: 163–166.

Redish offers two meanings of information design: “the overall process of developing a successful document” and “the way the information is presented on the page or screen” (p. 163). In either case, Redish observes, the objective is “to develop a document (or communication) that works for its users” through considering the users’ needs, their ability to understand what they find, and their capacity to use their findings (p. 163). The author indicates four vital concerns in information design: planning questions and front-end analysis; iterative evaluation; the interaction and equal importance of writing and presentation; and planning question-based guidelines for design purposes (p. 163). The two critical trends in technical communication Redish indicates are the Web and single sourcing; the visual aspects of the former and the multiple uses of the latter constrain information design, and communicators must consider the “whole”—process and product, writing and design—to create successful documents.²

Descriptive Abstract:

1. Defines two meanings of information design: the overall process and the presentation of information on page and on screen
2. Predicts the future importance of both meanings of information design, in terms of design for the Web and single-sourcing³

Guidelines for Writing Research Abstracts

The following guidelines help you (1) locate the important information in a document written by you or someone else and (2) present it with clarity and precision in an abstract. In every case, you must present a capsule version of the document in language the reader can understand. The ultimate goal is to save the readers’ time.

>> Abstracting Guideline 1: Highlight the Main Points

This guideline applies whether you are abstracting a document written by you or one written by someone else. To extract information to be used in your abstract, follow these steps:

1. Find a purpose statement in the first few paragraphs.
2. Skim the entire piece quickly, getting a sense of its organization.
3. Read the piece more carefully, underlining main points and placing comments in margins.
4. Pay special attention to information gained from headings, first sentences of paragraphs, listings, graphics, and beginning and ending sections.

>> Abstracting Guideline 2: Sketch an Outline

From the notes and marginal comments gathered in Abstracting Guideline 1, write a brief outline that contains the main points of the piece. If you are dealing with a well-organized piece of writing, it is an easy task; if not, it is a challenge.

²G. J. Alred. (2003). Essential works on technical communication. *Technical Communication*, 50(4), 585–616.

³J. C. Redish. (2000). What is information design? *Technical Communication*, 47(2), 163–166.

>> Abstracting Guideline 3: Begin with a Short Purpose Statement

Both descriptive and informational abstracts should start with a concise overview sentence. This sentence acquaints the reader with the document's main purpose. Stylistically, it should include an action verb and a clear subject. Following are three options that can be adapted to any abstract:

- The article "Recycle Now!" states that Georgia must intensify its effort to recycle all types of waste.
- In "Recycle Now!" Laurie Hellman claims that Georgia must intensify its effort to recycle all types of waste.
- According to "Recycle Now!" Georgians must intensify their efforts to recycle all types of waste.

>> Abstracting Guideline 4: Maintain a Fluid Style

One potential hazard of the abstracting process is that you may produce disjointed and awkward paragraphs. You can reduce the possibility of this stylistic flaw by following these steps:

- Write in complete sentences, without deleting articles (*a, an, the*)
- Use transitional words and phrases between sentences
- Follow the natural logic and flow of the original document itself

>> Abstracting Guideline 5: Avoid Technical Terms Readers May Not Know

Another potential hazard is that the abstract writer, in pursuit of brevity, will use terms unfamiliar to the readers of the abstract. This flaw is especially bothersome to readers who do not have access to the original document. As a general rule, use no technical terms that may be unclear to your intended audience. If a term or two are needed, provide a brief definition in the abstract itself.

Note, also, that abstracts that might become separated from the original document should include a bibliographic citation.

Abstract Guidelines

- Highlight the main points
- Sketch an outline
- Begin with a short purpose statement
- Maintain a fluid style
- Avoid technical terms readers may not know

>>> Chapter Summary

- Research projects in the workplace aim to answer questions, make decisions, or solve problems.
- All research projects start with a question to be answered. The goals of the research should be clear before any sources are consulted.
- Secondary sources include research results that have been published or shared with the public in some format.

- All research projects should start with a review of the published (secondary) research.
- You can locate published research, or secondary sources, by searching library databases and the World Wide Web.
- Primary sources result in data that the researcher has gathered firsthand.
- Quantitative research collects data that can be represented in numbers.
- Quantitative research is judged by its validity and reliability.
- Qualitative research presents nonnumerical data in words or images.
- Qualitative research is judged by its credibility, transferability, and dependability.
- Collecting data from people, or, in research terms, from human subjects, requires the researcher to follow established ethical guidelines and receive the informed consent of research participants.
- Surveys must be carefully designed and tested to ensure that their results apply clearly to the research project.
- Usability testing, an important type of research for technical communicators, helps determine if products, processes, and documents are easy to learn, use, and remember. They also measure user satisfaction.
- Ethically and legally, it is important for researchers to use information borrowed from sources correctly.
- Using the correct documentation system consistently helps readers understand the information in a research paper, and it identifies the researcher as a member of a professional community.
- The ABC format helps researchers report their findings in a clear, well-organized way.
- Research abstracts provide readers with useful summaries and help readers decide if they want to read an article.

>>> Learning Portfolio

Communication Challenge To Cite or Not to Cite

Dan Gibbs works as a benefits and finance specialist at M-Global's corporate office in Baltimore. As the number of M-Global employees has grown, he has received many inquiries about ways to save for retirement. He recently wrote and distributed a four-page flyer on the topic using materials from print and online sources. The response was so positive that his boss wants to send the flyer to clients as a "freebie"—both to help clients' employees and to create good will in marketing. This use of the flyer has made Dan rethink how he developed the piece. This case study presents Dan's research process and his results. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Background of Retirement Booklet

Unlike Tanya Grant in the hybrid vehicle project described in this chapter, Dan didn't have time or interest in pursuing a full-scale library search about retirement strategies. Besides, he has personnel magazines in the office with data that support his points. In addition, he has access to databases of relevant information through the Internet.

Like many companies, M-Global has a retirement plan largely in the form of what is called a 401k program. It allows employees to contribute a percentage of their salaries into a tax-deferred retirement account, a portion of which is matched by the employer. Even though M-Global has a generous matching arrangement, many employees do not take full advantage of the program. Therefore, Dan wrote the retirement flyer to remind them that it is never too early to plan for retirement. As it happens, he learned that many U.S. workers are failing to put away enough money for their retirement years.

The Research Process

After outlining his goals for the booklet, Dan began surfing through related information on the Internet. He made use of three sources he found on the Internet. Following are three of the themes he stressed, along with related information he used from an article in a personnel magazine.⁴

1. **Theme 1:** *We're living longer past retirement.* The following changes occurred in years of life expected after age 65: for men, 12.8 in 1960, 13.1 in 1970, 14.1 in 1980, 15.1 in 1990, and 16.0 in 2000; for women, 15.8 in 1960, 17.0 in 1970, 18.3 in 1980, 18.9 in 1990, and 19.0 in 2000.
2. **Theme 2:** *We cannot depend exclusively on Social Security.* As many more people retire from the baby boom generation born between 1946 and 1964, fewer workers paying Social Security are supporting each person getting it. The following numbers are actual and projected number of workers supporting each retiree: 7.11 in 1950, 5.67 in 1960, 5.36 in 1970, 5.04 in 1980, 4.70 in 1990, 4.65 in 2000, 4.49 in 2010, 3.45 in 2020, 2.67 in 2030, and 2.61 in 2040.
3. **Theme 3:** *We should begin saving when we're young.* If you start saving \$100 a month in a tax-deferred account at age 22, with an 8 percent annual return, you'll accumulate \$450,478 by age 65. If you start at age 32, you'll have \$194,654 by age 65.

Questions and Comments for Discussion

1. If you were presenting the previously mentioned data in a research report, what format would you choose? Why? (See Chapter 13.)
2. Considering the data sets Dan took from the magazine article/Internet sources, which ones need documentation and which, if any, do not? Explain your answer.
3. Does the fact that the flyer will be sent to clients have any effect on your answer to Question 2?
4. Do an APA-style works-cited reference for the data in Theme 1 and Theme 3. See the footnote to this Communication Challenge for actual source information. You may need to access the Web site and find the magazine article in your library's databases. Be prepared to discuss what challenges you had in formatting the citations.

Write About It

Using your library periodical databases, find an article that explains 401k retirement plans. Write an informational abstract of the article; and include a full citation of the article in APA style.

⁴Source for item 1: U.S. Department of Health and Human Services. (2010). Health, United States, <http://www.cdc.gov/nchs/data/hus/hus10.pdf>. Source for item 2: Workers per Retiree: 1950–2050. <http://www.econdatus.com/workers.html>. Source for item 3: M. B. Franklin. (2008, February 1). 6 Simple Ways to Retire Rich. *Kiplinger's Personal Finance*, 54–62.

Collaboration at Work Surfing the Turf

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

The Internet has greatly expanded the range of information you can find on a subject and the speed with which it can be found. Yet the Internet also has introduced new challenges. While conducting this type of research, you must do the following:

- Stay focused so that the inevitable distractions of new links and fascinating data do not detract from your main purpose.
- Evaluate the reliability of sources that are quite different from traditional hard-copy sources found in a library.
- Determine the mix of Internet and library sources that provide the best support for your topic.

- Keep good notes so that later you can properly document information that has been secured from the Internet.

To start you thinking about the process of Internet research, this exercise asks you to work with your team on a short project.

Team Assignment

First, agree as a team on a topic from the list below that you want to find information for on the Internet.

- Content management systems
- Document design
- Information design
- Technical illustrations
- Technical writing
- Usability testing

Second, work individually to locate three to five sources of information on the topic (the information itself—not just a list of sources). Third, come back together as a team and discuss the relative value of the sources of the information you found.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

If your instructor considers it appropriate, use a copy of the Planning Form at the end of the book for completing these assignments.

1. Analysis: Journal Article

Find a journal in your major field. Identify the following sections in one of the journal's articles:

- Review of literature
- Methodology
- Results
- Analysis and discussion
- Conclusion

Do the articles in the journal include headings? Abstracts? Illustrations? Look for information for authors about submitting articles. (This information may be on the journal's Web site.) Does the journal have specific formatting requirements for headings, captions, or other elements of the articles? What documentation style does the journal request?

2. Analysis: Research Methods

Find a journal in your major field. Your instructor may ask you to use the same article that you analyzed in Assignment 1. Locate the methodology section of the article. Does the article use quantitative methods, qualitative methods, or a combination of the two? How does the author assure the reader that the data reported in the article meet the accepted standards for the methodology? (See pages 271 and 274.)

3. Analysis: Technical Communication Database

One of the most useful databases of sources in technical communication is <http://tc.eserver.org>. One of the features of this Web site is the *tag cloud*. The link to the tag cloud is located on the lower part of the middle of the page. Open the tag cloud and study it. Look around the tc.eserver Web site to find out other ways of searching for information. Write a paragraph explaining how to find information on tc.eserver, or be prepared to discuss the site in class.

4. Analysis: Survey

Using the guidelines in this chapter for surveys, point out problems posed by the following questions:

- A. Is the poor economy affecting your opinion about the current Congress?
- B. Do you think the company's severe morale problem is being caused by excessive layoffs?
- C. Was the response of our salespeople both courteous and efficient?
- D. Of all the computer consultants you have used in the previous 15 years, which category most accurately reflects your ranking of our firm: (a) the top 5 percent, (b) the top 10 percent, (c) the top 25 percent, (d) the top 50 percent, or (e) the bottom 50 percent?
- E. In choosing your next writing consultant, would you consider seeking the advice of a professional association such as the STC or the CPTSC?
- F. Besides the position just filled, how many job openings at your firm have been handled by Dowry Personnel Services?

5. Practice: Research Paper

Using a topic approved by your instructor, follow the procedure suggested in this chapter for writing a paper that results from some technical research. Be sure that your topic (1) relates to a technical field in which you have an interest, by virtue of your career or academic experience; and (2) is in a field about which you can find information in nearby libraries.

6. Practice, M-Global Context: Research Paper

As an M-Global engineer or scientist, you have been asked to write a research paper for M-Global's upper management. Choose your topic from one of the technical fields listed below. Assume that your readers are gathering information about the topic because they may want to conduct consulting work for companies or government agencies involved in these fields. Focus on advantages and disadvantages associated with the particular technology you choose. Follow the procedure outlined in this chapter.

- Artificial intelligence
- Chemical hazards in the home
- Fiber optics
- Forestry management
- Geothermal energy
- Human-powered vehicles
- Lignite-coal mining
- Organic farming
- Satellite surveying
- Solar power
- Wind power

7. Practice: Abstract—One Article or Several Articles

Option A Visit your college library and find a magazine or journal in a technical area, perhaps your major field. Then photocopy a short article (about five pages) that does not already contain a separate abstract or summary at the beginning of the article. Using the guidelines in this chapter, write both an informative and a descriptive abstract for a nontechnical audience. Submit the two abstracts, along with the copy of the article.

Option B Follow the instructions in option A, but use a short article that has been selected or provided by your instructor.

Option C Read three to five current articles in your major field. Write an abstract that summarizes all of them on one page.

8. Practice: Writing a Survey

Design a brief survey to be completed by students on your campus. Select a topic of general interest, such as the special needs of evening students or the level of satisfaction with certain college facilities or services. Administer the survey to at least 20 individuals (in classes, at the student union, in dormitories, etc.). After you analyze the results, write a brief report that summarizes your findings. Note: Before completing this exercise, make sure that you gain any necessary approval by college officials, if required.

9. Practice: Interview

Select a simple research project that would benefit from information gained from an interview. (Your project may or may not be associated with a written assignment in this course.) Using the suggestions in this chapter, conduct the interview with the appropriate person.

10. Practice: Usability Test

Choose a simple, specific task for using a computer program that you have access to, for example, changing paragraph format. Identify the aspect of usability that you will test, such as how long it takes a user to complete the task, how many errors a user makes while trying to complete the task, or how many clicks it takes a user to find information in a Help file. Practice the task several times yourself to determine the criteria for a successful interface. How many minutes? How few errors? How many clicks?

Pair up with a class member and administer your usability test, recording your data. Your instructor may ask you to include a think-aloud protocol in your test. Write a brief report of your results, including whether the interface was successful for your user.

11. Ethics Assignment

This assignment is best completed as a team exercise.

Assume your team has been chosen to develop a Web-based course in technical communication. Team members are assembling materials on a Web site that can be used by students like you—materials such as (1) guidelines and examples from this book, (2) scholarly articles on communication, (3) newspaper articles and graphics from print and online sources, and (4) examples of technical writing that have been borrowed from various engineering firms.

Your team has been told that generally speaking, the “fair use” provision of the Copyright Act permits use of limited amounts of photocopied material from copyrighted sources without the need to seek permission from, or provide payment to, the authors—as long as use is related to a not-for-profit organization, such as a college. Your tasks are as follows:

- A. Research the Copyright Act to make sure you understand its application to conventional classroom use. If possible, also locate any guidelines that relate to the Internet.

- B. Develop a list of some specific borrowed materials your team wants to include on the site for the technical communication course. These materials may fall inside or outside the four general groupings noted previously.
- C. Discuss how the medium of the Internet may influence the degree to which the fair use provision is applicable to your Web course. Be specific about the various potential uses of the material.
- D. Consult an actual Web-based college course in any field and evaluate the degree to which you think it follows legal and ethical guidelines for usage.
- E. Prepare a report on your findings (written or oral, depending on the directions you have been given by your instructor).

12. International Communication Assignment

Using interviews, books, periodicals, or the Internet, investigate the degree to which writers in one or more cultures besides your own acknowledge borrowed information in research documents. For example, you may want to seek answers to one or more of the following questions: Do you believe acknowledging the assistance of others is a matter of absolute ethics, or should such issues be considered relative and therefore influenced by the culture in which they arise? For example, would a culture that highly values teamwork and group consensus take a more lenient attitude toward acknowledging the work of others? These are not simple questions. Think them through carefully.

13. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Interview two or three students to find out why they do or do not participate in student elections on campus. On the basis of information you gather from the interviews, develop a survey form by which you systematically solicit information on the topic from a wider audience. Administer the survey to at least 10 students and include the results in an oral or written report, depending on the instructions you are given.

MEMORANDUM

DATE: May 7, 2011
TO: Jim McDuff, President
FROM: Tanya Grant, Technical Writer
SUBJECT: Hybrid Vehicle Research and Recommendations

INTRODUCTION

When you heard that our Tokyo office had purchased some Toyota vehicles powered by a combination gasoline-electric engine, you asked me to research the hybrid vehicles and to recommend whether or not M-Global should use them in our offices in the United States. After making several phone calls, checking useful Web sites, and reviewing several magazine and newspaper articles, I recommend that M-Global replace our conventional company vehicles with the more fuel-economic and energy-efficient hybrid vehicles.

Research question:
Should we use hybrid vehicles in our offices in the United States?
Methods used to gather information

ADVANTAGES

Hybrid vehicles offer several advantages, especially in cost and impact on the environment.

• Excellent Fuel Economy

Hybrid vehicles are able to double the fuel economy of many of today's conventional cars. The midsize Toyota Prius is rated by the U.S. Environmental Protection Agency at 51 miles per gallon (mpg) city driving, and at 48 mpg on the highway. According to the Environmental Protection Agency, because of regenerative braking, electric motor drive/assist, and automatic start/shutoff, hybrid vehicles are able to use stop-and-go traffic to their advantage by conserving and regenerating energy.

• Low Emissions

In a hybrid vehicle, the electric motor releases no emissions, and the small gasoline engine recharges the battery and has to work less often, so its emissions are much lower. On average, hybrid cars produce about 90 percent fewer harmful pollutants and greenhouse gases than comparable gasoline cars, according to Hybrid-Car.org (n.d.).

As hybrid technology advances over the next few years, additional hybrid vehicles, such as heavy-duty trucks and plug-in hybrids, could also be added to the fleet in order to help reduce the number of greenhouse gases released into our atmosphere. A recent study shows that conventional vehicles average 452 grams of CO₂ emissions per mile, while plug-in hybrid vehicles average only 294 grams of CO₂ emissions per mile (Richard, 2008). And according to a study performed by the Northeast Advanced Vehicle Consortium (NAVC; 2010), heavy-duty hybrid vehicles produce about 50 to 70 percent less particulate matter, and therefore a smaller amount of hazardous airborne particles, like carbon.

• Long Range

Because the gasoline engine automatically recharges the electrical motor, hybrid vehicles can go hundreds of miles before refueling due to their excellent fuel economy. With a fuel tank of 11.9 gallons, the 2011 Toyota Prius can easily go over 500 miles between gas stations (Toyota, 2011).

- **Conventional Fueling**

Hybrid vehicles run on gasoline, so fuel is no different than for a standard automobile.

- **Adequate Power**

Some power is lost between the conventional and hybrid versions, yet both have adequate power. The conventional 2011 Chevy Malibu has a four-cylinder engine that holds 169 horsepower at 6400 rpm, and the hybrid Malibu holds 164 horsepower. Both can exceed 100 mph, but the hybrid Malibu averages about seven more miles per gallon (Chevrolet, 2011a).

DISADVANTAGES

Hybrid technology is relatively new, so there are still questions and concerns about it. Two disadvantages are especially important.

- **Electromagnetic Field (EMF) Risk Still Uncertain**

Although EMFs are all around us in cell phones, microwaves, televisions, and utility lines, the risk of exposure from hybrids is still uncertain. The kind of EMF most likely to be found in a hybrid is considered to be of a lower frequency—which means that it dissipates at a very short distance from the source (HybridCars.com, 2006). In a company statement, Toyota said. “The measured electromagnetic fields inside and outside of Toyota hybrid vehicles in the 50 to 60 hertz range are at the same low levels as conventional gasoline vehicles. Therefore there are no additional health risks to drivers, passengers or bystanders” (Motivalli, 2008).

- **Complexity**

With two power trains, hybrids are far more complex than conventional cars, and that could mean more down time and higher maintenance costs. However, with the recent rise in production of hybrid vehicles, there has also been a rise in the number of certified technicians that can perform the maintenance on them.

- **Battery**

Since hybrid vehicles are electric, the life of the battery becomes a concern. In the past hybrid batteries have taken up to 14 hours to charge. However, the Nissan Leaf battery is now able to be charged in 4 to 8 hours using a 220-volt home unit, or it will charge up to 80 percent in 26 minutes using a Nissan “quick charge station.” The only issue is that these stations do not exist yet. One option for M-Global, once the “quick charge stations” are operational, would be to build stations for the company’s personal use. An electrician can install a station for under \$35,000 (Dworetzky, 2010).

TAX AND LEGISLATIVE ADVANTAGES

- **Tax Credits**

- State**

Right now, about 35 states offer tax incentives (up to \$3,000) for the purchase of hybrid vehicles. Our Boston office could benefit from several incentives according to Senate Bill 1380, most notably a \$2,000 income tax deduction. Other states where our offices are located, such as Missouri, New York, and Ohio, offer \$1,500 to \$3,000 in tax incentives for the purchase of hybrid vehicles.

Parenthetical citation at end of sentence when source is not cited in sentence text

Federal

According to Angela Neville, in *Electric Vehicles: The Uncertain Road Ahead* (2010), in 2009 the federal government enacted a tax credit of \$2,500 to \$7,500 for individuals who buy a hybrid vehicle.

COSTS

Initial costs for a fleet of hybrids may seem high, but there are ways of reducing the cost of maintenance.

- **Purchase**

Hybrid vehicles are more expensive than conventional gasoline vehicles. The base model Tahoe starts at \$37,980, and the hybrid Tahoe retails at \$51,145 (Chevrolet, 2011b). Two of the least expensive hybrid sedans are the Toyota Prius (\$23,050) and Honda Fit Hybrid (17,00), which is going to be released in the United States this year (Dubois, 2010). The least expensive hybrid SUV is the Ford Escape (\$29,865). GMC now offers the Sierra Hybrid (\$38,710). The least expensive hybrid truck is the Chevrolet Silverado starting at 39,900 (HybridCars, 2011b).

- **Maintenance**

Most of the hybrid vehicles on the market come with standard three-year/36,000-mile warranties and eight-year/100,000-mile warranties on the batteries. Routine maintenance should probably be performed at a dealer, especially if the car is under warranty. In an article written by Erik Sofrge in *Popular Mechanics* (2010), a San Francisco cab company reduced its break pad changes from every 10,000 miles to 50,000 miles. Such a reduction could decrease the amount of time and money M-Global spends maintaining the company's fleet. Many companies are also developing faster methods to charge the batteries. Another option is to provide certification to the M-Global fleet mechanics so that they can perform maintenance on hybrid vehicles themselves. Because the market for hybrid vehicles has become so popular, technician certification programs are popping up all over the country in order to keep pace with the demand.

THE HYBRID MARKET

The hybrid market is expanding each year with new vehicles being added, such as the addition of trucks and minivans. In 2010 there were 23 hybrid vehicles on the market, and now in 2011 6 new models have been added, making the total number of hybrid vehicles 29 (Anderson, 2010). According to J. D. Power and Associates, by 2012, hybrids will account for 3.5 percent of the new-car market, with 44 different hybrids for sale (Automotive Editors, 2006). Honda and Toyota seem to always be competing for the newest hybrid technology. The Toyota Prius remains the top-selling hybrid vehicle, but Honda's CRZ will be the smallest hybrid, at 161 inches long and 15 inches shorter than the Toyota Prius, which increases the fuel efficiency and performance of the vehicle (HybridCars.com, 2011a).

THE OUTLOOK FOR HYBRID VEHICLES

Hybrid vehicles have a promising future, even as research continues on other technology.

• Near Future

With the rising gas prices and growing concern for the environment, hybrid vehicles are an excellent way to save money and contribute to the reduction of greenhouse gases. Although most experts agree that hybrid vehicles are only a temporary alternative to conventional internal-combustion automobiles, the next technology (fuel cell) is still many years from making itself into the mass market—particularly because fueling stations will have to become readily available to the general public.

• 2015 Predictions

Average gas prices are predicted to be around \$4.50/gallon in 2015. There may be higher gas prices between now and then, but the investment to find additional reserves will be justified by the oil companies, and prices could fluctuate (Belzowski, 2006). This rise in gas prices could affect the way that Americans purchase their vehicles, and it is possible that hybrids could become the predominant vehicle on the road.

• 2020 Predictions

Average gas prices are predicted to be around \$6.00/gallon in 2020. It is estimated that replacement energy will start and gas prices will drop (Belzowski, 2006). Many experts believe that this replacement energy will be in the form of hydrogen fuel cells, but others disagree because of the challenges that fuel cell technology must overcome. The biggest challenges are a low-cost source of hydrogen and a hydrogen infrastructure (Belzowski, 2006). The possibility remains that hybrid vehicles will still be the predominant vehicle on the road, even after 2020.

CONCLUSION

Clearly indicates how reader should use this research.

Initially, the purchase of hybrid vehicles would be more expensive, but we have a good chance of making up the initial expense in saved fuel costs and tax savings.

Because the makers of hybrid vehicles now offer sedans, SUVs, and trucks, we should be able to replace every vehicle in our fleet with a hybrid version in the same class. Furthermore, we can consider buying our vehicles using our discount arrangement with General Motors, as it now offers hybrid versions of the Malibu, Tahoe, and Silverado.

M-Global is well known for its environmental services, and having part or all of our fleet go green could help further emphasize this positive image in the minds of our customers.

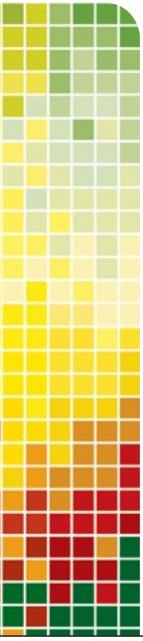
Bibliography list starts on new page because will not fit at end of last page of report

Do not use articles (*a*, *an*, or *the*) when alphabetizing list of references

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Chapter | 10 | Formatting Reports and Proposals



>>> Chapter Objectives

In this chapter, students will

- Learn how to format informal and formal documents like reports and proposals
- Learn when to use informal and formal formats for longer documents
- Read about sample situations in which informal and formal reports and proposals are written
- Learn guidelines to format informal documents to communicate a professional image and to make information clear for readers
- Learn the nine parts of formal documents
- Learn guidelines to format formal documents to communicate a professional image and to create navigation elements and organize information to help readers find the information that they need
- Read and analyze model reports and proposals

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Kurt Fleisch, M-Global's director of marketing, was given an interesting assignment two months ago. Jim McDuff asked him to take a long, hard look at the company's clients. Are they satisfied with the service they receive? Do they routinely reward M-Global with additional work? Are there any features of the company, its employees, or its services that frustrate them? What do they want to see changed? In other words, Kurt was asked to step back from daily events and evaluate the company's level of service. He attacked the project in five stages:

1. He searched Internet sources to identify a target rate for client retention among companies like M-Global.
2. He designed and sent out a survey to all recent and current clients.
3. He followed up on some of the returned surveys with phone and personal interviews.
4. He evaluated the data he collected.
5. He decided to use a formal format for his report on the results of his study. In addition to going to all corporate and branch managers, Fleisch's report later served as a basis for a proposal for in-house training sessions called Quality at M-Global.

Like Kurt Fleisch, you will write a number of reports and proposals during your career. Most will be written collaboratively with colleagues; others will be your responsibility. All will require major efforts at planning, organizing, drafting, and revising. Reports are used to record activities and share research for decision making, and proposals, like reports, are part of the decision-making process. Reports and proposals are more complex than the definitions, descriptions, instructions, and process explanations that are discussed in Chapter 7 and Chapter 8. In fact, those genres may be included as sections of reports and proposals. You may write reports and proposals for readers within your organization, or you may write these documents for outside readers such as people in other

organizations, government agencies, or even the general public.

Reports and proposals should be adapted to their audiences and purposes, but they are formatted in two basic ways—as informal or as formal documents. (Chapter 11 and Chapter 12 offer strategies for tailoring reports and proposals to specific purposes.) Informal reports and proposals can be formatted as letters (for outside readers) or as memos (for inside readers). Formal reports and proposals include the same basic elements whether they are written for internal or external audiences.

Often, you will not have to choose whether to use an informal or a formal format. The format will either be part of the project assignment, or it will be obvious from the length and complexity of the document. Sometimes, however, you will need to choose the format. In the M-Global example at the beginning of the chapter, Kurt decided to use a formal format for his report. He did so because his document was fairly complex, with a large number of tables, charts, and graphs. His report will also be read by people with differing interests and areas of expertise. He used a formal format for his proposal, as well, since he wanted to recommend a new training program that would require a significant investment; he decided that the formal format would signal a level of importance to his recommendation.

This chapter provides guidelines to help you format reports and proposals so that they meet readers' expectations and so that readers can find the information that they need. We begin with basic definitions of the two basic formats. This text uses the following working definition of informal documents:

Informal document: A somewhat short document, usually no longer than five pages of text, not including attachments. It has more substance than a simple letter or memo but is presented in letter or memo format. It can be directed to readers either outside or inside your organization. If outside, it may be called a *letter report* or *letter proposal*; if inside, it may be called a *memo report* or *memo proposal*.

Although informal reports are the most common report in business writing, formal reports become a larger part of your writing as you move along in your career. Many proposals also use a formal format. This text uses the following working definition:

Formal document: A formal document covers complex projects and is directed to readers at different technical levels. Although not defined by length, a formal document usually contains at least six pages of text, not including appendixes. It can be directed to readers either inside or outside your organization. Often bound, it usually includes the following separate parts: (1) cover/title page, (2) letter/memo of transmittal, (3) table of contents, (4) list of illustrations, (5) executive summary, (6) introduction, (7) discussion sections, and (8) conclusions and recommendations. (9) End material such as appendixes and bibliographies.

As noted previously, informal documents and formal documents look quite different. Early in your career, however, you may have trouble deciding which format to use. To help you decide, the two lists that follow briefly describe the characteristics of each format.

Informal reports and proposals have the following characteristics:

- Informal documents have a narrower focus, on a specific problem, situation, or event.
- Informal documents may be written by a team, but they are often written by a single author.
- Informal documents usually have few readers, or even just one reader.
- Informal documents are usually two to five pages long.
- Informal documents use letter (for external audiences) or memo (for internal audiences) format.
- Informal documents may be created in a preset form or a template.
- Informal documents use headings to help readers find information.
- Informal documents may include appendixes.

Formal reports and proposals have the following characteristics:

- Formal documents usually address complex problems, situations, or events.
- Formal documents are often written by a team.
- Formal documents usually are created for multiple readers at different technical levels.
- Formal documents generally include at least six pages of text.
- Formal documents are usually created for external audiences, although they may be used internally if the document is long and complex.
- Formal documents are often bound or presented in some kind of cover.
- Formal documents use headings, subheadings, and other navigational elements to help readers find information.
- Formal documents include front and back material, such as a title page, a table of contents, and appendixes.

The rest of this chapter includes information to help you decide when to use informal or formal formatting for your reports and proposals and provides guidelines for both basic formats.



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>>> When to Use Informal Document Format

In your career, you will spend much of your time writing informal reports and proposals. Although they are short and easy to read like letters and memos, these informal documents have more substance, are longer, and thus require more organization signals than everyday correspondence. This section first shows you when to use informal documents in your career by describing some M-Global cases. Second, it provides 10 main writing guidelines that apply to both letter and memo documents.

Letter Reports and Proposals at M-Global

Written to people outside your organization, letter reports and proposals use the format of a business letter because of their brevity; however, they include more detail than a simple business letter. Following are some sample projects at M-Global that would require letter reports or proposals:

- **Seafloor study:** M-Global's Nairobi staff writes a preliminary report on the stability of the seafloor where an oil rig might be located off the coast of Africa. This preliminary study includes only a survey of information on file about the site. The final report, involving fieldwork, will be longer and more formal.
- **Environmental study:** M-Global's San Francisco staff reports to the local Sierra Club chapter on possible environmental effects of an entertainment park proposed for a rural area where eagles often nest. The project involves one site visit, interviews with a biologist, and some brief library research.
- **Proposal for training project:** M-Global's corporate training staff proposes changes in the training program of a large construction company. Courses that are described include technical writing, interpersonal communication, and quality management.
- **Sales proposal for asbestos removal:** Jane Wiltshire, asbestos department manager at M-Global's St. Paul office, regularly talks with owners of buildings that may contain asbestos. After an initial discussion with the head minister of First Street Church, she writes an informal sales proposal in which she offers M-Global's services in performing an asbestos survey of the church building. Specifically, she explains how M-Global will examine the structure for possible asbestos, gives a schedule for completing the survey and writing the final report, and proposes a lump-sum price for the project.

As these examples show, letter reports and proposals are the best format for projects with a limited scope. In addition, this informal format is a good sales strategy when dealing with customers greatly concerned about the cost of your work. When reading letter proposals, they realize—consciously or subconsciously—that these documents cost them less money than formal proposals. Your use of letter proposals for small jobs shows

sensitivity to their budget and may help gain their repeat work. See Model 10–1 on pages 330–331 for a letter report based on a small project at M-Global.

Memo Reports and Proposals at M-Global

Memo reports and proposals are the informal documents that go back and forth among M-Global’s own employees. Although in memo format, they include more technical detail and are longer than routine memos. These situations at M-Global show the varied contexts of memo reports and proposals:

- **Need for testing equipment:** Juan Watson, a lab technician in the Denver office, evaluates a new piece of chemical testing equipment for his department manager, Wes Powell. Powell discusses the report with his manager.
- **Personnel problem:** Werner Hoffman, a field engineer in the Munich office, writes to his project manager, Hans Schulman, about disciplinary problems with a field hand. Hoffman discusses the report with his manager and with the personnel manager.
- **Report on training session:** Pamela Martin, a field engineer in St. Louis, reports to her project manager, Mel Baron, on a one-week course she took in Omaha on new techniques for removing asbestos from buildings. Baron circulates the report to his office manager, Ramsey Pitt, who then sends copies to the manager of every company office, because asbestos projects are becoming more common throughout the firm.
- **Proposal for structural design and analysis equipment:** Meg Stevens, a civil engineer at the Denver office, writes an in-house proposal to the construction manager, Elvin Lipkowsky, in which she proposes that the company purchase a new structural design and analysis system. Her proposal includes a description of equipment that she recently saw demonstrated at a conference of civil engineers.
- **Proposal for retaining legal counsel:** Jake Washington, an employment specialist in the Human Resources Department in the Baltimore office, writes an in-house proposal to Karrie Camp, Vice President for Human Resources. In it he proposes that the company retain legal counsel on a half-time basis (20 hours a week). In his position at M-Global, Jake uses outside legal advice in dealing with new hiring laws, unemployment compensation cases, affirmative action regulations, and occasional lawsuits by employees who have been fired. He is proposing that the firm retain regular half-time counsel, rather than dealing with different lawyers as is done now.

These five documents require enough detail to justify writing memo reports or proposals rather than simple memos. As for audience, each document goes directly to one reader, and it may be discussed with readers at high levels within the company. That means good memo reports and proposals can help advance your career. Model 10–2 on pages 332–333 provides an annotated example of a memo proposal from a small non-profit organization.

>> General Guidelines for Informal Document Format

Following are 10 guidelines that focus mainly on informal document format.

>> Informal Document Guideline 1: Plan Well Before You Write

Like other chapters in this book, this section emphasizes the importance of the planning process. Complete the Planning Form at the end of the book for each assignment in this chapter, as well as for informal documents you write in your career. Before you begin writing a draft, use the Planning Form to record specific information about these points:

- The document's purpose
- The variety of readers who will receive the document
- The needs and expectations of readers, particularly decision makers
- An outline of the main points to be covered in the body
- Strategies for writing an effective document

>> Informal Document Guideline 2: Use Letter or Memo Format

Model 10–1 shows that letter reports and proposals follow about the same format as typical business letters (see Chapter 6). For example, both are produced on letterhead and both often include the reader's name, the date, and the page number on all pages after the first. Yet the format of letter reports and proposals differs from that of letters in the following respects:

- The greeting is sometimes left out or replaced by an attention line, especially when your letter report or proposal will go to many readers in an organization.
- A title often comes immediately after the inside address. It identifies the specific project covered in the document. You may have to use several lines because the project title should be described fully, in the same words that the reader would use.
- Spacing between lines might be single, one-and-one-half, or double, depending on the reader's preference.

Model 10–2 shows the typical format for a memo report or proposal. Like most memos, it includes Date/To/From/Subject information at the top and has the recipient's name, the date, and the page number on every page after the first. Also, memos and memo reports and proposals have a subject line that should engage interest, give readers their first quick look at your topic, and be both specific and concise—for example, “Fracture Problems with Molds 43-D and 42-G” is preferable to “Problems with Molds.” Because memo reports and proposals are usually longer than memos, they tend to contain more headings than routine memos.



Franz Pfluegl/Dreamstime.com

>> Informal Document Guideline 3: Make Text Visually Appealing

Your informal report or proposal must compete with other documents for each reader's attention. Following are three visual devices that help get attention, maintain interest, and highlight important information:

- Bulleted points for short lists (like this one)
- Numbered points for lists that are longer or that include a list of ordered steps
- Frequent use of headings and subheadings

Headings are particularly useful in memo and letter reports and proposals. As Models 10–1 and 10–2 (pp. 330–333) show, they give readers much-needed visual breaks. Because informal documents have no table of contents, headings also help readers locate information quickly. (Chapter 5 gives more detail on headings and other features of page design.)

>> Informal Document Guideline 4: Use the ABC Format for Organization

Headings and lists attract attention, but these alone do not keep readers interested. You must also organize information effectively. Most technical documents, including informal documents, follow what this book calls the *ABC format*. This approach to organization includes three parts: (1) *Abstract*, (2) *Body*, and (3) *Conclusion*.

Abstract, *body*, and *conclusion* are only generic terms. They indicate the types of information included at the beginning, middle, and end of your documents—not necessarily the exact headings you will use. The next four guidelines give details on the ABC format as applied to memo and letter reports and proposals.

ABC Format: Informal Documents

- **ABSTRACT:** Start with a capsule version of the information most needed by decision makers.
- **BODY:** Give details in the body of the document, where technical readers are most likely to linger a while to examine supporting evidence.
- **CONCLUSION:** Reserve the end of the document for a description or list of findings, conclusions, or recommendations.

>> Informal Document Guideline 5: Create the Abstract as an Introductory Summary

Abstracts should give readers a summary, the “big picture.” This text suggests that in informal documents, you label this overview *Introduction*, *Summary*, or *Introductory Summary*, terms that give the reader a good idea of what the section contains. (You also have the option of leaving off a heading label, in which case your first few paragraphs will contain the introductory summary information, followed by the first body heading of the document.)

In letter reports and proposals, the introductory summary comes immediately after the title; in memo reports and proposals, it comes after the subject line. Note that informal

documents do not require long, drawn-out beginnings; just one or two paragraphs in this first section give readers three essential pieces of information:

1. **Purpose** for the document—Why are you writing it?
2. **Scope** statement—What range of information does the document contain?
3. **Summary** of essentials—What main information does the reader most want or need to know?

>> **Informal Document Guideline 6: Put Important Details in the Body**

The body section provides details needed to expand on the outline presented in the introductory summary. If your document goes to a diverse audience, managers often read the quick overview in the introductory summary and then skip to the last section of the document. Technical readers, however, may look first to the body section(s), where they expect to find supporting details presented in a logical fashion. In other words, here is your chance to make your case and to explain points thoroughly.

Yet the discussion section is no place to ramble. Details must be organized so well and put forward so logically that the reader feels compelled to read on. Following are three main suggestions for organization:

- **Use headings generously.** Each time you change a major or minor point, consider whether a heading change would help the reader. Informal documents should include at least one heading per page.
- **Precede subheadings with a lead-in passage.** Here you mention the subsections to follow, before you launch into the first subheading. (For example, “This section covers these three phases of the field study: clearing the site, collecting samples, and classifying samples.”) This passage does for the entire section exactly what the introductory summary does for the entire document—it sets the scene for what is to come by providing a “road map.”
- **Move from general to specific in paragraphs.** Start each paragraph with a topic sentence that includes your main point, and then give supporting details. This approach always keeps your most important information at the beginnings of paragraphs, where readers tend to focus first while reading.

Another important consideration in organizing the document discussion is the way you handle facts versus opinions.

>> **Informal Document Guideline 7: Separate Fact From Opinion**

Some informal documents contain strong points of view. Others contain only subtle statements of opinion, if any. In either case, you must avoid any confusion about what constitutes fact or opinion. The safest approach in the document organization is to move logically from findings to your conclusions and, finally, to your recommendations. Because these terms are often confused, some working definitions are as follows:

- **Findings:** Facts you uncover (e.g., you observed severe cracks in the foundations of two adjacent homes in a subdivision).

- **Conclusions:** Summary of the document that emphasizes the information most important to your readers (e.g., you emphasize that foundation cracks occurred because the two homes were built on soft fill, where original soil had been replaced by construction scraps). Opinion is clearly a part of conclusions.
- **Recommendations:** Suggestions or action items based on your conclusions (e.g., you recommend that the foundation slab be supported by adding concrete posts beneath it). Recommendations are almost exclusively made up of opinions, but recommendations should clearly be grounded in the facts presented in the document.

>> Informal Document Guideline 8: Focus Attention in Your Conclusion

Letter and memo reports end with a section labeled *Findings*, *Conclusions*, or *Conclusions and Recommendations*, depending on whether the report is informative or analytical. (See Chapter 11 for more on the different purposes of reports.) Proposals use only the label *Conclusion* because they recommend actions throughout the document. (See Chapter 12 for more on proposals.) Choose the wording that best fits the content of your document. In all cases, this section gives details about your major findings, your conclusions, and, if called for, your recommendations. People often remember best what they read last, so think hard about what you place at the end of a document.

The precise amount of detail in your conclusion depends on which of these two options you choose for your particular document:

Option 1: If your major conclusions or recommendations have already been stated in the discussion, then you only need to restate them briefly to reinforce their importance (see Model 10–2, pp. 332–333).

Option 2: If the discussion leads up to, but has not covered, these conclusions or recommendations, then you may want to give more detail in this final section (see Model 10–1, pp. 330–331).

As in Model 10–1, lists are often mixed with paragraphs in the conclusion. Use such lists if you believe they will help readers remember your main points.

>> Informal Document Guideline 9: Use Attachments for Less Important Details

Informal documents are by definition short, yet detailed technical information is often needed for support. One solution to this dilemma is to place technical details in clearly labeled attachments that could include the following items:

- **Tables and figures:** Illustrations in informal documents usually appear in attachments unless it is crucial to include one within the text. Informal documents are so short that attached illustrations are easily accessible.
- **Costs:** It is best to list costs on a separate sheet. First, you do not want to bury important financial information within paragraphs. Second, readers must often circulate cost information, and a separate cost attachment is easy to photocopy and send.

>> Informal Document Guideline 10: Edit Carefully

Many readers judge you on how well you edit every document. A few spelling errors or some careless punctuation makes you seem unprofessional. Your career and your firm's future can depend on your ability to write final drafts carefully. Chapter 17 and the Handbook at the end of this text give detailed information about editing. For now, remember the following basic guidelines:

- Keep most sentences short and simple.
- Proofread several times for mechanical errors such as misspellings (particularly personal names).
- Triple-check all cost figures for accuracy.
- Make sure all attachments are included, are mentioned in the text, and are accurate.
- Check the format and wording of all headings and sub-headings.
- Ask a colleague to check over the document.

These guidelines help memo and letter reports and proposals accomplish their objectives. Remember, both your supervisors and your clients will judge you as much on communication skills as they do on technical ability. Consider each document part of your résumé. During your career, you will write many types of informal documents other than those presented here. If you grasp this chapter's principles, however, you can adapt to other formats.



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Informal Document Guidelines

- Plan well before you write
- Use letter or memo format
- Make text visually appealing
- Use the ABC format for organization
- Create the abstract as an introductory summary
- Put important details in the body
- Separate fact from opinion
- Focus attention in your conclusion
- Use attachments for less important details
- Edit carefully

>>> When to Use Formal Document Format

Like most people, you probably associate formal reports and proposals with important projects. What else justifies all that time and effort? In comparison to informal documents, formal documents usually (1) cover more complicated projects and (2) are longer than their informal counterparts. To prepare you to write effective formal documents, this section briefly describes four situations that would require formal documents. Second, this section provides guidelines for writing the main parts of a long document. Finally, this section discusses a complete long document from M-Global, Model 10–3 on pages 334–349.

Although complexity of subject matter and length are the main differences between formal and informal documents, sometimes there is another distinction: Formal reports and proposals may have a more diverse set of readers. In this case, readers who want just a quick overview can turn to the executive summary at the beginning or the conclusions

and recommendations at the end; technical readers who want to check your facts and figures can turn to discussion sections or appendixes; and all readers can flip to the table of contents for a quick outline of what sections the document contains. You must consider the needs of all these readers as you plan and write your formal documents.

The intended audience for formal reports and proposals can be internal or external, although the latter is more common for formal documents like these. Following are four situations at M-Global for which formal reports and proposals are appropriate:

- **Salary study and recommendations (internal):** Mary Kennelworth, a supervisor at M-Global's San Francisco office, has just completed a study of technicians' salaries among M-Global's competitors on the West Coast. What prompted the study was the problem she had hiring technicians to assist environmental engineers and geologists. Lately, some top applicants have been choosing other firms. Because the salary scales of her office are set by M-Global's corporate headquarters, she wants to give the main office some data showing that San Francisco starting salaries should be higher. Mary decides to submit a formal report, complete with data and recommendations for adjustments. Her main audience includes the San Francisco branch manager and Karrie Camp, Vice President for Human Resources in Baltimore (the company's top decision maker about salaries and other personnel matters).
- **Analysis of marketing problems (internal):** For several years, Jim Springer, Engineering Manager at M-Global's Houston office, has watched profits decline in onshore soils work. (In this type of work, engineers and technicians investigate the geologic and surface features of a construction site and then recommend foundation designs and construction practices.) One problem has been the "soft" construction market in parts of Texas. However, the slump in work has continued despite the recent surge in construction. In other words, some other company is getting the work. Jim and his staff have analyzed past marketing errors with a view to developing a new strategy for gaining new clients and winning back old ones. He plans to present the problem analysis and preliminary suggestions in a formal report. The main readers are his manager, the corporate marketing manager in Baltimore, and managers at other domestic offices who have positions that correspond to his.
- **Collapse of oil rig (external):** A 10-year-old rig in the North Sea recently collapsed during a mild storm. Several rig workers died, and several million dollars' worth of equipment was lost. Also, the accident created an oil spill that destroyed a significant amount of fish and wildlife before it was finally contained. M-Global's London office was hired to examine the cause of the collapse of this structure, which supposedly was able to withstand hurricanes. After three months of on-site analysis and laboratory work, M-Global's experts are ready to submit their report. It will be read by corporate managers of the firm, agencies of the Norwegian government, and members of several major wildlife organizations, and it will be used as the basis for some articles in magazines and newspapers throughout the world.
- **Sales proposal for work on wind turbine project (external):** A utility company in California plans to build 10 wind turbines in a desert valley in the southern part of the state. The "free" power that is generated will help offset the large increases

in fuel costs for the company's other plants. Although the firm has selected a turbine design and purchased the units, it must decide where to place them and what kind of foundations to use. Therefore it has sent out a Request For Proposal (RFP) to companies that have experience with foundation and environmental engineering. Louis Bergen, Engineering Manager at M-Global's San Francisco office, writes a proposal that offers to test the soils at the site, pinpoint the best locations for the heavy turbines, and design the most effective foundations.

As these four situations show, formal reports and proposals are among the most difficult on-the-job writing assignments you face in your career. Although some of these are written by a single author, most formal documents are written by teams of technical and professional people. In all cases, you must (1) understand your purpose, (2) grasp the needs of your readers, and (3) design a document that responds to these needs. The guidelines in the next two sections help you meet these goals.

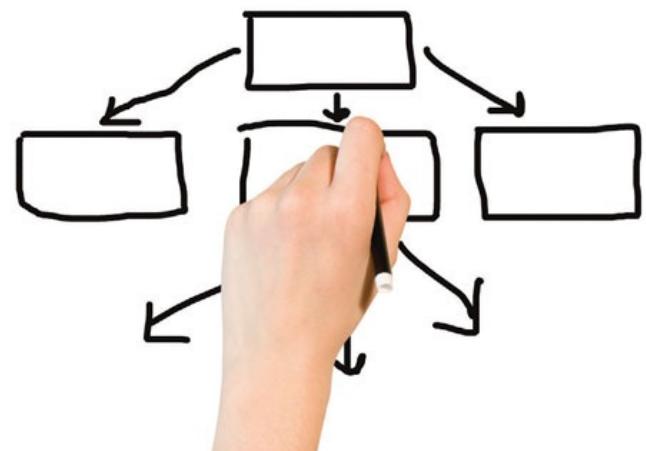
>>> Strategy for Organizing Formal Documents

You will encounter different document formats in your career, depending on your profession and your specific employer. Whatever format you choose, however, there is a universal approach to good organization that always applies. This approach is based on these main principles, discussed in detail in Chapter 4:

Principle 1: Write different parts for different readers.

Principle 2: Place important information first.

Principle 3: Repeat key points when necessary.



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These principles apply to long formal documents even more than they do to short documents, for the following reasons:

1. A formal document often has a very mixed audience—from laypersons to highly technical specialists to executives.
2. The majority of readers of formal documents focus on specific sections that interest them most, reading selectively each time they pick up the document.
3. Few readers have time to wade through a lot of introductory information before reaching the main point. They will get easily frustrated if you do not place important information first.

This chapter responds to these facts about readers of formal documents by following the ABC format (for Abstract, Body, Conclusion). As noted in Chapter 4, the three main rules are that you should (1) start with an abstract for decision makers, (2) put supporting

ABC Format: Formal Document

■ ABSTRACT:

- Cover/title page
- Letter or memo of transmittal
- Table of contents
- List of illustrations
- Executive summary
- Introduction

■ BODY:

- Discussion sections
- [Appendices—appear after text but support the body section]

■ CONCLUSION:

- Conclusions (for reports and proposals)
- Recommendations (for reports only)

details in the body, and (3) use the conclusion to produce action. This simple ABC format should be evident in all formal documents, despite their complexity. The particular sections of formal documents fit within the ABC format as shown on the right.

Several features of this structure deserve special mention. First, note that the generic abstract section includes five different parts of the document that help give readers a capsule version of the entire document. As we discuss shortly, the executive summary is by far the most important section for providing this *big picture* of the document. Second, appendixes are discussed within the body part of the outline, even though they are placed at the end of the document. The reason for this outline placement is that both appendixes and body sections provide supporting details for the document. Third, remember that the generic conclusion section in the ABC format can contain conclusions or recommendations or both, depending on the nature of the document.

Before moving to a discussion of the specific sections that make up the ABC format, take note of the use of main headings in complex formal documents. (See Figure 5–12, p. 137.) Much like chapter titles, these headings are often centered, in full caps, in bold type, and larger in font size than the rest of the text. They usually also begin on a new page. This way, each major section of the formal document seems to exist on its own. Subheadings are then used to indicate parts of the major sections.

Because formal documents may be longer and more complex than other forms of technical communication, it is important to help your readers navigate through the document. You may be used to thinking of navigation devices in Web pages and electronic documents, but they are also important for long print documents. For example, consider information that you can include in the header and footer of your document to help your reader find appropriate sections quickly. Your organization may require standardized information in headers and footers, such as the company name, the date of the document, or an identifying code. In very long documents, it may be useful to include section headings in the header, in the same way that this textbook includes chapter number and chapter title information in its headers. Obviously, including pagination in the header or footer of your document makes it much easier to find information. Many styles of pagination abound. Following are some guidelines for one commonly used pattern that is acceptable unless you have been instructed to use another:

- Use lowercase roman numerals for some or all of the front matter that precedes—and includes—the table of contents.
- Use Arabic numbers for items that follow the table of contents (all of which are listed in the table of contents).

- Continue the Arabic numbering for appendixes if they are relatively short. Long sets of appendixes sometimes have their own internal numbering (A–1, A–2, A–3 . . . ; B–1, B–2, B–3 . . .)

Dividers, colors on the edges of pages (*bleed indexes*), or tabbed sheets are also good ways to help readers find the document sections that they are interested in. Consider starting each section with a tabbed sheet so that the reader can “thumb” to it easily.

>>> Guidelines for the Nine Parts of Formal Documents

The nine parts of formal documents are as follows:

1. Cover/title page
2. Letter or memo of transmittal
3. Table of contents
4. List of illustrations
5. Executive summary
6. Introduction
7. Discussion sections
8. Conclusions and recommendations
9. End material

See Model 10–3 (pp. 334–349) for an example of these navigational elements and for an example of guidelines that follow.

Cover>Title Page

Formal documents are usually bound, often with a standard cover used for all documents in the writer’s organization. (Reports prepared for college courses, however, are often placed in a simple report cover.) Because the cover is the first item seen by the reader, it should be attractive and informative. It usually contains the same four pieces of information mentioned in the following list with regard to the title page; sometimes it has only one or two of these items.

Inside the cover is the title page, which should include the following four pieces of information:

- Project title (exactly as it appears on the letter/memo of transmittal)
- Your client’s or recipient’s name (“Prepared for . . . ”)
- Your name and/or the name of your organization (“Prepared by . . . ”)
- Date of submission

To make your title page or cover distinctive, you might want to place a simple illustration on it; however, do not clutter the page. Use a visual only if it reinforces a main point and if it can be done simply and tastefully. For example, assume that M-Global, Inc., submitted a formal report to a city in Georgia, reporting the results of a study of water pollution. The report writer decided to place the picture of a creek on the title page, punctuating the report's point about the water quality, as in Model 10–3 on page 334–349.

Letter/Memo of Transmittal

Letters or memos of transmittal are like an appetizer—they give the readers a taste of what is ahead. If your formal document is to readers outside your own organization, write a letter of transmittal. If it is to readers inside your organization, write a memo of transmittal. Figures 10–1 and 10–2 show examples of both. Use the following guidelines for constructing this part of your document:

>> Transmittal Guideline 1: Place the Letter/Memo Immediately after the Title Page

This placement means that the letter/memo is bound with the document, to keep it from becoming separated. Some organizations paper-clip this letter or memo to the front of the document or simply include it in the envelope with the document, making

MEMO

TO: Karrie Camp, Vice President for Human Resources

FROM : Abe Andrews, Personnel Assistant *aa*

SUBJECT: Report on Flextime Pilot Program at Boston Office

DATE: March 18, 2012

As you requested, I have examined the results of the six-month pilot program to introduce flextime to the Boston office. This report presents my data and conclusions about the use of flexible work schedules.

To determine the results of the pilot program, I asked all employees to complete a written survey. Then I followed up by interviewing every fifth person on an alphabetical list of office personnel. Overall, it appears that flextime has met with clear approval by employees at all levels. Productivity has increased and morale has soared. This report uses the survey and interview data to suggest why these results have occurred and where we might go from here.

I enjoyed working on this personnel study because of its potential impact on the way M-Global conducts business. Please give me a call if you would like additional details about the study.


M-GLOBAL INC.

M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

■ **Figure 10–1** ■ Memo of transmittal

12 Post Street
Houston Texas 77000
(713) 555-9781

Report #82-651

July 18, 2012

Belton Oil Corporation
PO Box 301
Huff Texas 77704

Attention: Mr. Paul A. Jones

**GEOTECHNICAL INVESTIGATION
DREDGE DISPOSAL AREA F
BELTON OIL REFINERY
HUFF, TEXAS**

This is the second volume of a three-volume report on our geotechnical investigation concerning dredge materials at your Huff refinery. This study was authorized by Term Contract No. 604 and Term Contract Release No. 20-6 dated May 6, 2012.

This report includes our findings and recommendations for Dredge Disposal Area F. Preliminary results were discussed with Mr. Jones on July 16, 2012. We consider the soil conditions at the site suitable for limited dike enlargements. However, we recommend that an embankment test section be constructed and monitored before dike design is finalized.

We appreciate the opportunity to work with you on this project, and we would like to thank Bob Berman and Cyndi Johnson for the help they provided on-site. We look forward to assisting you with the final design and providing materials-testing services.

Sincerely,



George H. Fursten
Geotechnical/Environmental Engineer
GHF/dnn



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■ **Figure 10–2 ■ Letter of transmittal**

it a cover letter or memo. In so doing, however, they risk having it become separated from the document.

>> Transmittal Guideline 2: Include a Major Point from Document

Remember that readers are heavily influenced by what they read first in documents. Therefore, take advantage of the position of this section by including a major finding, conclusion, or recommendation from the document—besides supplying necessary transmittal information.

>> Transmittal Guideline 3: Acknowledge Those Who Helped You

Recognizing those who have been particularly helpful with your project gives them recognition and identifies you as a team player. It reflects well on you and on your organization. Figure 10–2 includes a thank you to members of the client’s organization.

>> Transmittal Guideline 4: Follow Letter and Memo Conventions

Like other letters and memos, letters and memos of transmittal should be easy to read, inviting readers into the rest of the document. Keep introductory and concluding paragraphs relatively short—no more than three to five lines each. Also, write in a conversational style, free of technical jargon and stuffy phrases such as “per your request” or “enclosed herewith.” See the models at the end of Chapter 6 for more details concerning letter/memo format. For now, here are some highlights about the mechanics of format:

Letters and Memos

- Use single spacing and ragged-right-edge copy, even if the rest of the document is double-spaced and fully justified.
- Use only one page.

Letters

- Include company project number with the letter date.
- Spell the reader’s name correctly.
- Be sure the inside address includes the mailing address to appear on the envelope.
- Use the reader’s last name (“Dear Mr. Jamison:”) in the salutation or attention line because of the formality of the document—unless your close association with the reader would make it more appropriate to use first names (“Dear Bill:”).
- Usually include a project title. It is treated like a main heading. Use concise wording that matches wording on the title page.
- Use “Sincerely” as your closing.
- Include a line to indicate those who will receive copies of the document (“cc” or just “c” or “copy” for copy, “pc” for photocopy).

Transmittal Correspondence Guidelines

- Place the letter/memo immediately after the title page
- Include a major point from document
- Acknowledge those who helped you
- Follow letter and memo conventions

Memos

- Give a clear description of the project in the subject line of the memo, including a project number if there is one.
- Include a distribution list to indicate those who will receive copies.

Table of Contents

Your contents page acts as an outline. Many readers go there right away to grasp the structure of the document and then return repeatedly to locate document sections of most interest to them. Most word-processing programs allow you to generate a table of contents automatically from tagged headings, but tables of contents generated this way

must often be edited, especially if you have decided to leave out lower-level headings (see Table of Contents Guideline 3). Guidelines follow for assembling this important component of your document; see page 334–349 in Model 10–3 for an example.

>> Table of Contents Guideline 1: Make It Very Readable

The table of contents must be pleasing to the eye so that readers can find sections quickly and see their relationship to each other. Be sure to

- Space items well on the page
- Use indenting to draw attention to subheadings
- Include page numbers for every heading and subheading, unless there are many headings in a relatively short document, in which case you can delete page numbers for all of the lowest-level headings listed in the table of contents

>> Table of Contents Guideline 2: Use the Contents Page to Reveal Document Emphases

Choose the wording of headings and subheadings with care. Be specific yet concise so that each heading listed in the table of contents gives the reader a good indication of what the section contains.

Readers associate the importance of document sections with the number of headings and subheadings listed in the table of contents. If, for example, a discussion section called “Description of the Problem” contains many more heading breakdowns than other sections, you are telling the reader that the section is more important. When possible, it is best to have about the same number of breakdowns for document sections of about the same importance. In short, the table of contents should be balanced.

>> Table of Contents Guideline 3: Consider Leaving Out Low-Level Headings

In very long documents, you may want to unclutter the table of contents by removing lower-level headings. As always, the needs of the readers are the most important criterion to use in making this decision. If you think readers need access to all levels of headings on the contents page, keep these headings there. If you think they would prefer a simple contents page instead of a comprehensive one, delete all the lowest-level headings from the table of contents.

>> Table of Contents Guideline 4: List Appendixes

Appendixes include items such as tables of data or descriptions of procedures that are inserted at the end of the document. Typically, they are listed at the end of the table of contents. They may be paged with Arabic numerals, like the rest of the document. However, sometimes no page numbers are given in the table of contents, because many appendixes contain *off-the-shelf* material such as résumés or project sheets and are thus individually paged (e.g., Appendix A might be paged A–1, A–2, A–3, etc.). Tabs on the edges of pages can help the reader locate these sections.

>> Table of Contents Guideline 5: Use Parallel Form in All Entries

All headings in one section, and sometimes even all headings and subheadings in the document, have parallel grammatical form. Readers find mixed forms distracting. For example, “Subgrade Preparation” and “Fill Placement” are parallel because they are both the same type of phrase. However, if you switch the wording of the first item to “Preparing the Subgrade” or “How to Prepare the Subgrade,” parallel structure is lost.

Table of Contents Guidelines

- Make it very readable
- Use the contents page to reveal document emphases
- Consider leaving out low-level headings
- List appendixes
- Use parallel form in all entries
- Proofread carefully

>> Table of Contents Guideline 6: Proofread Carefully

The table of contents is one of the last document sections to be assembled; therefore it often contains errors. Wrong page numbers and incorrect headings are two common mistakes. Another is the failure to show the correct relationship of headings and subheadings. If you have used your word-processing software to generate a table of contents automatically, you may need to generate it again, after you have completed your final version of the document. Obviously, errors in the table of contents can confuse the reader and prove embarrassing to the writer. Proofread this section carefully.

List of Illustrations

Illustrations within the body of the document are usually listed on a separate page right after the table of contents. When there are few illustrations, another option is to list them at the bottom of the table of contents rather than on a separate page. In either case, this list should include the number, title, and page number of every table and figure within the body of the document. If there are many illustrations, separate the list into tables and figures. See the example on page 334–349 in Model 10–3. (For more information on illustrations, see Chapter 13.)

Executive Summary

No formal document would be complete without an executive summary. This short section provides decision makers with a capsule version of the document. Consider it a stand-alone section that should be free of technical jargon. In some cases, a copy of the executive summary may be circulated and filed separate from the document (see Figure 10–3). Follow these basic guidelines in preparing this important section of your formal documents:

>> Executive Summary Guideline 1: Put It on One Page

The best reason to hold the summary to one page is that most readers expect and prefer this length. It is a comfort to know that somewhere within a long document there is one page to which one can turn for an easy-to-read overview. Moreover, a one-page length permits easy distribution at meetings. When the executive summary begins to crowd your page, it

EXECUTIVE SUMMARY

Quarterly monitoring of groundwater showed the presence of nickel in Well M-17 at the Hennessey Electric facility in Jones, Georgia. Nickel was not detected in any other wells on the site. Hennessey retained M-Global's environmental group to determine the source of the nickel.

The project consisted of four main parts. First, we collected and tested 20 soil samples within a 50-yard radius of the well. Second, we collected groundwater samples from the well itself. Third, we removed the stainless steel well screen and casing and submitted them for metallurgical analysis. Finally, we installed a replacement screen and casing built with Teflon.

The findings from this project are as follows:

- The soil samples contained *no* nickel.
- We found *significant* corrosion and pitting in the stainless steel screen and casing that we removed.
- We detected *no* nickel in water samples retrieved from the well after replacement of the screen and casing.

Our study concluded that the source of the nickel in the groundwater was corrosion on the stainless steel casing and screen.

■ **Figure 10–3** ■ Executive summary—formal report

is acceptable to switch to single-spacing if such a change helps keep the summary on one page—even though the rest of the document may be space-and-a-half or double-spaced.

Some extremely long formal documents may require that you write an executive summary of several pages or longer. In this case, you must still provide the reader with a section that summarizes the document in less than a page. The answer to this dilemma is to write a brief *abstract*, a condensed version of the executive summary directed to the highest-level decision makers. The abstract should be placed right before the executive summary. (See Chapter 9 for further discussion of abstracts.)

>> Executive Summary Guideline 2: Avoid Technical Jargon

Include only that level of technical language the decision makers comprehend. It makes no sense to talk over the heads of the most important readers.

>> Executive Summary Guideline 3: Include Only the Important Conclusions and Recommendations

The executive summary mentions only the major points of the document. An exhaustive list of appropriate findings, conclusions, and recommendations can come later, at the end of the document. If you have trouble deciding what is most important, put yourself in the position of the readers. What information is most essential for them? If you want to leave

them with one, two, or three points about the document, what would these points be? That is the information that belongs in the executive summary.

>> Executive Summary Guideline 4: Avoid References to the Document Body

Avoid the tendency to say that the document provides additional information. It is understood that the executive summary is only a generalized account of the document's contents. References to later sections do not provide the busy reader with further understanding.

An exception is those instances when you are discussing issues that involve danger or liability, when it may be necessary to add qualifiers in your summary—for example, “As noted in this document, further study will be necessary.” Such statements protect you and the client in the event the executive summary is removed from the document and used as a stand-alone document.

>> Executive Summary Guideline 5: Use Paragraph Format

Whereas lists are often appropriate for body sections of a document, they can give executive summaries a fragmented effect. Instead, the best summaries create unity with a series of relatively short paragraphs that flow together well. Within a paragraph, there can be a short listing of a few points for emphasis (see Figure 10–3 on page 334–349), but the listing should not be the main structural element of the summary.

Occasionally, you may be convinced that the paragraph approach is not desirable. For example, a project may involve a series of isolated topics that do not mesh into unified paragraphs. In this case, use a modified list. Start the summary with a brief introductory paragraph, followed by a numbered list of three to nine points. Each numbered point should include a brief explanation. For example,

1. Sewer Construction: We believe that seepage influx can be controlled by . . .
2. Geologic Fault Evaluation: We found no evidence of surficial . . .

Executive Summary Guidelines

- Put it on one page
- Avoid technical jargon
- Include only the important conclusions and recommendations
- Avoid references to the document body
- Use paragraph format
- Write the executive summary last

>> Executive Summary Guideline 6: Write the Executive Summary Last

Only after finishing the document do you have the perspective to write a summary. Approach the task in a logical manner. First, sit back and review the document from beginning to end, and then ask yourself, “What would my readers really need to know if they had only a minute or two to read?” The answer to that question becomes the core of your executive summary.

Introduction

View this section as your chance to prepare both technical and nontechnical readers for the discussion ahead. You do not need to summarize the document, because your executive

summary has accomplished that goal. Instead, give information on the document's purpose, scope, and format, as well as a project description. Follow these basic guidelines, as reflected on page 334–349 in Model 10–3.

>> **Introduction Guideline 1: State Your Purpose and Lead into Subsections**

The purpose statement for the document should appear immediately after the main introduction heading (e.g., “This document presents M-Global’s foundation design recommendations for the new Hilltop Building in Franklin, Maine”). Follow it with a sentence that mentions the introduction subdivisions to follow (e.g., “This introduction provides a description of the project site and explains the scope of activities we conducted”).

>> **Introduction Guideline 2: Include a Project Description**

Here you must be precise about the project. Depending on the type of project, you may be describing a physical setting, a set of problems that prompted the document study, or some other data. The information may have been provided to you, or you may have collected it yourself. Accuracy in this section helps prevent any later misunderstandings between you and the reader. (When the project description is too long for the introduction, sometimes it is placed in the body of the document.)

>> **Introduction Guideline 3: Include Scope Information**

This section outlines the precise objectives of the project. Include all necessary details, using bulleted or numbered lists when appropriate. Your listing or description should parallel the order of the information presented in the body of the document. Like the project description, this subsection must be accurate in every detail. Careful and thorough writing here can prevent later misunderstandings about the tasks you were hired to perform.

>> **Introduction Guideline 4: Consider Including Information on Document Organization**

Often, the scope section lists information as it is presented in the document. If this is not the case, end the introduction with a short subsection on the document organization where you can give readers a brief preview of the main sections that follow. In effect, the section acts as a condensed table of contents and may list the document’s major sections and appendixes.

Discussion Sections

Discussion sections make up the longest part of formal documents. In general, they are written for the most technically oriented members of your audience. You can focus on facts and opinions, demonstrating the technical expertise that the reader expects from

Introduction Guidelines

- State your purpose and lead into subsections
- Include a project description
- Include scope information
- Consider including information on document organization

you. Because the discussion sections will be the longest part of your document, they should be organized carefully. Common patterns of organization, such as a problem solution or chronological structure, can be used to organize the entire body of the document, or they may be used to organize specific sections. (See Chapter 4 for more about the common patterns of organization.) The discussion sections often include technical definitions, descriptions, and process explanations. They may also include information about budgets, schedules, and other resources. General guidelines for writing the document discussion are listed next. Chapter 11 and Chapter 12 list guidelines for discussion sections for specific types of documents. For a complete example of the discussion component, see the formal document example in Model 10–3 on pages 334–349.

>> Discussion Guideline 1: Move from Facts to Opinions

As you have learned, the ABC format requires that you start your formal document with a summary of the most important information—that is, you skip right to essential conclusions and recommendations the reader needs and wants to know. Once into the discussion section, however, you back up and adopt a strategy that parallels the stages of the technical project itself. You begin with hard data and move toward conclusions and recommendations (i.e., those parts that involve more opinion). There are two reasons for this approach, one ethical and the other practical. First, as a professional, you are obligated to draw clear distinctions between what you observe and what you conclude or recommend. Second, documents are usually more persuasive if you give readers the chance to draw conclusions for themselves.

>> Discussion Guideline 2: Use Frequent Headings and Subheadings

Headings give readers handles by which to grasp the content of your document. They are especially needed in the document body, which presents technical details. Your readers view headings, collectively, as a sort of outline by which they can make their way easily through the document.

>> Discussion Guideline 3: Use Listings to Break Up Long Paragraphs

Long paragraphs full of technical details irritate readers. Use paragraphs for brief explanations, not for descriptions of processes or other details that could be listed.

>> Discussion Guideline 4: Use Illustrations for Clarification and Persuasion

A simple table or figure can sometimes be just the right complement to a technical discussion in the text. Incorporate illustrations into the document body to make technical information accessible and easier to digest.

>> Discussion Guideline 5: Place Extra Detail in Appendixes

Today's trend is to place cumbersome detail in appendixes that are attached to formal documents, rather than weighing down the discussion with this detail. In other words, you give readers access to supporting information without cluttering up the text of the

formal report or proposal. Of course, you must refer to the appendixes in the body of the document and label appendixes clearly so that readers can locate them easily.

Conclusions and Recommendations

This section of the document gives readers a place to turn to for a comprehensive description—sometimes in the form of a listing—of all conclusions and recommendations. The points may or may not have been mentioned in the body of the document, depending on the length and complexity of the document. It can sometimes be difficult to decide whether to use the term *conclusions* or the term *recommendations*, or both. Your organization may have guidelines for how to label the last section of formal documents; however, these general guidelines can help you decide which term best describes the final section of your document. *Conclusions*, on the one hand, summarize the content of your document. They emphasize the information that you feel is most important for your reader. *Recommendations*, on the other hand, are actions you are suggesting based on your conclusions. For example, your conclusion may be that there is a dangerous level of toxic chemicals in a town’s water supply, and your recommendation may be that the toxic site near the reservoir should be cleaned immediately. As noted earlier, the final section of proposals is usually labeled *Conclusions*.

What distinguishes this final section of the document text from the executive summary is the level of detail and the audience. The section on conclusions and recommendations provides an exhaustive list of conclusions and recommendations for technical and management readers. The executive summary provides a selected list or description of the most important conclusions and recommendations for decision makers, who may not have technical knowledge.

In other words, view the section on conclusions and recommendations as an expanded version of the executive summary. It usually assumes one of these three headings, depending, of course, on the content:

1. Conclusions
2. Recommendations
3. Conclusions and Recommendations

Another option for documents that contain many conclusions and recommendations is to separate this last section into two sections: (1) “Conclusions” and (2) “Recommendations.”

End Material

One kind of end material—appendixes—is mentioned in the context of the discussion section. Note that formal documents may also contain works-cited pages or bibliographies, which should be included in the end materials. See Chapter 9 and, at the end of this book, the Handbook for guidelines on formatting in-text citations and bibliography entries. Finally, very long documents may include indexes.

Discussion Guidelines

- Move from facts to opinions
- Use frequent headings and subheadings
- Use listings to break up long paragraphs
- Use illustrations for clarification and persuasion
- Place extra detail in appendixes

>>> Formal Report Example

Model 10–3 (pp. 334–349) provides a long and formal technical report from M-Global, Inc. It contains the main sections discussed previously, including the list of illustrations. Marginal annotations indicate how the model reflects proper use of this chapter’s guidelines for format and organization.

The report results from a study that M-Global completed for the city of Winslow, Georgia. Members of the audience come from both technical and nontechnical backgrounds. Some are full-time professionals hired by the city, whereas others are part-time, unpaid citizens appointed by the mayor to explore environmental problems. The paid professionals include engineers, environmental specialists, accountants, city planners, managers, lawyers, real estate experts, and public relations specialists. The part-time appointees include citizens who work in a variety of blue-collar and white-collar professions or who are homemakers.

>>> Chapter Summary

- Complex documents like reports and proposals may be formatted as informal documents or as formal documents.
- Usually, the choice of format is obvious, or it is assigned, but sometimes the reader must choose which format to use based on how narrow or broad the scope is and how large and diverse the audience is.
- Informal documents are formatted as memos, for communication within organizations, or as letters, for communications between organizations.
- Informal documents generally have a narrow, specific focus.
- Informal documents are usually written for one reader or a few readers with similar backgrounds.
- The ABC format can help writers organize informal documents.
- Less important details should be attached to informal documents as appendixes.
- Formal documents cover topics that are more complex or projects with larger scope.
- Formal documents are usually written for multiple readers with different technical expertise.
- Formal documents have up to nine main parts: a cover and/or title page, a letter or memo of transmittal, a table of contents, a list of illustrations, an executive summary, an introduction, a discussion, conclusions and/or recommendations, and end material.
- Because of their length and complexity, formal documents need navigation elements such as headings and subheadings, as well as clear organization.
- Informal and formal documents should be visually appealing and carefully edited.

>>> Learning Portfolio

Communication Challenge The Ethics of Clients Reviewing Report Drafts

Last week, Hank Wallace of M-Global's Kenya office completed the draft of an ocean exploration project for the Republic of Cameroon (see the second project sheet on page 473 in Model 12–6). As is routine with major reports, Hank showed the client a draft before the final draft was submitted. For the first time in his career, he was asked by the client to make changes he thinks are difficult to justify by project data. This case study is an explanation of why M-Global shares report drafts with some clients, as well as some background on the ocean exploration project. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Sharing Drafts with Clients

In M-Global's business, some of the firm's reports must be submitted both to the paying client and to regulatory agencies of the government. This dual audience has created a review procedure common in the industry. Client firms have an opportunity to review a draft and make suggestions before both they and the regulatory agencies are sent final drafts.

For example, a U.S. mining company hired M-Global to examine a Siberian site to determine if gold reserves could be mined without damaging the delicate permafrost surface of the tundra. Because the Russian government regulates development of the region, it received a final copy of the report. However, before the final copy was submitted to the government, M-Global shared a draft with engineers and executives from the mining company. These client representatives questioned several technical assumptions M-Global made about the site, but M-Global had adequate justifications for its work. In the end, M-Global made no change in its original draft recommendation—that is, that further study was needed before mining was permitted in the permafrost region.

In another case, however, a client's review of a report on a dam in the midwestern United States prompted M-Global to adjust its report before submission of the final draft to the state's Department of Natural Resources, which regulates high-hazard dams. The owners of the dam—who paid for the study—convinced M-Global that the report should emphasize the fact that poor installation of a guardrail over the dam created a drainage problem. When heavy rains came, soil washed out an embankment near the dam's spillway. The first draft had failed to mention that the state's transportation group bore some responsibility for the dam's problems.

The Ocean Exploration Report Review

The draft review of the ocean exploration report for the Republic of Cameroon did not go as smoothly as the two reviews just described. Major differences of opinion were evident between the M-Global project manager and the client.

As indicated on the project sheet on page 473 in Model 12–6, M-Global engineers developed conclusions and recommendations for the Cameroon coastal site. For the most part, they found that the offshore environment where they did the study would be too environmentally sensitive to drill offshore wells or run pipelines. There were two locations where a pipeline might be placed safely, but even in this case, some environmental damage was likely. When the Ministry of Mines and Energy got the draft report, the client asked for a meeting.

At the meeting the following week, M-Global engineers reviewed their findings, conclusions, and recommendations with the client. Ultimately, M-Global managers were asked to change the wording in the report to present a more favorable view of oil exploration at the site because, in the client's opinion, M-Global was being too conservative in its conclusions. If M-Global would just adjust some wording so as not to emphasize what was, after all, only possible environmental damage, then the Cameroon government might be provided the support it needed to develop this potentially rich oil field. Cameroon, the client argued, needed oil revenues to improve its economy and assist poor farmers with the transition to a modern economy. M-Global was not being asked to alter the facts—only to adjust the tone of the language.

Back at the office, the M-Global project manager met with the branch manager and later with corporate staff via teleconference. The project manager presented the facts of the project and a summary of the meeting. To all present, it was clear that the relationship with a long-term client was at stake.

Questions and Comments for Discussion

1. How should M-Global, Inc., respond to the client's request?
2. Generally, do you think M-Global's procedure for reviewing report drafts with clients is ethically sound? Support your answer.
3. If you answered yes to Question 2, do you have any suggestions to improve the procedure for this client report review? In other words, how might the process be adjusted to reduce the potential for misunderstandings and abuse?

4. If you answered no to Question 2, is there any circumstance in which you would support the review of a report draft by a client before final submission to the client and its regulatory agency?
5. It is often said, in this text and elsewhere, that collaboration is essential in the workplace. Describe the kinds of on-the-job situations where you think collaboration between writer and reader would be useful, appropriate, and ethical.

Write About It

Assume the role of the project manager in this Communication Challenge. In preparing for your teleconference meeting, you have been thinking about whether M-Global's procedure for reviewing report drafts with clients is ethical (see Question 2). Write a memo to Erik Schell, Vice President of International Operations, explaining your opinion. Respond to the issues raised in Question 3 or Question 4.

Collaboration at Work Suggestions for High School Students

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

This chapter introduced you to two basic formats for reports—informal memo and letter formats and the formal format that includes a cover, letter or memo of transmittal, and front and back material that are not part of the informal document format. As with other collaborative efforts, first, you share ideas in a nonjudgmental way; then you choose what should be included in the report and how the report should be formatted and organized based on your team discussions.

Team Assignment

Assume that an association of colleges and universities has asked your team to help write a short report to be sent to high school students. The report's purpose is to assist students in selecting a college or university. First, your team will decide if the report should be formatted as an informal document or as a formal document. Then your team will prepare an outline for the body of the report by (1) choosing several headings that classify groupings of recommendations and (2) providing specific recommendations within each grouping. For example, one grouping might be "Support for Job Placement," with one recommendation in this grouping being "Request data on the job placement rates of graduates of the institution." After deciding on your format and producing your outline, share the results with other teams in the class. Be prepared to discuss why you have chosen the informal or formal format and what organization principles you used in planning the body of the report. (See Chapter 4 for more on organization principles.)

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. Your instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Informal documents

Use Model 10-1 and Model 10-2 on pages 330–333, for this assignment. Each of these reports is addressed to one reader, but the readers of these reports are quite different. For each report

- Identify the likely audience for the document.
- Discuss how you identified the characteristics of the audience for each document.
- Compare the two documents. How is each document organized to answer a question or solve a problem for the reader?
- Does the writer of each document present a professional image? Explain.

2. Analysis: Formal Report

Locate a formal report written by a private firm or government agency, or use a long report provided by your instructor. (You can use the advanced search tools in an Internet search engine to find a report that is in PDF format.) Determine the degree to which the example follows the guidelines in this chapter. Depending on the instructions given by your teacher, choose between the following options:

- Present your findings orally or in writing.
- Select part of the report or all of the report.

3. Analysis: Executive Summary

The 9/11 Commission Report was widely praised for its excellent writing, especially for its appropriateness to an audience that included a general, international public, as well as people in government agencies. It was even nominated

for a National Book Award for nonfiction. Find the executive summary for the 9/11 Commission Report (located at http://www.9-11commission.gov/report/911Report_Exec.pdf). Evaluate it as a stand-alone document. What techniques did the writers use to prepare the executive summary for the media and general public who would be reading it? Can you explain why the executive summary does not follow all of the guidelines in this chapter?

Depending on the instructions given by your teacher, present your findings in writing or be prepared to discuss them in class.

4. Analysis: Introduction

Review the chapter guidelines for writing an effective introduction to a formal report. Then evaluate the degree to which the following example follows or does not follow the guidelines presented.

INTRODUCTION

M-Global, Inc., has completed a three-week study of the manufacturing and servicing processes at King Radio Company. As requested, we have developed a blueprint for ways in which computer-aided testing (CAT) can be used to improve the company's productivity and quality.

Project Description

Mr. Dan Mahoney familiarized our project team with the problems that prompted this study of CAT. According to Mr. Mahoney, the main areas of concern are as follows:

- Too many units on the production line are failing postproduction testing and thus returning to the repair line.
- Production bottlenecks are occurring throughout the plant because of the testing difficulties.
- Technicians in the servicing center are having trouble repairing faulty units because of their complexity.
- Customers' complaints have been increasing, about both new units under warranty and repaired units.

Scope

From May 3 through May 5, 2012, M-Global, Inc., had a three-person team of experts working at the King Radio Company plant. This team interviewed many personnel, observed all the production processes, and acquired data needed to develop recommendations. On returning to the M-Global office, team members met to share their observations and develop the master plan included in this report.

Report Format

This report is organized primarily around the two ways that CAT can improve operation at the King Radio Company plant. Based on the detailed examination of the plant's problems in this regard, the report covers two areas for improvement and ends with a section that lists main conclusions and recommendations. The main report sections are as follows:

- Production and Servicing Problems at King Radio
- CAT and the Manufacturing Process
- CAT and the Servicing Process
- Major Conclusions and Recommendations

The report ends with two appendixes. Appendix A offers detailed information on several pieces of equipment we recommend that you purchase. Appendix B provides three recent articles from the journal *CAT Today*, all of which deal with the application of CAT to production and service problems similar to those you are experiencing.

Practice Assignments

Follow these general guidelines for the practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

5. Practice: Informal Report Based on Internet Search

Use the Internet to collect actual information, or a list of sources that may contain information, about a topic that relates to your academic major. Then write an informal report in which you analyze (1) the ease with which the Internet allowed you to collect information on your topic and (2) the quality of the sources or information you received. Your audience is your instructor, who will let you know the degree of knowledge you can assume he or she has on this topic.

6. Practice, M-Global Context: Memo Report

Assume you are an M-Global field engineer working at the construction site of a nuclear power plant in Jentsen, Missouri. For the past three weeks, your job has been to observe the construction of a water-cooling tower, a large cylindrical structure. As consultants to the plant's construction firm, you and your M-Global crew were hired to make sure that work proceeds properly and on schedule. As the field engineer, you are supposed to report any problems in writing to your project manager, John Raines, back at your St. Louis office. Then he will contact the construction firm's office, if necessary.

Write a short memo report to Raines. Take the following randomly organized information and present it in a clear, well-organized fashion. If you wish, add information of your own that might fit the context.

- Three cement pourings for the tower wall were delayed an hour each on April 21 because of light rain.
- Cement-truck drivers must slow down while driving through the site. Other workers complain about the excessive dust raised by the trucks.
- Mary Powell, an M-Global safety inspector on the crew, cited 12 workers for not wearing their hard hats.
- You just heard from one subcontractor, Allis Wire, Inc., that there will be a two-day delay in delivering some steel reinforcing wires that go into the concrete walls. That delay will throw off next week's schedule. Last Monday's hard rain and flooding kept everyone home that day.

- It is probably time once again to get all the subcontractors together to discuss safety at the tower site. Recently, two field hands had bad cuts from machinery.
- Although there have not been any major thefts at the site, some miscellaneous boards and masonry pieces are missing each day—probably because nearby residents (doing small home projects) think that whatever they find at the site has been discarded. Are additional "No trespassing" signs needed?
- Construction is only two days behind schedule, despite the problems that have occurred.

7. Practice, M-Global Context: Letter Report

This project requires some research. Assume that your college plans either to embark on a major recycling effort or to expand a recycling program that has already started. Put yourself in the role of an M-Global environmental scientist or technician who has been asked to recommend these recycling changes.

First, do some research about recycling programs that have worked in other organizations. A good place to start is a periodical database such as EBSCOhost or J-Stor, which will lead you to some magazine articles of interest. Choose to discuss one or more recoverable resources, such as paper, aluminum, cardboard, plastic, or glass bottles. Be specific about how your recommendations can be implemented by the organization or audience for which you are writing.

8. Practice: Research-Based Formal Report

Complete the following procedure for writing a research-based report:

- Use library and Internet resources to research a general topic in a field that interests you. Do some preliminary reading to screen possible specific topics.
- Choose three to five specific topics that require further research and for which you can locate information.
- Work with your instructor to select the one topic that best fits this assignment, given your interests and the criteria set forth here.
- Develop a simulated context for the report topic, whereby you select a purpose for the report, a specific audience to whom it could be addressed (as if it were a real report), and a specific role for you as a writer.

For example, assume you have selected "Earth-Sheltered Homes" as your topic. You might be writing a report to the manager of a local design firm on the features and construction techniques of such structures. As a newly hired engineer or designer, you are presenting information so that your manager can decide whether the firm might want to begin building and marketing such homes. This report might present only data, or it could present data and recommendations.

- Write the report according to the format guidelines in this chapter and in consideration of the specific context you have chosen.
- Document your sources appropriately (see Chapter 9).

9. Practice: Work-Based Formal Report

This assignment is based on the work experience that you may have had in the past or that you may be experiencing now.

- Choose five report topics that are based on your current or past work experience. For example, you could choose “warehouse design” if you stock parts, “checkout procedure” if you work behind the counter at any retail store, “report production procedures” if you work as a secretary at an engineering firm, and so on. In other words, find a subject that you know about, or about which you can find more information, especially through interviews.
- Work with your instructor to select the one topic that holds out the best possibilities for a successful report on the basis of the criteria given here.
- Develop a context for the report in which you give yourself a role in the company where you work(ed). This role should be one in which you would actually write a formal in-house or external report about the topic you have chosen, but the role does not have to be the exact one you had or have. Then select a precise purpose for which you might be writing the report, and finally, choose a set of readers who might read such a report within or outside the organization. Your report can be a presentation of data and conclusions or a presentation of data, conclusions, and recommendations.
- Follow the guidelines included in this chapter for format and organization.

10. Practice, M-Global Context: Formal Report

For this assignment, place yourself in a role of your choosing at M-Global, Inc. Use the following procedure, which may be modified by your instructor:

- Review pages 310–311, which list M-Global cases for formal reports to get a sense of when formal reports are used at companies like M-Global.
- Review the M-Global information in Model 1–1 on pages 25–34, especially with regard to the kinds of jobs people hold at the company and the kinds of projects that are undertaken.
- Choose a specific job that you could assume at M-Global, based on your academic background, your work experience, or your career interests.
- Choose a specific project that (a) could conceivably be completed at M-Global by someone in the role you have

chosen, (b) would result in a formal report directed either inside or outside the company, and (c) would be addressed to a complex audience at two or three of the levels indicated on the Planning Form at the end of the book.

- Be sure you have access to information that will be used in this simulated report—for example, from work experience, from a term paper or class project in another course, or from your interviews of individuals already in the field. (For this assignment, you may want to talk with a professional, such as a recent graduate in your major.)
- Prepare a copy of the Planning Form at the end of the book for your instructor’s approval before proceeding further with the project.
- Complete the formal report, following the guidelines in this chapter.

11. Ethics Assignment

Illustrations on cover pages of formal reports are one strategy for attracting the readers’ attention to the document. Note the use of an illustration in Model 10–3, along with the rationale on page 341. Do you think Model 10–3 uses its graphics in an ethically sound way to engage the reader with the report? Why or why not? How do you determine whether a cover page illustration is an appropriate persuasive tool, on the one hand, or an inappropriate attempt to manipulate the reader, on the other? Give hypothetical examples, or find examples from reports available on the Internet.

12. Informal Report: International Context

Investigate features such as style, format, structure, and organization of formal reports written in another country. For this assignment, it would be best to interview someone who does business in another country and, if possible, to get an actual report that you can submit. Write a memo report to your instructor that presents the results of your study.

13. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Interview a member of the campus staff responsible for adopting energy-saving measures at your college or university. Focus on one or more technical or social strategies, such as alternative-energy vehicles, new technology for regulating energy systems, advanced insulation, variable work hours, and modification of human behaviors related to energy use. Then write a short report on the relative success of the strategies you have researched. If the report is well reviewed by your instructor, consider seeking wider distribution of the report by submitting it (or a version of it) to the campus—assuming you have the permission of the person interviewed.

12 Post Street
Houston Texas 77000
(713) 555-9781

April 22, 2012

Big Muddy Oil Company Inc
12 Rankin St
Abilene TX 79224

ATTENTION: Mr. James Smith, Engineering Manager

Includes specific title.

**SHARK PASS STUDY
BLOCK 15, AREA 43-B
GULF OF MEXICO**

Uses optional heading
for abstract part of
ABC format.

INTRODUCTORY SUMMARY

You recently asked our firm to complete a preliminary soils investigation at an offshore rig site. This report presents the tentative results of our study, including major conclusions and recommendations. A longer, formal report will follow at the end of the project.

Draws attention to *main*
point of report.

On the basis of what we have learned so far, it is our opinion that you can safely place an oil platform at the Shark Pass site. To limit the chance of a rig leg punching into the seafloor, however, we suggest you follow the recommendations in this report.

Gives on-site details of
project—dates, location,
tasks.

WORK AT THE PROJECT SITE

On April 15 and 16, 2012, M-Global's engineers and technicians worked at the Block 15 site in the Shark Pass region of the gulf. Using M-Global's leased drill ship, *Seeker II*, as a base of operations, our crew performed these main tasks:

- Seismic survey of the project study area
- Two soil borings of 40 feet each

Uses lead-in to subsec-
tions that follow.

Both seismic data and soil samples were brought to our Houston office the next day for laboratory analysis.

LABORATORY ANALYSIS

On April 17 and 18, our lab staff examined the soil samples, completed bearing capacity tests, and evaluated seismic data. Here are the results of that analysis.

Highlights most impor-
tant point about soil
layer—that is, the weak
clay.

Soil Layers

Our initial evaluation of the soil samples reveals a 7- to 9-foot layer of weak clay starting a few feet below the seafloor. Other than that layer, the composition of the soils seems fairly typical of other sites nearby.



M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

James Smith

April 22, 2012

Page 2

Bearing Capacity

We used the most reliable procedure available, the XYZ method, to determine the soil's bearing capacity (i.e., its ability to withstand the weight of a loaded oil rig). That method required that we apply the following formula:

Notes why this method was chosen (i.e., reliability).

$Q = cNv + tY$, where

Q = ultimate bearing capacity

c = average cohesive shear strength

Nv = the dimensionless bearing capacity factor

t = footing displacement

Y = weight of the soil unit

The final bearing capacity figure will be submitted in the final report, after we repeat the tests.

Seafloor Surface

By pulling our underwater seismometer back and forth across the project site, we developed a seismic "map" of the seafloor surface. That map seems typical of the flat floor expected in that area of the gulf. The only exception is the presence of what appears to be a small sunken boat. This wreck, however, is not in the immediate area of the proposed platform site.

Explains both how the mapping procedure was done and what results it produced.

CONCLUSIONS AND RECOMMENDATIONS

Based on our analysis, we conclude that there is only a slight risk of instability at the site. Although unlikely, it is possible that a rig leg could punch through the seafloor, either during or after loading. We base this opinion on (1) the existence of the weak clay layer, noted earlier, and (2) the marginal bearing capacity.

Leads off section with major conclusion, for emphasis.

Nevertheless, we believe you can still place your platform if you follow careful rig-loading procedures. Specifically, take these precautions to reduce your risk:

Restates points (made in body) that support conclusion.

1. Load the rig in 10-ton increments, waiting 1 hour between loadings.
2. Allow the rig to stand 24 hours after the loading and before placement of workers on board.
3. Have a soils specialist observe the entire loading process to assist with any emergency decisions if problems arise.

Uses list to emphasize recommendations to reduce risk.

As noted at the outset, these conclusions and recommendations are based on preliminary data and analysis. We will complete our final study in three weeks and submit a formal report shortly thereafter.

Again mentions tentative nature of information, to prevent misuse of report.

M-GLOBAL, Inc., enjoyed working once again for Big Muddy Oil at its Gulf of Mexico lease holdings. I will phone you this week to see if you have any questions about our study. If you need information before then, please give me a call.

Maintains contact and shows initiative by offering to call client.

Sincerely,

Bartley Hopkins

Bartley Hopkins, Project Manager

M-GLOBAL, Inc.

hg

TO: Gary Lane
FROM: Jeff Bilstrom *JB*
SUBJECT: Creation of Logo for Montrose Service Center
DATE: October 3, 2012

Gives concise view of problem—and his proposed solution.

Part of my job as director of public relations is to get the Montrose name firmly entrenched in the minds of metro Atlanta residents. Having recently reviewed the contacts we have with the public, I believe we are sending a confusing message about the many services we offer retired citizens in this area.

To remedy the problem, I propose we adopt a logo to serve as an umbrella for all services and agencies supported by the Montrose Service Center. This proposal gives details about the problem and the proposed solution, including costs.

Includes effective lead-in.

The Problem

The lack of a logo presents a number of problems related to marketing the center's services and informing the public. Here are a few:

Uses bulleted list to highlight main difficulties posed by current situation.

- The letterhead mentions the organization's name in small type, with none of the impact that an accompanying logo would have.
- The current brochure needs the flair that could be provided by a logo on the cover page, rather than just the page of text and headings that we now have.
- Our 14 vehicles are difficult to identify because there is only the lettered organization name on the sides without any readily identifiable graphic.
- The sign in front of our campus, a main piece of free advertising, could better spread the word about Montrose if it contained a catchy logo.
- Other signs around campus could display the logo, as a way of reinforcing our identity and labeling buildings.

Ends section with good transition to next section.

It's clear that without a logo, the Montrose Service Center misses an excellent opportunity to educate the public about its services.

Starts with main point—need for logo.

The Solution

I believe a professionally designed logo could give the Montrose Service Center a more distinct identity. Helping to tie together all branches of our operation, it would give the public an easy-to-recognize symbol. As a result, there would be a stronger awareness of the center on the part of potential users and financial contributors.

Gary Lane

October 3, 2012

Page 2

The new logo could be used immediately to do the following:

- Design and print letterhead, envelopes, business cards, and a new brochure.
- Develop a decal for all company vehicles that would identify them as belonging to Montrose.
- Develop new signs for the entire campus, to include a new sign for the entrance to the campus, one sign at the entrance to the Blane Workshop, and one sign at the entrance to the Administration Building.

Focuses on *benefits* of proposed change.

Cost

Developing a new logo can be quite expensive. However, I have been able to get the name of a well-respected graphic artist in Atlanta who is willing to donate his services in the creation of a new logo. All that we must do is give him some general guidelines to follow and then choose among 8–10 rough sketches. Once a decision is made, the artist will provide a camera-ready copy of the new logo.

Emphasizes *benefit* of possible price break.

• Design charge	\$0.00
• Charge for new letterhead, envelopes, business cards, and brochures (min. order)	545.65
• Decal for vehicles 14 @ \$50.00 + 4%	728.00
• Signs for campus	415.28
Total Cost	\$1,688.93

Uses listing to clarify costs.

Conclusion

As the retirement population of Atlanta increases in the next few years, there will be a much greater need for the services of the Montrose Service Center. Because of that need, it's in our best interests to keep this growing market informed about the organization.

Closes with major benefit to reader and urge to action.

I'll stop by later this week to discuss any questions you might have about this proposal.

Keeps control of next step.

STUDY OF WILDWOOD CREEK

WINSLOW, GEORGIA

Prepared for:
The City of Winslow

Prepared by:
Christopher S. Rice, Hydro/Environmental Engineer
M-Global, Inc.

November 28, 2012

Uses graphic on title page to reinforce theme of environmental protection.



Medford Taylor/National Geographic Image Collection

12 Peachtree Street
Atlanta GA 30056
(404) 555-7524

McDuff Project #99-119
November 28, 2012

Adopt-a-Stream Program
City of Winslow
300 Lawrence Street
Winslow Georgia 30000

Attention: Ms. Elaine Sykes, Director

**STUDY OF WILDWOOD CREEK
WINSLOW, GEORGIA**

We have completed our seven-month project on the pollution study of Wildwood Creek. This project was authorized on May 16, 2012. We performed the study in accordance with our original proposal No. 14-P72, dated April 24, 2012.

This report mentions all completed tests and discusses the test results. Wildwood Creek scored well on many of the tests, but we are concerned about several problems—such as the level of phosphates in the stream. The few problems we observed during our study have led us to recommend that several additional tests should be completed.

Thank you for the opportunity to complete this project. We look forward to working with you on further tests for Wildwood Creek and other waterways in Winslow.

Sincerely,
Christopher S. Rice
Christopher S. Rice, P.E.
Hydro/Environmental Engineer



M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

Lists project title as it appears on title page.

Gives brief statement of project information.

Provides major point from report.

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Uses white space,
indenting, and bold to
accent organization
of report.



ILLUSTRATIONS**FIGURES**

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Includes illustration titles as they appear in text.

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EXECUTIVE SUMMARY

Summarizes purpose and scope of report.

→ The City of Winslow hired M-Global, Inc., to perform a pollution study of Wildwood Creek. The section of the creek that was studied is a one-mile-long area in Burns Nature Park, from Newell College to U.S. Highway 42. The study lasted seven months.

Describes major findings and conclusions.

→ M-Global completed 13 tests on four different test dates. Wildwood scored fairly well on many of the tests, but there were some problem areas—for example, high levels of phosphates were uncovered in the water. The phosphates were derived either from fertilizer or from animal and plant matter and waste. Also uncovered were small numbers of undesirable water organisms that are tolerant of pollutants and can survive in harsh environments.

Includes main recommendation from report text.

→ M-Global recommends that (1) the tests done in this study be conducted two more times, through Spring 2013; (2) other environmental tests be conducted, as listed in the conclusions and recommendations section; and (3) a voluntary cleanup of the creek be scheduled. With these steps, we can better analyze the environmental integrity of Wildwood Creek.

INTRODUCTION

M-Global, Inc., has completed a follow-up to a study completed in 2004 by Ware County on the health of Wildwood Creek. This introduction describes the project site, scope of our study, and format for this report.

Gives lead-in to Introduction.

PROJECT DESCRIPTION

By law, all states must clean up their waterways. The State of Georgia shares this responsibility with its counties. Ware County has certain waterways that are threatened and must be cleaned. Wildwood Creek is one of the more endangered waterways. The portion of the creek that was studied for this report is a one-mile stretch in the Burns Nature Park between Newell College and U.S. Highway 42.

Briefly describes project.

SCOPE OF STUDY

The purpose of this project was to determine whether the health of the creek has changed since the previous study in 2004. Both physical and chemical tests were completed. The nine physical tests were as follows:

- Air temperature
- Water temperature
- Water flow
- Water appearance
- Habitat description
- Algae appearance
- Algae location
- Visible litter
- Bug count

Uses bulleted list to emphasize scope of activities.

The four chemical tests were as follows:

- pH
- Dissolved oxygen (DO)
- Turbidity
- Phosphate

REPORT FORMAT

This report includes three main sections:

1. Field Investigation: A complete discussion of all the tests that were performed for the project
2. Test Comparison: Charts of the test results and comparisons
3. Conclusions and Recommendations

Provides “map” of main sections in report.

FIELD INVESTIGATION

Wildwood Creek has been cited repeatedly for environmental violations in the pollution of its water. Many factors can generate pollution and affect the overall health of the creek. In 2004, the creek was studied in the context of a study of all water systems in Ware County. Wildwood Creek was determined to be one of the more threatened creeks in the county.

The city needed to learn if much has changed in the past eight years, so M-Global was hired to perform a variety of tests on the creek. Our effort involved a more in-depth study than that done in 2004. Tests were conducted four times over a seven-month period. The 2004 study lasted only one day.

The field investigation included two categories of tests: physical tests and chemical tests.

PHYSICAL TESTS

Amplifies information presented later in report.

The physical tests covered a broad range of environmental features. This section discusses the importance of the tests and some major findings. The Test Comparison section on Page 9 includes a table that lists results of the tests and the completion dates. The test types were as follows: air temperature, water temperature, water flow, water appearance, habitat description, algae appearance, algae location, visible litter, and bug count.

Air Temperature

The temperature of the air surrounding the creek will affect life in the water. Unusual air temperature for the seasons will determine if life can grow in or out of the water.

Three of the four tests were performed in the warmer months. Only one was completed on a cool day. The difference in temperature from the warmest to coolest day was 10.5°C, an acceptable range.

Water Temperature

The temperature of the water determines which species will be present. Also affected are the feeding, reproduction, and metabolism of these species. If there are one or two weeks of high temperature, the stream is unsuitable for most species. If water temperature changes more than 1° to 2°C in 24 hours, thermal stress and shock can occur, killing much of the life in the creek.

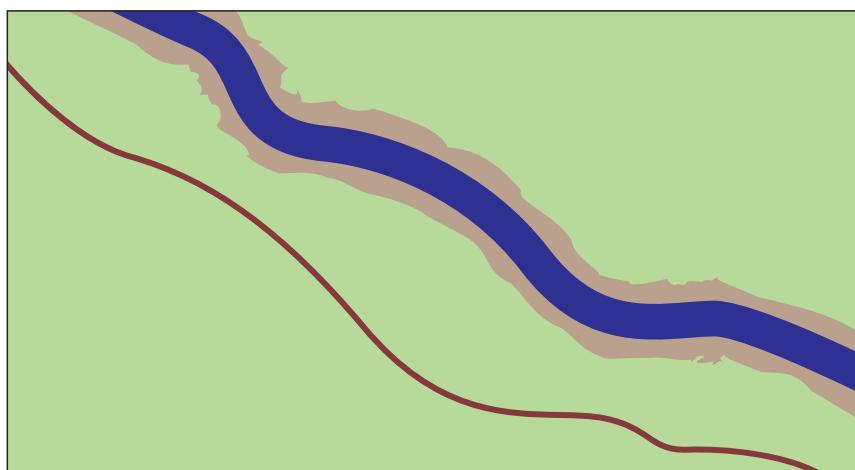
During our study, the temperature of the water averaged 1°C cooler than the temperature of the air. The water temperature did not get above 23°C or below 13°C. These ranges are acceptable by law.

Water Flow

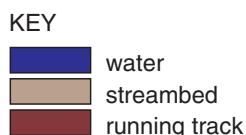
The flow of the water influences the type of life in the stream. Periods of high flow can cause erosion to occur on the banks and sediment to cover the streambed. Low water flow can decrease the living space and deplete the oxygen supply.

The flow of water was at the correct level for the times of year the tests were done—except for June, which had a high rainfall. With continual rain and sudden flash floods, the creek was almost too dangerous for the study to be performed that month.

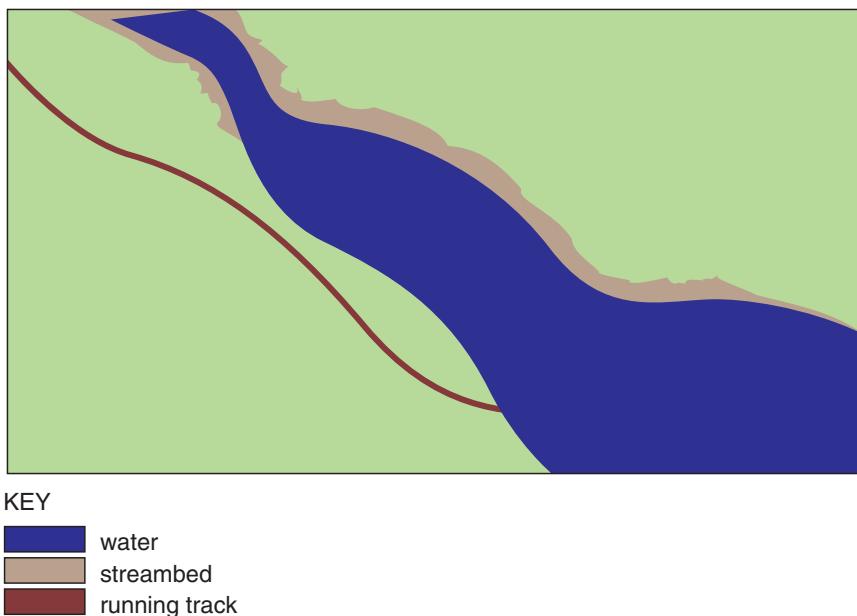
In fact, in June we witnessed the aftermath of one flash flood. Figure 1 shows the creek with an average flow of water, and Figure 2 shows the creek during the flood. The water's average depth is 10 inches. During the flash flood, the water level rose and fell 10 feet in about one hour. Much dirt and debris were washing into the creek, and some small fish were left on dry land as the water receded.



Incorporates graphic into page of text.



■ **Figure 1** ■ Wildwood Creek—Normal Water Level



■ **Figure 2** ■ Wildwood Creek—Flash Flood Water Level

Water Appearance

The color of the water gives a quick but fairly accurate view of the health of the creek. If the water is brown or dirty, then silt or human waste may be present. Black areas of water may contain oil or other chemical products.

On each of the four test days, the water was always clear. Therefore the appearance of the creek water was considered excellent.

Habitat Description

The habitat description concerns the appearance of the stream and its surroundings. An important criterion is the number of pools and the number of ripples—that is, points where water flows quickly over a rocky area. Both pools and ripples provide good locations for fish and other stream creatures to live and breed.

In describing habitat, M-Global also evaluates the amount of sediment at the bottom of the stream. Too much sediment tends to cover up areas where aquatic life lays eggs and hides them from predators. We also evaluate the stability of the stream banks; a stable bank indicates that erosion has not damaged the habitat. Finally, we observe the amount of stream cover. Such vegetation helps keep soil in place on the banks.

Wildwood Creek tested fairly well for habitat. The number of pools and ripples was about average for such creeks. Stream deposits and stream bank stability were average to good, and stream cover was good to excellent. For more detail about test results, see the chart in the Test Comparison section on Page 9.

Algae Appearance and Location

Algae are naturally present in any creek. The numbers of algae can be a warning of pollution in the water. If algae are growing out of control, disproportionate amounts of nutrients such as nitrogen or phosphate could be present. These chemicals could come from fertilizer washed into the creek. Excessive numbers of algae cause the oxygen level to drop when they die and decompose.

During the four studies, algae were everywhere, but they were especially heavy on the rocks in the ripples of the creek. The algae were always brown and sometimes hairy.

Visible Litter

Litter can affect the habitat of a creek. Although some litter has chemicals that can pollute the water, other litter can cover nesting areas and suffocate small animals. Whether the litter is harmful or not, it is always an eyesore.

On all four test dates, the litter we saw was heavy and ranged from tires to plastic bags. Some of the same trash that was at the site on the first visit was still there seven months later.

Gives specific details that support the report's conclusions and recommendations, which come later.

Bug Count

The bug count is a procedure that begins by washing dirt and water onto a screen. As water drains, the dirt with organisms is left on the screen. The bugs are removed and classified. Generally, the lower the bug count, the higher the pollution levels. Bug counts here were considered low to average.

Two types of aquatic worms were discovered every time during our count, but in relatively small amounts. In addition, the worms we observed are very tolerant of pollution and can live in most conditions. Finally, we observed only two crayfish, animals that are somewhat sensitive to pollution.

CHEMICAL TESTS

Physical tests cover areas seen with the naked eye. Chemical tests can uncover pollutants that are not so recognizable. Certain chemicals can wipe out all life in a creek. Other chemicals can cause an overabundance of one life-form, which in turn could kill more sensitive animals.

A chart of results of chemical tests is included in the Test Comparison section on Page 9. The chemical tests that M-Global performed were pH, dissolved oxygen (DO), turbidity, and phosphate.

pH

The pH test is a measure of active hydrogen ions in a sample. The range of the pH test is 0–14. If the sample is in the range of 0–7.0, it is acidic; if the sample is in the range of 7.0–14, it is basic. By law, the pH of a water sample must be within the range of 6.0–8.5.

For the tests we completed, the water sample was always 7.0, which is very good for a creek.

Dissolved Oxygen (DO)

Normally, oxygen dissolves readily into water from surface air. Once dissolved, it diffuses slowly in the water and is distributed throughout the creek. The amount of DO depends on the circumstances. Oxygen is always highest in choppy water, just after noon, and in cooler temperatures.

In many streams, the level of DO can become critically low during the summer months. When the temperature is warm, organisms are highly active and consume the oxygen supply. If the amount of DO drops below 3.0 ppm (parts per million), the area can become stressful for the organisms. An amount of oxygen that is 2.0 ppm or below will not support fish. DO that is 5.0 ppm to 6.0 ppm is usually required for growth and activity of organisms in the water.

According to the Water Quality Criteria for Georgia, average daily amounts of DO should be 5.0 ppm, with a minimum of 4.0 ppm. Wildwood Creek scored well on this test. The average amount of DO in the water was 6.9 ppm, with the highest amount being 9.0 ppm on November 19, 2012.

Turbidity

Turbidity is the discoloration of water due to sediment, microscopic organisms, and other matter. One major factor of turbidity is the level of rainfall before a test.

Three of our tests were performed on clear days with little rainfall. On these dates, the turbidity of Wildwood Creek was always 1.0, the best that creek water can score on the test. The fourth test, which scored worse, occurred during a rainy period.

Phosphate

Phosphorus occurs naturally as phosphates—for example, orthophosphates and organically bound phosphates. Orthophosphates are phosphates that are formed in fertilizer, whereas organically bound phosphates can form in plant and animal matter and waste.

Phosphate levels higher than 0.03 ppm contribute to an increase in plant growth. If phosphate levels are above 0.1 ppm, plants may be stimulated to grow out of control. The phosphate level of Wildwood was always 0.5 ppm, considerably higher than is desirable.

TEST COMPARISON

There was little change from each of the four test dates. The only tests that varied greatly from one test to another were air temperature, water temperature, water flow, and DO. On the basis of these results, it would appear that Wildwood Creek is a relatively stable environment.

Table 1 Physical Tests

TEST DATES	5/26/12	6/25/12	9/24/12	11/19/12
Air Temperature in °C	21.5	23.0	24.0	13.5
Water Temperature in °C	20.0	22.0	23.0	13.0
Water Flow	Normal	High	Normal	Normal
Water Appearance	Clear	Clear	Clear	Clear
Habitat Description				
Number of Pools	2.0	3.0	2.0	5.0
Number of Ripples	1.0	2.0	2.0	2.0
Amount of Sediment Deposit	Average	Average	Good	Average
Stream Bank Stability	Average	Good	Good	Good
Stream Cover	Excellent	Good	Excellent	Good
Algae Appearance	Brown	Brown/hairy	Brown	Brown
Algae Location	Everywhere	Everywhere	Attached	Everywhere
Visible Litter	Heavy	Heavy	Heavy	Heavy
Bug Count	Low	Average	Low	Average

Brings together test results for easy reference.

Table 2 Chemical Tests

Test	5/26/12	6/25/12	9/24/12	11/19/12
pH	7.0	7.0	7.0	7.0
Dissolved Oxygen (DO)	6.8	6.0	5.6	9.0
Turbidity	1.0	3.0	1.0	1.0
Phosphate	0.50	0.50	0.50	0.50

CONCLUSIONS AND RECOMMENDATIONS

This section includes the major conclusions and recommendations from our study of Wildwood Creek.

Draws conclusions that flow from data in body of report.

Uses paragraph format instead of lists because of lengthy explanations needed.

CONCLUSIONS

- Generally, we were pleased with the health of the stream bank and its floodplain. The area studied has large amounts of vegetation along the stream, and the banks seem to be sturdy. The floodplain has been turned into a park, which handles floods in a natural way. Floodwater in this area comes in contact with vegetation and some dirt. Floodwater also drains quickly, which keeps sediment from building up in the creek.
- However, we are concerned about the number and types of animals uncovered in our bug counts. Only two bug types were discovered, and these were types quite tolerant of pollutants. The time of year these tests were performed could have affected the discovery of some animals. However, the low count still should be considered a possible warning sign about water quality. Phosphate levels were also high and probably are the cause of the large numbers of algae.

We believe something in the water is keeping sensitive animals from developing. One factor that affects the number of animals discovered is the pollutant problems in the past (see Appendix A). The creek may still be in a redevelopment stage, a possible explanation for the small numbers of animals.

RECOMMENDATIONS

On the basis of these conclusions, we recommend the following actions for Wildwood Creek:

- 1. Conduct the current tests two more times, through Spring 2013. Spring is the time of year that most aquatic insects are hatched. If sensitive organisms are found then, the health of the creek could be considered to have improved.
2. Add testing for nitrogen. With the phosphate level being so high, nitrogen might also be present. If it is, then fertilizer could be in the water.
3. Add testing for human waste. Some contamination may still be occurring.
4. Add testing for metals, such as mercury, that can pollute the water.
5. Add testing for runoff water from drainage pipes that flow into the creek.
6. Schedule a volunteer cleanup of the creek.

With a full year of study and additional tests, the problems of Wildwood Creek can be better understood.

APPENDIX A

Background on Wildwood Creek

Wildwood Creek begins from tributaries on the northeast side of the city of Winslow. From this point, the creek flows southwest to the Chattahoochee River. Winslow Wastewater Treatment Plant has severely polluted the creek in the past with discharge of wastewater directly into the creek. Wildwood became so contaminated that signs warning of excessive pollution were posted along the creek to alert the public.

Today, all known wastewater discharge has been removed. The stream's condition has dramatically improved, but nonpoint contamination sources continue to lower the creek's water quality. Nonpoint contamination includes sewer breaks, chemical dumping, and storm sewers.

Another problem for Wildwood Creek is siltration. Rainfall combines with bank erosion and habitat destruction to wash excess dirt into the creek. This harsh action destroys most of the macroinvertebrates. At the present time, Wildwood Creek may be one of the more threatened creeks in Ware County.

APPENDIX B

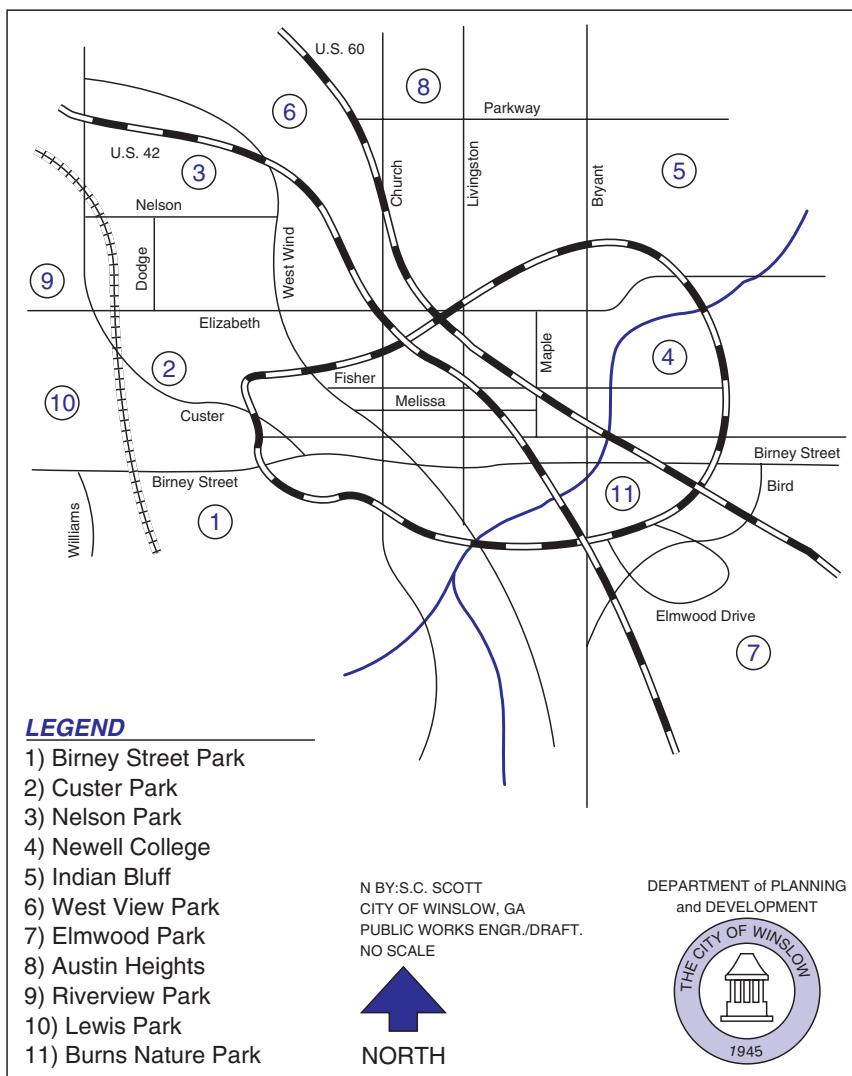
Water Quality Criteria for Georgia

All waterways in Georgia are classified in one of the following categories: fishing, recreation, drinking, and wild and scenic. Different protection levels apply to the different uses. For example, the protection level for dissolved oxygen is stricter in drinking water than fishing water. All water is supposed to be free from all types of waste and sewage that can settle and form sludge deposits.

In Ware County, all waterways are classified as “fishing,” according to Chapter 391-3-6.03 of “Water Use Classifications and Water Quality Standards” in the Georgia Department of Natural Resources *Rules and Regulations for Water Quality Control*. The only exception is the Chattahoochee River, which is classified as “drinking water supply” and “recreational.”

APPENDIX C

Map 6 Location of City of Winslow Parks and Recreation Facilities





Chapter | 11 | Reports for Information and Analysis



>>> Chapter Objectives

In this chapter students will

- Learn how informative reports are used to share information and keep records in organizations
- Learn the ABC format for four types of informative reports: activity reports, progress reports, regulatory reports, and lab reports
- Learn how analytical reports are used to guide decision making in organizations
- Learn the ABC format for four types of analytical reports: problem analysis, recommendation reports, feasibility studies, and equipment evaluations
- Read and analyze model informative and analytical reports

Photo © Dmitriy Shironosov/Shutterstock

Alan Murphy, a salesperson for M-Global's St. Paul office, has a full day ahead. Besides having to make some sales calls in the morning, he must complete two short reports back in the office. The first is a short progress report to Brasstown Bearings, a company that recently hired M-Global to train its technical staff in effective sales techniques. As manager of the project, Alan has overseen the efforts of three M-Global trainers for the last three weeks. According to the contract, he must send a progress report to Brasstown every three weeks during the project. Alan's second report is internal. His boss wants a short report recommending ways that M-Global can pursue more training projects like the Brasstown job.

Like Alan Murphy, you will write many different kinds of reports in your career. The two basic document formats that were presented in Chapter 10 are a starting place for writing reports. This chapter and Chapter 12 explain how to write documents to meet specific purposes. The common types of reports discussed in this chapter can be formatted as informal or formal documents, but they are adapted to specific needs and contexts. This chapter discusses reports that convey information or analyze problems. Chapter 12 discusses proposals and white papers, documents whose purpose is primarily persuasive.

The strategies for developing and organizing reports in this chapter will help you create documents that meet your readers' need for information, your own need to create effective documents that project a professional image, and the need to adapt documents to your organizational context. The context in which you are writing is a critical concern for these informative and analytical reports. Not only does it help you identify your audience, but it also can affect the content and structure of your

reports. The guidelines in this chapter are just that—guidelines. Reports like these emerge naturally from organizational contexts, so you should adapt the ABC formats in this chapter to the specific characteristics of the situations and problems that are being reported. You should also adapt your reports to the expectations of your organization and of your clients' organizations.

Report types vary from company to company. The ones described here are only a sampling of what you will be asked to write on the job. Because the reports discussed here may have different labels in different books and organizations, we include definitions to explain how we group and identify each type of report that we discuss.

The sections that follow include an ABC format for each report being discussed and some brief case studies from M-Global. Well-organized reports incorporate the writing patterns described in Chapter 4 and often include the elements of technical communication discussed in Chapters 7 and 8. Remember to consult Chapter 4 if you need to review general patterns of organization used in short and long reports, such as cause-effect; consult Chapters 7 and 8 if you need to review common genres of technical communication, such as technical descriptions. If you master these eight informative and analytical reports, you can probably handle other types that come your way.

At the end of the chapter are examples with marginal annotations. They give you specific, real-life applications of the chapter's writing guidelines. These models will help you complete chapter assignments and do actual reports on the job. During your career, you will write many types of informal reports other than those presented here. If you grasp this chapter's principles, however, you can adapt to other formats.

>>> Four Common Informative Reports

Informative reports are one of the most common types of documents used in organizations. They generally serve two purposes. First, they provide a record of what individuals, departments, and the organization have accomplished and of how they have proceeded. These re-

ports may be archived for future reference, either by employees or by researchers. Second, they are used to share information, either with supervisors or between departments. Because these reports are so common, organizations often create templates, or even forms, for them. As a result, the abstracts and conclusions in informative reports are often quite short.

Activity Reports

Most organizations require activity reports to provide a record of ongoing tasks, specific activities, and special projects, as well as the accomplishments of individuals and departments. These informative reports may simply be read by supervisors and managers who need to know what is happening in their divisions, or they may become part of a file for future reference. This book uses the following definition for activity reports:

Activity report: An informal report, usually directed within your own organization, which summarizes an event or records work on a specific project or during a specific time period.

Many activity reports are written at set periods, such as weekly, monthly, or quarterly. These *periodic reports* may be used simply to inform others of what is happening in a department or on a project, or they may become part of an employment record. In some organizations, managers publish their department's periodic reports as internal blogs so that everyone in the organization can find out what other departments are doing. This practice makes it easier for departments to collaborate.

In some organizations, employees are required to submit periodic self-evaluations in which they list their activities and accomplishments. These become part of their personnel record and may be the basis for promotion. Weekly activity reports may also be submitted as time sheets so that time devoted to specific projects can be recorded or individual clients can be billed.

Some activity reports include information about specific events, rather than about activities over a period of time. For example, an organization may require a *trip report* from employees who travel to meet clients, work in other branches, or participate in professional training workshops. Another type of activity report is the *incident report*, which provides initial information about accidents in a factory or at a work site.

Often, these types of activity reports are submitted as forms. One easy way to create these forms is to use the table tools in your word processor. Start with a basic table, and then join columns or rows to provide adequate blanks for information, like the example in Figure 11–1. You can also hide cell borders, or leave borders to serve as underlines to indicate where information is to be completed, as in the example in Figure 11–2. If the form is made available through an organization's intranet, the use of table tools makes completing an electronic version of the form easy; it prevents formatting problems that occur with forms that are created only with text and underscores or graphic lines.

ABC Format for Activity Reports

Because activity reports are routine workplace documents, they often do not need much context to help readers understand why they are receiving the report. Some activity reports, such as time sheets, trip reports, and incident reports, may even be submitted

Trip Report

This report form must be completed and signed by the employee and supervisor for all travel related to M-Global business. One copy of the form should be submitted with monthly departmental reports. If the employee is seeking reimbursement for travel expenses, one copy of the form with original receipts attached must be filed with the M-Global branch Accounting Office.

Employee name:			Employee number:	
Department:				
Destination:			Dates:	
Purpose of travel:				
<hr/>				
Findings/Results:				
<hr/>				
Transportation expenses:				
	Personal car			
	Airfare			
	Other			
Lodging:				
Meals:				
Other:				
Employee signature		Date	Supervisor signature	Date
			Supervisor name (please print)	



■ **Figure 11-1** ■ Form created with basic table tools

Trip Report

This report form must be completed and signed by the employee and supervisor for all travel related to M-Global business. One copy of the form is to be submitted with monthly departmental reports. If the employee is seeking reimbursement for travel expenses, one copy of the form with original receipts attached must be filed with the M-Global branch Accounting Office.

Employee name: _____ Employee number: _____

Department: _____

Destination: _____ Dates: _____

Purpose of travel:

Findings/Results:

Transportation expenses:

Personal car: _____

Airfare: _____

Other: _____

Lodging: _____

Meals: _____

Other: _____

Employee signature

Date

Supervisor signature

Date

Supervisor name (please print)



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■ **Figure 11–2** ■ Form created as table with some borders removed

as forms. However, activity reports should still include an abstract, because the number of them generated each month makes it necessary to provide information to someone accessing them at a later date.

Since activity reports usually describe events, you may think that they should use a chronological pattern of organization; however, this is probably the least effective way to report your activities. Instead, the body of an activity report should group the activities into useful classifications, for example, by type of activity or by project. The conclusion of your activity report should indicate which activities will continue in the future, especially if the activities are related to specific projects. It should also indicate how problems reported in the body will be addressed.

ABC Format: Activity Reports

- **ABSTRACT:** Time period, project, or event covered in report.
- **BODY:** List of activities or events
 - Organization that emphasizes type of activity, by project, or by client
 - Problems important to reader
- **CONCLUSION:** Future actions
 - Actions for continuing and ongoing activities
 - Plans for addressing problems or for the time period covered by the next report

M-Global Case Study for an Activity Report

Model 11–1 on pages 374–75 shows the rather routine nature of most activity reports. In this case, Nancy Fairbanks is simply submitting her usual monthly report. The greatest challenge in such reports is to classify, divide, and label information in such a way that readers can find what they need quickly. Fairbanks selected the kind of substantive headings that help the reader locate information (e.g., “Jones Fill Project,” “Performance Reviews”).

Progress Reports

Some short reports are intended to cover progress on a specific project. They can be directed inside or outside your organization and are defined as follows:

Progress report: An informal report that provides your manager or client with details about work on a specific project. Often you agree at the beginning of a project to submit a certain number of progress reports at certain intervals. The final progress report, submitted when a project is completed, is often called a *project completion report*.

Progress reports contain mostly objective data. Yet they are sometimes written in a persuasive manner. Progress reports tell your supervisor or the client that your project is on task, on time, and on budget. If you have encountered problems with any of these elements, the progress report should offer an explanation of what has happened and how the problem will be addressed. After all, you are trying to put forth the best case for the work you have completed. The next section provides an ABC format for these two report types.

ABC Format for Progress Reports

Whether internal or external, progress reports follow a basic ABC format. Whether the project report is being written as a letter or memo, the project itself should be clearly identified in a subject line by project title or by a reference number. This information should also appear in the abstract, with background information about the history and scope of the project. Because progress reports describe work over a period of time, it may seem as if

ABC Format: Progress Report

- **ABSTRACT:** Project and general progress (e.g., second week of a four-week project)
 - Capsule summary of main project(s)
 - Main progress to date or since last report
- **BODY:** Description of work completed since last report
 - Organization emphasizes task, chronology, or both
 - Clear reference to any dead ends that may have taken considerable time but yielded no results
 - Explanation of delays or incomplete work
 - Description of work remaining on project(s), organized by task, by time, or by both
 - Reference to attachments that may contain more specific information
- **CONCLUSION:** Brief restatement of work since last reporting period
 - Expression of confidence or concern about overall work on project(s)
 - Indication of your willingness to make any adjustments the reader may want to suggest

the body of progress reports should be organized chronologically; however, like activity reports, progress reports should be organized by type of activity. They usually include a section that describes problems or delays in the project and a clear timeline for completion of the remaining work on the project. The conclusion should summarize the progress since the previous progress report (or since the beginning of the project, if you are writing the first project report), and it should predict what will be accomplished before the next report is submitted.

M-Global Case Study for a Progress Report

As Model 11–2 on pages 376–377 indicates, Scott Sampson, M-Global’s personnel manager, is in the midst of an internal project being conducted for Jeannie McDuff, Vice President of Domestic Operations. Sampson’s goal is to find ways to improve the company’s training for technical employees. Having completed two of three phases, he is reporting his progress to McDuff. Note that Sampson organizes the body sections by task. This arrangement helps focus the reader’s attention on the two main accomplishments—the successful phone interviews and the potentially useful survey.

Also note that Sampson adopts a persuasive tone at the end of the report—that is, he uses his solid progress as a way to emphasize the importance of the project. In this sense, he is “selling” the project to his “internal customer,” Jeannie McDuff, who ultimately is in the position to make decisions about the future of technical training at M-Global.

Regulatory Reports

Most organizations are required to submit reports that show they are in compliance with federal, state, or local regulations, or with standards set by professional organizations. In some highly regulated industries such as banking, energy, and insurance, technical communicators may be hired primarily to maintain, update, and submit these *regulatory reports*. However, in most cases, technical communicators are responsible primarily for designing and editing these reports.

Regulatory reports include quarterly and annual financial reports, as well as audit and compliance reports for a wide range of regulations—from workplace safety to compliance with employment regulations to environmental impact. The following is a working definition of regulatory reports:

Regulatory report: A report written for an external audience—a regulatory agency—asserting and documenting an organization’s compliance with standards and regulations. Regulatory reports may be submitted at required intervals and may use a required format.

Regulatory reports may be formatted as informal or as formal documents, and they are usually written both internal audiences (such as a board of directors) and external audiences (such as regulatory agencies or stockholders).

ABC Format for Regulatory Reports

The organization of regulatory reports can vary widely, depending on the requirements of the regulatory agency and the type of information that is being communicated. However, the basic ABC format is useful for regulatory reports.

A special type of regulatory report is the *annual report* issued by publicly held companies, companies that sell stock. In the United States, these reports are required by the Securities and Exchange Commission (SEC), and they are meant to inform stockholders and potential stockholders about the company's financial health. The only information that is required by SEC regulations is financial data; however, many companies use their annual report as a way to promote the company to current and potential stockholders. Annual reports are often bound in attractive covers, with photographs of employees or company locations. They usually include a letter from the president of the company, and they often promote a company's philanthropic activities. Accountants create the annual report material required by federal regulations, but marketing or public relations departments often design and create additional material for annual reports. Managers of individual branches or divisions may be asked to contribute stories for the annual report, and publications departments may be responsible for combining all of these materials into an attractive, positive document.



Minerva Studio/Shutterstock

ABC Format: Regulatory Reports

- **ABSTRACT:** Reference to standards or regulations that are the subject of the report.
 - Summary of the findings, including statement of extent to which the organization is in compliance
 - Summary of recommended actions
- **BODY:** Detailed information about the findings
 - Organization that emphasizes required activities or documents
 - Description of observations
 - Description of problems observed
 - Data that support observations
- **CONCLUSION:** Summary of degree of compliance with regulations
 - Recommendations for improvement of compliance
 - Summary of consequences if problems are not addressed in a timely manner

M-Global Case Study for a Regulatory Report

Asbestos removal is a growing part of M-Global's business, and regulations for asbestos removal vary from state to state. As a hazardous materials specialist in the St. Paul office, Ken Liu is responsible for informing state agencies whenever his office is removing asbestos from a work site. He meets this requirement by filing the report in Model 11–3 on pages 378–381. Like many regulatory reports, this report follows a template, in this case one provided by the Minnesota Department of Transportation. The form identifies the specific regulations and asks for all professional certifications. Because there are documents required for each step of the process, the template specifies how those documents are to be submitted in the report.



Marcomayer/Dreamstime.com

Lab Reports

College students write lab reports for courses in science, engineering, psychology, and other subjects. This type of report also exists in technical organizations such as hospitals, engineering firms, and computer companies. Lab reports record and communicate the results of laboratory studies; therefore, they are primarily informative. However, lab results may be included in the findings in analytical reports. For example, a lab report that records the results of soil core analysis may provide data for a report that recommends which of three building sites is most suitable for construction of a school. The lab report varies in format from organization to organization (and

from instructor to instructor, in the case of college courses). This section presents a format to use when no other instructions have been given. A working definition follows:

Lab report: An informal report that describes work done in any laboratory. It may be directed to someone inside or outside your own organization. Also, it may stand on its own, or it may become part of a larger report that uses the laboratory work as supporting detail.

The next section shows a typical ABC format for lab reports, with the types of information that might appear in the three main sections.

ABC Format for Lab Reports

The audience for lab reports may be very technical, as when a team of organic chemists reports their findings for other organic chemists, or it may be much less technical, as when a real estate agent has asked to have a property tested for radon. You should adapt your language, graphics, and technical detail to meet the needs of your reader. Lab reports are often written in the passive voice because the reader is more interested in the processes being reported than in who conducted the investigation. Whether simple or complicated, lab reports usually can be organized using the ABC format. The abstract includes appropriate background information that summarizes the investigation and demonstrates the quality of the results. The body of lab reports is usually organized by topics, such as purpose of the work, procedures, problems, results, and implications. If recommendations have been requested, these should be included in the conclusion.

ABC Format: Lab Report

- **ABSTRACT:** Summary of laboratory investigation
 - Purpose of laboratory investigation
 - Nature of investigation, such as material tested, process analyzed
 - Qualifications of investigator
 - Equipment used
 - Capsule summary of results
- **BODY:** Purpose or hypothesis of lab work
 - Organization that emphasizes procedures or methods used in the lab test
 - Unusual problems or occurrences
 - Results of the test with reference to your expectations (results may appear in conclusion, instead)
- **CONCLUSION:** Statement or restatement of main results
 - Recommendations, if requested
 - Implications of lab test for further work

M-Global Case Study for a Lab Report

Model 11–4 on pages 382–383 shows an M-Global lab report that is not part of a larger document. In this case, the client sent M-Global some soils taken from borings made into the earth. M-Global analyzed the samples in its company laboratory and

drew some conclusions about the kind of rock from which the samples were taken. The report writer, a geologist named Joseph Rappaport, uses the body of the report to provide background information, lab materials, procedures, and problems encountered. Note that the report body uses process explanation, an element of technical communication covered in Chapter 8.

>>> Four Common Analytical Reports

Analytical reports help readers understand and solve problems by explaining the results of an investigation and the consequences of possible courses of action. Because the investigation is situated in a specific workplace context, the content and organization of analytical reports should be closely tied to the specific workplace situation being addressed. Although analytical reports may recommend a course of action, they emphasize the data and reasoning that led to the recommendations. Analytical reports generally do not propose specific steps for implementing actions; those are usually presented in proposals, which are discussed in Chapter 12.

When beginning the process of writing an analytical report, you should answer these questions:

1. What is the situation or problem that has prompted the report?
2. Will the reader use the report to understand a situation, to solve a problem, or to implement improvements?
3. What information does the reader need to act?
4. What criteria will be used to make a decision?
5. What information do the criteria call for?

Identifying criteria for decision making is an important step in the analytical report process, but it is one that is often overlooked. Carolyn Rude¹ explains three common categories of criteria: technical, managerial, and social:

- **Technical criteria** help identify whether something is possible: Does the organization have the expertise, capacity, or physical space for the change? Does the change meet long-term needs for flexibility and upgrades?
- **Managerial criteria** help identify whether something is effective: How will the change affect the company financially? What personnel costs are there in hiring and training?
- **Social criteria** help identify whether something is desirable: How will the change affect employees? Is the change safe for employees, customers, and the environment? Is the change consistent with the organization's culture and ethics?

After you have established the criteria for evaluating the particular situation that the report will analyze, you should gather data using the research techniques that were discussed in

¹Some of the information in this section is based on the excellent discussion in C. Rude. (1995). The report for decision making: Genre and inquiry. *Journal of Business and Technical Communication*, 9(2), 170–205.

Chapter 9. Choose sources that will help you find information appropriate to the subject of your report.

Problem Analyses

Every organization faces both routine and complex problems. Routine problems are often handled without much paperwork; they are discussed and then solved. However, other problems must often be described in reports, particularly if they involve many people, are difficult to solve, or have been brewing for a long time. Use the following working definition of a *report* that analyzes a problem:

Problem analysis: A report that presents readers with a detailed description of problems in areas such as personnel, equipment, products, and services. Its main goal is to provide objective information so that the readers can choose the next step. Any opinions must be well supported by facts.

It may be helpful to approach a problem analysis as a research project, like the ones discussed in Chapter 9. Note that solutions to problems are not mentioned; this chapter deals separately with (1) problem analyses, whose main focus is problems; and (2) recommendation reports, whose main focus is solutions. Of course, be aware that during your career, you may be called on to write reports that combine both types.

ABC Format for Problem Analyses

Like other analytical reports, *problem analyses* fit the simple ABC (*Abstract/Body/Conclusion*) format recommended throughout this text. The three sections contain some or all of the following information, depending on the specific report. The abstract should provide

the readers with all background information about the problem that prompted the report. The body of the report should clearly identify sources of information and methods used in the analysis, and it should use the pattern of organization that is most appropriate for the problem being discussed. The conclusion may include a general statement of the next steps to be taken, but it should emphasize the findings and the importance of the problem.

ABC Format: Problem Analysis

- **ABSTRACT:** Purpose of report
 - Capsule summary of problems covered in report discussion
- **BODY:** Background on source of problems
 - Well-organized description of the problems observed
 - Data that support your observations
 - Consequences of the problems
- **CONCLUSION:** Brief restatement of main problems (unless report is so short that such restatement would seem repetitious)
 - Degree of urgency required in handling problems
 - Suggested next step

M-Global Case Study for a Problem Analysis

Model 11–5 on pages 384–385 presents a sample problem analysis that follows this chapter’s guidelines. Harold Marshal, a longtime M-Global employee, supervises all technical work aboard the *Seeker II*, a boat that M-Global leases during the summer. Staffed with several technicians and engineers, the boat is used to collect and test soil samples from the ocean floor. Different clients purchase these data, such as oil companies that must place oil rigs safely and telecommunications companies that must lay cable.

After a summer on the *Seeker II*, Harold has severe reservations about the safety and technical adequacy of the boat. Yet he knows that his supervisor, Jan Stillwright, will require detailed support of any complaints before she seriously considers negotiating a new boat contract next season. Given this critical audience, Harold focuses on specific problems that affect (1) the safety of the crew, (2) the accuracy of the technical work performed, and (3) the morale of the crew. He believes that this pragmatic approach, rather than an emotional appeal, will best persuade his boss that the problem is serious.

Most problem analyses contain both facts and opinions. As the writer, you must make special efforts to separate the two, for the following reason: Most readers want the opportunity to draw their own conclusions about the problem. Also, you must support all opinions with facts.

Recommendation Reports

Like problem analysis reports, recommendation reports include facts and opinions, because they include the writer's interpretation of data. Use the following working definition for recommendation reports:

Recommendation report: A report that presents readers with specific suggestions that affect areas such as personnel, equipment, procedures, products, and services. Although the report's main purpose is to persuade, every recommendation must be supported by objective data.

Recommendation reports can be either internal or external documents, both of which follow the ABC format.

ABC Format for Recommendation Reports

Problem analyses and recommendation reports sometimes overlap in content. You may recommend solutions in a problem analysis, just as you may analyze problems in a recommendation report. The ABC format assumes that you want to mention the problem briefly in the abstract before proceeding to discuss solutions. The body of your recommendation report should include the options that have been considered, as well as data to support considering or rejecting each option. You may decide that more than one option is acceptable, but that one is preferable. The reasons for your recommendation should be explained in the conclusion.

M-Global Case Study for a Recommendation Report

Model 11–6 (pp. 386–387) shows a typical recommendation report written at M-Global. The servers at M-Global are several years old and are no longer adequate. The writer, Mike Tran, is a member of the Information Services Department, and has been asked by



Diego Vito Cervo/Dreamstime

ABC Format: Recommendation Report

- **ABSTRACT:** Purpose of report
 - Brief reference to problem to which recommendations respond
 - Capsule summary of recommendations covered in report discussion
- **BODY:** Details about problem, if necessary
 - Description of options
 - Data that support recommendations (with reference to attachments, if any)
 - Main benefits of recommendations
 - Any possible drawbacks
- **CONCLUSION:** Brief statement or restatement of main recommendations (optional)
 - The main benefit of recommended change
 - Your offer to help with next step

his supervisor, Greg Bass, to recommend a course of action to solve the problem. The report clearly identifies the context for which it was written, lists criteria for making a decision, and recommends a solution to the problem.

Feasibility Studies

Much like recommendation reports, feasibility studies guide readers toward a particular action. Another similarity is that both report types can be either in-house or external. However, feasibility studies are usually solicited by the reader who needs to make a decision. Therefore, they do not advocate strongly for a single solution. Instead, they compare alternatives in such a way that a reader can make an informed decision about a course of action. This book uses the following working definition of feasibility studies:

Feasibility study: A document written to show the practicality of a proposed policy, product, service, or other change within an organization. Often prompted by ideas suggested in a proposal, a feasibility study examines details such as costs, alternatives, and likely effects. Although they must reflect the objectivity of a report, most feasibility studies also try to convince readers either (1) to adopt or reject the one idea discussed or (2) to adopt one of several alternatives presented in the study.

ABC Format: Feasibility Study

- **ABSTRACT:** Capsule summary of information for the most important readers (i.e., the decision makers)
 - Brief statement about who has authorized the study and for what purpose
 - Brief mention of the criteria used during the evaluation
 - Brief reference to your recommendation
- **BODY:** Details that support whatever conclusions and recommendations the study contains, working logically from fact toward opinion
 - Organization that compares advantages and disadvantages of each option
 - Description of evaluation criteria used during your study
 - Description of exactly what was evaluated and how, especially if you are comparing several items
- **CONCLUSION:** Wrap-up in which you state conclusions and recommendations resulting from the study

Feasibility studies are often part of a larger process. They may be preceded by a problem analysis and a recommendation report or proposal. Once a problem has been identified and analyzed and a response has been suggested, a feasibility study may be conducted to determine if the proposed action is appropriate for the particular situation in the organization. If the proposed action is feasible and desirable, the feasibility study may be followed by a plan of action, including the development of guidelines and training materials.

ABC Format for Feasibility Studies

Like other forms of technical writing, good feasibility studies have the basic three-part structure of abstract, body, and conclusion—although the exact headings you choose may vary from report to report. The abstract of your feasibility study should clearly identify the purpose of the study and should briefly summarize your findings and

recommendations. The body should identify the subject of your study, and it should clearly explain the criteria that were used in your evaluation. Feasibility studies use a comparison pattern of organization, presenting the advantages and disadvantages of each alternative. The conclusion section should make your findings and recommendations clear to the reader, while inviting questions and discussion.

M-Global Case Study for a Feasibility Study

Like many feasibility studies, Model 11–7 on pages 388–395 was written as part of a larger process. The writers, members of M-Global’s Information Systems department, had previously submitted an informal proposal, recommending that M-Global begin using open-source software. The proposal cited specific cost savings, but Greg Bass, Director of Information Systems, wanted more information before moving forward. Although this feasibility study does include recommendations, it presents information in a way that allows Greg to make the final decision. It also suggests more actions be taken (the establishment of guidelines) before fully implementing the proposal.

Equipment Evaluations

Every organization uses some kind of equipment, and someone has to help buy, maintain, or replace it. Because companies put so much money into this part of their business, evaluating equipment has become an important activity. Following is a working definition of evaluation reports:

Equipment evaluation: An informal report that provides objective data about how equipment has, or has not, functioned. The report may cover topics such as machinery, tools, vehicles, office supplies, computer hardware, and computer software.

Like a problem analysis, an equipment evaluation may focus only on problems; or like a recommendation report, it may go on to suggest a change in equipment. Whatever its focus, an equipment evaluation must provide a well-documented review of the exact manner in which equipment performed.

ABC Format for Equipment Evaluations

Equipment evaluations that are informal reports should include some or all of the points listed here. The abstract of equipment evaluations should inform readers of the reasons for the evaluation and the scope of the report. The body of equipment evaluations may be organized part-by-part, or they may emphasize



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ABC Format: Equipment Evaluation

- **ABSTRACT:** Purpose of report
 - Capsule summary of what your report says about the equipment
 - Reason for the evaluation
- **BODY:** Thorough description of the equipment being evaluated
 - Well-organized critique, either analyzing the parts of one piece of equipment or contrasting several pieces of similar equipment according to selected criteria
 - Additional supporting data, with reference to any attachments
- **CONCLUSION:** Brief restatement of major findings, conclusions, or recommendations

process—either how the equipment is used or how it functions—or they may compare the new equipment to existing equipment. Remember that in this type of report, the discussion must include evaluation criteria most important to the *readers*, not you. The conclusion should provide readers with the information that they need to make decisions about the use of the equipment.

M-Global Case Study for an Equipment Evaluation

Like other firms, M-Global relies on word processing for almost all internal and external documents. Model 11–8 (pp. 396–397) contains an evaluation of a new word-processing package used on a trial basis. Melanie Frank, office manager in San Francisco, conducted the trial in her office and wrote the report to the branch manager, Hank Worley. Note that she analyzes each of the software’s five main features and then ends with a recommendation, much as in a recommendation report.

Pay special attention to the tone and argumentative structure of this example. Frank shows restraint in her enthusiasm, knowing that facts will be more convincing than opinions. Indeed, every claim about Best Choice software is supported either by evidence from her trial or by a logical explanation. For example, her praise of the file management feature is supported by the experience of a field engineer who used the system for three days, and her statement about the well-written user’s guide is supported by the few calls made to the Best Choice support center during the trial.

>>> Chapter Summary

- Organizations use informative reports to keep records and to share information between departments.
- Informative reports are influenced by the workplace context for which they are written.
- Activity reports include information about ongoing tasks, specific activities, or special projects.
- Progress reports provide information about specific projects.
- Regulatory reports provide information about an organization’s compliance with federal, state, or local regulations or with professional standards.
- Lab reports provide information about the results of work done in laboratories.
- Organizations use analytical reports to understand problems and make informed decisions.
- Analytical reports should include clear criteria for analysis and recommendations.
- Problem analysis reports provide objective data to describe and understand a problem.
- Recommendation reports use objective data to support specific suggestions about how to solve a problem or improve the operations in an organization.
- Feasibility studies analyze the practicality of a proposed policy, product, service, or other change.
- Equipment evaluations describe how well equipment has functioned.

>>> Learning Portfolio

Communication Challenge A Nonprofit Job: Good Deed or Questionable Ethics?

It all started with an innocent conversation. Velora Nescon, a project manager at M-Global's Houston branch, had lunch with her old college friend Sibyl Sanders. As principal of Houston's Downtown Academy, Sibyl talked about her effort to keep the new private academy financially healthy and academically strong. Now she was busy with an expansion. This case study describes a problem she faced with the expansion and the help that Velora tried to offer. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

A Working Lunch

Houston's Downtown Academy was established as a private elementary and middle school for bright inner-city kids who couldn't afford other private schools. Years ago, business leaders donated a renovated building for the new school and raised money for a scholarship account. Now the academy had a respectable enrollment, a good academic reputation, and excellent morale among faculty and staff. Overall, the future looked good for the school. Recently, a benefactor had given the school a piece of land adjacent to its campus where a recreational area would be built.

In her conversation with Velora, Sibyl noted that although the school had some money to begin construction, the budget would be tight. At this point, Velora reminded her friend that M-Global, Inc., offered some of the technical services the project might require. She added that she could ask her branch manager if M-Global might handle the job just for cost, as its way of contributing to the growth of the school. Velora genuinely wanted to help her friend with this worthwhile venture, but in truth, she also saw an opportunity to keep her technical staff busy during a slack period. By the end of lunch, Sibyl and Velora had reached a tentative agreement on M-Global doing the property study required before the land could be developed. Then, back at the office, Velora convinced her boss to approve that the job be done for cost.

Velora's Lucky Find

The project involved a soil and environmental study. M-Global was to drill borings to determine what foundations would be needed for small structures in the recreation area. In addition, soil samples would be taken from the site to check for contamination. These tasks were routine.

Before sending out her crew, Velora mentioned the project to a colleague, George Lightfoot, who thought he remembered doing some soil borings at the same location a couple of years ago. On checking his files, George found a report that included two borings paid for by Ace Enterprises, a firm that had considered buying the property. Later, Ace backed out of the purchase for reasons unrelated to the report. George loaned Velora the report and suggested she ask Ace for permission to use it, because she was trying to save the Downtown Academy money on the project. Velora thanked George for the report and said she would call Ace.

Velora wanted to get on this nonprofit job right away, while her crew wasn't busy, so she tried all afternoon to contact Ace Enterprises. There was no listing for the firm in Houston, and the M-Global librarian found no address in a quick search of her regional files. Velora assumed the firm had gone out of business, changed names, or left town. That being the case, she decided to move ahead in using information in the report—thus saving the Downtown Academy money for soil borings that would have been done. She assumed that Ace, if it still existed, would not mind contributing information for a nonprofit job like this one.

M-Global's Fieldwork

The next day, the M-Global crew gathered soil samples from the surface and from shallow borings dug with a hand auger. Results of the lab tests on the samples showed there was an underground storage tank on the property. It had been used for kerosene, which had leaked into the surrounding soil. Both the tank and the soil would have to be removed.

Again trying to save her friend some money, Velora had the small tank and soil removed by an M-Global subcontractor working nearby later that week. The crew had been working for another M-Global client most of the day. Because that client had to pay for a full day's use of the crew and crane anyway, Velora didn't charge the Downtown Academy for the two hours it took to remove the tank and soil.

Questions and Comments for Discussion

Within a week, Velora handed Sibyl a complete report showing her fieldwork, lab tests, and conclusions. Sibyl was

overjoyed that the study had come in even under the low-cost budget she and Velora had first discussed. In thanking Velora, she assured her that M-Global would be a serious contender for the profit contracts that the Downtown Academy was sure to have in the future.

1. Do you think there are any ethical problems raised by this case study? If so, what are they, and how would you have dealt with them? If not, explain your views.
2. Specifically, how do Sibyl's and Velora's actions either satisfy or violate the ethical guidelines described in Chapter 1?

3. Putting aside the ethical issue, do you think Velora followed wise procedures in her handling of the Downtown Academy project? Why or why not?

Write About It

Assume the role of Velora, and write the project completion report (a final progress report) addressed to Sibyl and copied to Ralph Suarez, manager of the Houston branch. Identify all of the activities involved in completing the project, and address any ethical concerns that Ralph might have. Create whatever details necessary to make the report complete.

Collaboration at Work Critiquing an Annual Report

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Many companies prepare annual reports that summarize activities during the previous year. Readers include stockholders, employees, and investment groups, among others. Besides providing useful data about the company, annual reports often provide good examples of the following:

- How complex and diverse information can be organized
- How words can be selected to accentuate the positive, even if negative information is being reported
- How page design can be used to create an engaging, readable document

Annual reports are sent to stockholders; however, they also may be available in libraries and on the Internet.

Team Assignment

You may complete this assignment with a hard-copy annual report provided by your instructor or secured from your library, or you can complete it by locating an annual report on the World Wide Web. Try to find a report from an organization similar to one where you might work after graduation. Meet with your team to review the print or online version of the report. Develop responses to the following questions:

1. Does the report follow the ABC format for regulatory reports presented on page 357? (Explain.)
2. What additional information does the report include? (Give examples.)
3. Who is the audience for the report? (Support your conclusion with evidence from the annual report.)

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, answering the following questions:

- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis, M-Global Context: Progress Report

Using the guidelines in this chapter, evaluate the level of effectiveness of the following progress report, which was written as part of the Wildwood Creek project presented in Model 10-3 on pages 336–351.

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?

12 Peachtree Street
Atlanta GA 30056
(404) 555-7524

M-Global Project #99-119

July 6, 2012

Elaine Sikes, Director
Adopt-a- Stream Program
City of Winslow
300 Lawrence Street
Winslow Georgia 30000

Subject: Progress Report

Dear Ms. Sikes,

This is the first progress report of the health assessment of Wildwood Creek. We agreed that the project would take about four months to complete and that we would perform 13 different tests on four different test dates.

My team and I have completed the first two sets of tests. We will complete the two additional test sets as scheduled.

WORK COMPLETED

The two days of testing concluded as follows:

Air Temperature

Air temperatures for the first two days of testing seemed adequate to support the surrounding life.

Water Temperature

The temperature of the water aids in determining the types of species that are able to live in that environment. Thus far, the water temperature has averaged 1 degree Celsius cooler than the air temperature, indicating a good fluctuation in temperature.

Water Flow

Different forces of flow allow for different types of erosion to occur on the stream. At this point in the study the water flow for the month of May was normal; however, the increased amount of rain received in June elevated the water level and force of the flow. This caused a higher level of erosion during the month of June.

Water Appearance and Turbidity

The appearance of the water was clear during the month of May; however, the water was brown during June. This is due to increased level of rain during June, which disturbed the silt settled at the bottom of the creek; making the water brown.

Habitat Description

During the month of May, there was a lack of vegetation near the banks of the stream, probably due to the lower winter temperatures.

Algae Appearance and Location

The algae levels during May were minimal; however, during the month of June a significant number of algae appeared on the rocks and in different locations of the stream. The number of algae indicates the level of pollution in the stream. Further testing will indicate if this is a steady pattern or simply due to the increased rainfall during June.

Visible Litter

Visible litter was almost nonexistent on the two testing dates.

Bug Count

The number and species of insects present in the stream indicate an adequate level of health. The number of insects is expected to increase during future testing because of the increase in temperature; however, the species should remain relatively the same.

CHEMICAL TESTS

Three chemical tests were completed for the months of May and June. These tests indicate the pH, dissolved oxygen, turbidity, and phosphate levels in the stream.

pH

This test indicates the level of active ions within the stream. The readings will range from 0 to 14, 0–7 being an acidic level and 7–14 being the basic or normal level. The stream during the months of May and June indicated a pH level of 7.

Dissolved Oxygen

The oxygen level within the stream plays a large role in its health. If the oxygen level is too low the environment of the water will become too stressful for many species of organisms to survive. Usually the level is lower during the summer months because of the increased activity of the organisms. This proved to be true thus far, since the dissolved-oxygen level during May was 6.8 ppm (parts per million) and during June 6.0 ppm. As the temperature increases during the summer months, it is expected that the oxygen levels will decrease during future tests.

Phosphate

Phosphate is a natural compound found in nature. The level of phosphate determines plant growth. Wildwood Creek had a phosphate level of .05 ppm, which is a normal level to support plant growth.

Conclusion

Thus far, the tests have proven that Wildwood Creek is a relatively healthy stream. As the study continues we will be able to gather more information regarding the health of the stream.

I will be happy to answer any questions about the findings to date or about the progress of the project.

Sincerely,



Christopher Rice
M-Global Hydro/Environmental Engineer

2. Analysis, M-Global Context: Problem Analysis

Using the guidelines in this chapter, evaluate the level of effectiveness of the M-Global problem analysis that begins on the following pages.

April 16, 2012
Mr Jay Henderson
Christ Church
10 Smith Dr
Jar Georgia 30060

PROBLEM ANALYSIS: NEW CHURCH BUILDING SITE

Introductory Summary

Last week, your church hired our firm to study problems caused by the recent incorporation of the church's new building site within the city limits. Having reviewed the city's planning and zoning requirements, we have found some problems with your original site design—which initially was designed to meet the county's requirements only. My report focuses on problems with four areas on the site:

1. Landscaping screen
2. Church sign

3. Detention pond
4. Emergency vehicle access

Attached to this report is a site plan to illustrate these problems as you review the report. The plan was drawn from an aerial viewpoint.

Landscaping Screen

The city zoning code requires a landscaping screen along the west property line, as shown on the attached site illustration sheet. The former design does not call for a screen in this area. The screen will act as a natural barrier between the church parking lot and the private residence adjoining the church property. The code requires that the trees for this screen be a minimum height of 8 feet with a height maturity level of at least 20 feet. The trees should be an aesthetically pleasing barrier for all parties, including the resident on the adjoining property.

Church Sign

After the site was incorporated into the city, the Department of Transportation decided to widen Woodstock Road and increase the setback to 50 feet, as illustrated on our site plan. With this change, the original location of the sign falls in the road setback. Its new location must be out of the setback and closer to the new church building.

Detention Pond

The city's civil engineers reviewed the original site drawing and found that the detention pond is too small. If the size of the detention pond is not increased, rainwater may build up and overflow into the building, causing a considerable amount of flood damage to property in the building and to the building itself. There is a sufficient amount of land in the rear of the site to enlarge and deepen the pond to handle all expected rainfall.

Emergency Vehicle Access

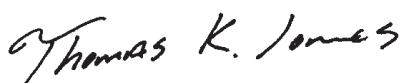
On the original site plan, the slope of the ground along the back of the new building is so steep that an ambulance or city fire truck will not be able to gain access to the rear of the building in the event of a fire. This area is shown on our site illustration around the north and east sides of the building. The zoning office enforces a code that is required by the fire marshal's office. This code states that all buildings within the city limits must provide a flat and unobstructed access path around the buildings. If the access is not provided, the safety of the church building and its members would be in jeopardy.

Conclusion

The just-stated problems are significant, yet they can be solved with minimal additional cost to the church. Once the problems are remedied and documented, the revised site plan must be approved by the zoning board before a building permit can be issued to the contractor.

I look forward to meeting with you and the church building committee next week to discuss any features of this study and its ramifications.

Sincerely,



Thomas K. Jones
Senior Landscape Engineer

Enclosure

3. Analysis, M-Global Context: Recommendation Report

Using the guidelines in this chapter, evaluate the level of effectiveness of the following M-Global recommendation report.

April 21, 2012
Kenman Aircraft Company
76 Jonesboro Road
Sinman Colorado 87885

Attention: Mr. Ben Randall, Facilities Manager

EMERGENCY EXIT STUDY

Introductory Summary

As you requested, I have just completed a study of the emergency exits in your accounting office at the plant. My study indicates that you have two main problems: (1) easier access to exits is needed, and (2) more exit signs and better visibility of these signs are needed. This report contains recommendations for rearranging the floor plan and improving signage.

Problems with Current Floor Plan

Two main problems cause the accounting office to fail to meet the county's guidelines for access to fire exits. First, the file cabinets on the north wall of the office are partially blocking the Reynolds Lane exit. Second, the office photocopier partially blocks the exit to the east hallway. In the first case, the file cabinets are so heavy that they cannot be moved by one person. In the second case, the photocopier can be rolled out of the way only by a very strong individual. Obviously, both situations are unacceptable and violate the current code.

The other problem is signage. The Reynolds Lane exit has an exit sign, but it is not easily seen. The east hallway exit has no sign at all. In addition, the rest of the office lacks any maps that show people the location of the two fire exits.

Recommendations for Solving Exit Problem

Fortunately, the existing problems can be corrected with only minor cost to the company. The following recommendations should be implemented immediately on your receipt of this report:

1. Move the file cabinets on the north wall to the east wall so that they no longer block the Reynolds Street exit.
2. Relocate the photocopier to the office supply room or the cubicle adjacent to it.
3. Remove the undersized exit sign from the Reynolds Street exit.
4. Purchase and install two county-approved exit signs above the two fire exits.
5. Draw up an emergency plan map and post a copy in every cubicle within the accounting office.

When you implement these recommendations, you will meet the county's current fire regulations.

Conclusion

I strongly suggest that my recommendations be put into action as soon as possible. By doing so, you greatly reduce the risk to your employees and your associated liability.

If you have any questions or need additional information, please call me at your convenience.

Sincerely,



Howard B. Manwell
Field Engineer

4. Analysis: Feasibility Study

Locate a feasibility study written by a private firm or government agency, or use one provided by your instructor. (Use the phrase "feasibility study" or "feasibility report" in

a search.) Determine the degree to which the example follows the guidelines for feasibility studies in this chapter. Depending on the instructions given by your teacher, prepare a written analysis or present your findings orally.

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

5. Practice, M-Global Context: Periodic (Activity) Report

Assume that you have worked as a field hand at M-Global's Atlanta office for 15 years. Because of your reliability, good judgment, and intelligence, the company is paying for your enrollment at a local college. Also, you get half-time off, with pay. Because of its investment in you, M-Global expects you to report periodically on your college work. Following the guidelines in the "Periodic Reports" section of this chapter, write a periodic report on your recent course work (completed or ongoing classes or both). Direct the memo report to the manager of engineering, Wade Simkins. Organize the report by class, and then give specific updates on each one.

6. Practice: Creating an Incident (Activity) Report

As explained on page 352, many organizations use forms for common activity reports, such as trip reports and incident reports. Using the table tools in your word processor, create an incident report form that would be appropriate for a setting that you are familiar with. Choose a workplace, a classroom, or an area such as a recreation center or dormitory lounge. Consider the following questions as you create your form:

- Who will be filling out the report form?
- Who will be receiving the report form?
- What action(s) might the report form lead to?
- What essential information should be included on the report form? (What data fields do you need to create?)
- Should the report form include yes/no questions or open-ended questions? (How should the data fields be formatted?)
- What design strategies will make the form easy to use? (What elements of page design should you use?)

7. Practice: Lab Report

For this assignment, you must be taking a lab course now or have taken such a course recently. As in Assignment 5, assume you work as a field hand with M-Global's Atlanta office. The company is sponsoring your schooling and has requested that you report on a specific college lab. Following

the guidelines in this chapter's "Lab Reports" section, write another report to Wade Simkins. The quality of your report may affect whether M-Global continues to fund your schooling. Be specific about the goals, procedures, and results of your laboratory—just as you would in an actual college lab report.

8. Practice: Problem Analysis—Team Project

Divide into three- or four-person teams, as your instructor directs. In your team, share information about any problems that team members have encountered with services or facilities at the college or university you attend. Then select a problem substantive enough to be described in a short report. As a team, write a problem analysis in the format described in this chapter. Select as your audience the appropriate administrators at the college or university.

9. Practice, M-Global Context: Problem Analysis

As a landscape engineer for M-Global, one of your jobs is to examine problems associated with the design of walkways, the location of trees and garden beds, the grading of land around buildings, and any other topographic features. Assume that you have been hired by a specific college, community, or company with which you are familiar. Your objective is to evaluate one or more landscaping problems at the site.

Write an informal report that describes the problem(s) in detail. (Follow the guidelines in the "Problem Analyses" section of this chapter.) Be specific about how the problem affects people—the employees, inhabitants, students, and so on. Following are some sample problems that could be evaluated:

- Poorly landscaped entrance to a major subdivision
- Muddy, unpaved walkway between dormitories and academic buildings on a college campus
- Unpaved parking lot far from main campus buildings
- Soil runoff into the streets from several steep, muddy subdivision lots that have not yet been sold
- City tennis courts with poor drainage
- Lack of adequate flowers or bushes around a new office building
- Need for a landscaped common area within a subdivision or campus
- Need to save some large trees that may be in danger because of proposed construction

10. Practice: Recommendation Report

For this document, choose a design problem at your college or company. Now put yourself in the position of an M-Global employee hired by your school or company to recommend solutions to the problem.

Your ideas must be in the form of a report that gives one or more recommendations resulting from your study. (Consult writing guidelines in the “Recommendation Reports” section of this chapter.) Assume that the problem is understood well enough to require only a brief summary, before you launch into your recommendations. Because this is a short report, it may not contain many technical details for implementing your recommendations. Also, you must choose a topic that is specific enough to be covered in a short memo report. Following are some sample topics:

- Poor ventilation in an office or a classroom, such as one with sealed windows
- Inadequate quick exits for emergencies
- Poor visibility in a large auditorium
- Poor acoustics in a large classroom or training room
- Lack of, or improper placement of, lighting
- Energy inefficiency caused by structural flaws, such as poor insulation or high ceilings
- Rooms or walkways that are not handicapped-accessible
- Failure to take advantage of solar heating
- Inefficient heating or air-conditioning systems

11. Practice, M-Global Context: Equipment Evaluation

For six months, you have driven a new Ford F-150 company truck at remote job sites. As lead field hand for M-Global’s Boston office, you have been asked to write an evaluation of the vehicle for Brenda Seymour, Director of Procurement at the corporate office in Baltimore. Seymour will use your report to decide whether to recommend ordering five more F-150s for other offices. She has told you that you must discuss only major positive or negative features, not every detail. If she needs more information after reading your report, she will let you know.

Consider the following list your random notes. Use all this information to write a memo report that evaluates the truck. Make sure to follow the guidelines in this chapter.

- My 150 has been very reliable—it never failed to start, even during subzero ice storms last winter.
- The 4.6-liter small V-8 has provided plenty of power to handle any hauling I have done. No need to order the more expensive and less fuel-efficient 5.4-liter V-8.
- Have been to 18 job sites with the truck, from marshes in Maine to mountains in New Hampshire. Have put about 12,000 miles on it, on all kinds of roads and in all conditions.
- Tires that came with the truck did not work well in muddy locations, even with four-wheel drive. Suggest we buy all-terrain tires for future vehicles. Continue to

order four-wheel drive—it is necessary at over half our job sites.

- The short bed (six feet) did not provide enough hauling room, once I put my toolbox across the truck bed near the back window. Suggest company buy long-bed trucks with the added two feet of room.
- From my experience, I give the truck a good to excellent rating.
- Automatic transmission worked great. Am told by other owners that the automatic is better than the manual for construction jobs because the manual tends to burn out clutches, especially when the truck needs to be “rocked” back and forth to get out of mud holes. My automatic has taken a lot of abuse without problems.
- Have had some problems with front-end handling on rough roads. Suggest that future trucks be ordered with special handling package, which includes two shock absorbers—not just one—on each front wheel.
- Have had no major repairs, just the regular maintenance checks at the dealer.
- There was one recall from the manufacturer concerning an exhaust pipe hanger that might bend, but the dealer fixed the problem in 20 minutes.
- Really need to have another six months to see how well truck holds up.

12. Practice: Equipment Evaluation

(For the purposes of this assignment, you may need to conduct research on the Internet or at your local small-appliance retailer.) Assume that your university is preparing to buy small appliances to equip a kitchen in a new campus dormitory building. The purchasing office wants to know how appliances in the existing dormitory kitchens have performed. Choose a small appliance that you have access to, such as a toaster, microwave, or coffee maker, and evaluate its suitability for use in the shared kitchens. Your criteria for evaluation might include topics such as one or more of the following:

- Physical design of the appliance
- Ease with which appliance can be learned
- Quality of the written instructions
- Ease of cleaning and maintenance
- Useful features
- Length of coverage of warranty
- Nearness to a service center
- Reputation of the manufacturer

13. Ethics Assignment

Reread Model 11–5 on pages 384–385, a problem analysis concerning Seeker II, a ship leased by M-Global for its offshore

jobs. Jan Stillwright receives the report just after she has signed a contract to complete a highly profitable one-week assignment for one of M-Global's best clients. This client urgently needs some geologic data from the floor of the Gulf of Mexico so that a bid for a construction project can be submitted to the government. Jan immediately contacts other leasing operations but discovers that no other soil-drilling ships are available when her project must begin—the day after tomorrow. At this point, Jan e-mails Harold Marshal that she will definitely address all concerns with the boat owner after this urgent one-week study. Moreover, she says that she will (1) give overtime pay to the crew for the upcoming one-week trip and (2) assign M-Global's top safety officer to the trip so that she can observe, record, and validate the points made in Harold's report. What are the ethical implications, if any, of Jan's response? If you were Harold, how would you respond?

14. International Communication Assignment

This assignment requires that you gain information about writing specific types of reports designed for readers outside the United States (or outside the country where you are taking this course, if it is not the United States). The suggestions you develop can relate to either (1) reports written in English that will be read in English or (2) reports written in English that will be translated into another language.

Specifically, write a report that provides suggested guidelines for writing recommendation or feasibility reports for readers in a specific country or international region. Cover as many writing-related issues as possible—organization, format, page design, and style.

To gather information for this assignment, begin with a search for published articles to provide background reading. Your instructor may also ask you to find someone who works for an international firm, deals with international clients, or has in some other way acquired information about the needs of international readers of technical documents. Possible sources include (1) your institution's alumni office, which may be able to provide names of graduates or employers of graduates; (2) friends or colleagues; (3) individuals contacted through Web sites of international organizations; and (4) local chambers of commerce and other organizations that promote international trade.



15. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

This assignment is intended to be completed as a team project. Write a formal report in which you describe the progress of efforts that have been made at an educational institution, a business, or a local government to promote diversity within the organization. Because you and your team members may not be experts in this subject, your report should be presented only with findings and conclusions—not with recommendations. In other words, your purpose is to describe strategies that have been used and—based on information gathered during your investigation—to indicate their relative degree of success. On a campus, for example, you might cover topics such as enrollment issues and the resulting diversity among the student body, hiring issues and the resulting diversity among the faculty and staff, training and professional development of employees, and general atmosphere on campus.

MEMORANDUM

TO: Ralph Buzby, Manager of Engineering
FROM: Nancy Fairbanks, Project Manager *NF*
DATE: August 1, 2012
SUBJECT: Activity Report for July 2012

Begins with overview of entire report.

Gives summary of small projects.

Uses list to highlight main types.

Indicates reasons for delays.

Again, gives reasons for delay.

Supports section with specifics—for example, the exact number of meetings.

→ July has been a busy month in our group. Besides starting and finishing many smaller jobs, we completed the Jones Fill project. Also, the John Lewis Dam borings began just a week ago. Finally, I did some marketing work and several performance reviews.

SMALL PROJECTS

→ Last month, my group completed nine small projects, each with a budget under \$20,000 and each lasting only a few days. These jobs were in three main areas:

- 1 Surveying subdivisions—five jobs
- 2 Taking samples from toxic sites—two jobs
- 3 Doing nearby soil borings—two jobs

→ All nine were completed within budget. Eight of the nine projects were completed on time. The Campbell County survey, however, was delayed for a day because of storms on July 10.

JONES FILL PROJECT

→ Our written report on this 12-month job was finally submitted to Trunk Engineering, Inc., on July 23. The delay was caused by Trunk's decision to change the scope of the project again. The firm wanted another soil boring, which we completed on July 22.

JOHN LEWIS DAM PROJECT

As you know, we had hoped to start work at the dam site last month. However, the client decided to make many design changes that had to be approved by subcontractors. The final approval to start came just last week; thus our first day on-site was July 28.

MARKETING

→ During July, my main marketing effort was to meet with some previous clients, acquainting them with some of our new services. I met with eight different clients at their offices, with two meetings occurring on each of these dates: July 15, 16, 22, and 23. There's a good possibility that several of these meetings will lead to additional waste-management work in the next few months.



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Ralph Buzby
August 1, 2012
Page 2

PERFORMANCE REVIEWS

As we discussed last month, I fell behind on my staff's performance reviews in June. In July, I completed the three delayed reviews, as well as the four that were due in July. Copies of the paperwork were sent to your office and to the Personnel Department on July 18. This brings us up to date on all performance reviews.

CONCLUSION

July was a busy month in almost all phases of my job. Because of this pace, I haven't had time to work on the in-house training course you asked me to develop. In fact, I'm concerned that time I devote to that project will take me away from my ongoing client jobs. At our next meeting, perhaps we should brainstorm about some solutions to this problem.

Lays foundation for next meeting.

MEMO

To: Jeannie McDuff, Vice President of Domestic Operations
From: Scott Sampson, Manager of Personnel SS
Date: June 11, 2012
Subject: Progress Report on Training Project

Summarizes project, to refresh reader's memory and establish common ground.

INTRODUCTORY SUMMARY

On May 21, you asked that I study ways our firm can improve training for technical employees in all domestic offices. We agreed that the project would take about six or seven weeks and involve three phases:

Phase 1: Make phone inquiries to competing firms.

Phase 2: Send a survey to our technical people.

Phase 3: Interview a cross section of our technical employees.

Gives overview of report.

I have now completed Phase 1 and part of Phase 2. My observation thus far is that the project will offer many new directions to consider for our technical training program.

Summarizes two main tasks, as lead-in to subsections.

WORK COMPLETED

In the first week of the project, I had extensive phone conversations with people at three competing firms about their training programs. Then, in the second week, I wrote and sent out a training survey to all technical employees in M-Global's domestic offices.

Phone Interviews

I contacted three firms for whom we have done similar favors in the past: Simkins Consultants, Judd & Associates, and ABG Engineering. Here is a summary of my conversations:

Organizes this section by the companies consulted.

1. Simkins Consultants

Talked with Harry Roland, Training Director, on May 22. Harry said that his firm has most success with internal training seminars. Each technical person completes several one- or two-day seminars every year. These courses are conducted by in-house experts or external consultants, depending on the specialty.

Creates parallel form in organization of all three points.

2. Judd & Associates

Talked with Jan Tyler, Manager of Engineering, on May 23. Jan said that Judd, like Simkins, depends mostly on internal seminars. But Judd spreads these seminars over one or two weeks, rather than teaching intensive courses in one or two days. Judd also offers short "technical awareness" sessions during the lunch hour every two weeks. In-house technical experts give informal presentations on some aspect of their research or fieldwork.



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Jeannie McDuff

June 11, 2012

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3. ABG Engineering

Talked with Newt Moseley, Personnel Coordinator, on May 27. According to Newt, ABG's training program is much as it was two decades ago. Most technical people at high levels go to one seminar a year, usually sponsored by professional societies or local colleges. Other technical people get little training beyond what is provided on the job. In-house training has not worked well, mainly because of schedule conflicts with engineering jobs.

Gives important details about the survey.

Internal Survey

After completing the phone interviews noted, I began the survey phase of the project. Last week, I finished writing the survey, had it reproduced, and sent it with a cover memo to all 450 technical employees in domestic offices. The deadline for returning it to me is June 17.

Organizes section chronologically, making sure to stay within a six- or seven-week schedule.

Work Planned

With phone interviews finished and the survey mailed, I foresee the following schedule for completing the project:

June 17:	Surveys returned
June 18–20:	Surveys evaluated
June 23–27:	Trips taken to all domestic offices to interview a cross section of technical employees
July 3:	Submission of final project report to you

Looks to future tasks.

CONCLUSION

My interviews with competitors gave me a good feel for what technical training might be appropriate for our staff. Now I am hoping for a high-percentage return on the internal survey. That phase will prepare a good foundation for my on-site interviews later this month. I believe this major corporate effort will upgrade our technical training considerably.

Emphasizes major benefit, to "sell" the project internally.

I would be glad to hear any suggestions you may have about my work on the rest of the project. For example, please call if you have any particular questions you want asked during the on-site interviews (ext. 348).

Indicates flexibility and encourages response from reader.

Clearly indicates that this is a template to be used by companies that are required to submit this report.

ASBESTOS REMOVAL INVENTORY REPORT FORMAT

Address
City, MN, Zip

Prepared For:
Mn/DOT District, Mn/DOT

Prepared By:
Company

Month Year

CONTENTS:

Section 1 – Site Specifics and Certification

Section 2 – Summary of Actions Required

Section 3 – Copies of Asbestos Related Work Notifications and Amendments

Section 4 – Copies of Asbestos Transportation Manifests and Landfill Tipping receipts for all Asbestos Removed

Section 5 – Daily field log daily sign in and sign out logs, asbestos project plan, on site air monitoring results, and negative air pressure measurements.

Section 6 – Licenses

Indicates specific forms and certifications to be included, and where they are to be included in report.

SECTION 1
Site Specifics and Certification
Address

SP:

Parcel:

Location: Address (see copies of site map Appendix II).

Number and type of Structure/s: XXX

Current Owner: XXX

Expected Disposition of the Structure: Move/Demolition

Licensure: Name of MDH certified asbestos abatement contractor.

Certification: The undersigned certifies that this asbestos removal was performed in compliance with MN Rules 4620.

Signature: _____,

Name, Certified Asbestos abatement contractor # License #

Date: _____

Certification of Inspecting Contractor:

The undersigned certifies that this asbestos abatement was performed under his/her direct oversight and was performed in compliance with the applicable asbestos abatement regulations found in Minnesota Rules Chapter 4620 and that the contents of the Asbestos Removal Inventory Report has been reviewed and meets or exceed Mn/DOT's contract requirements.

Signature: _____,

Name, Certified Asbestos Site Supervisor Certification #

Date: _____

Date in footer indicates
that report writer is
using most current form.

Updated December 2010

SECTION 2**Address****Summary of Actions Required For This Move/Demolition**

Asbestos: The structure contained XX square feet of category X material type/s. The material was located on XXXX. This XXX was in XXX condition. **This xxx is/is not required to be removed for a move/demolition** (See documents in Section 4 for the detailed abatement amounts, transportation manifests, and landfill tipping receipts).

Report writer must choose appropriate language.

SECTION 3**Address****Copies of Asbestos Related Work Notifications and Amendments**

Sections identify required forms and in what order they should be included in report.

SECTION 4**Address****SECTION 5****Address**

Daily field log daily sign in and sign out logs, asbestos project plan, on site air monitoring results, and negative air pressure measurements.

SECTION 6**Address****Licenses**

Copies of asbestos transportation manifests and landfill tipping receipts for all asbestos removed verify asbestos waste was delivered to a Mn/DOT approved landfill
[\(http://www.dot.state.mn.us/environment/publications/Asbestos_Manual/AMmanual.pdf\)](http://www.dot.state.mn.us/environment/publications/Asbestos_Manual/AMmanual.pdf)

Reference to information about regulations.

105 Halsey Street
Baltimore Maryland 21212
(301) 555-7588

December 12, 2012

Mr Andrew Hawkes
Monson Coal Company
2139 Lasiter Dr
Baltimore MD 21222

**LABORATORY REPORT
BOREHOLE FOSSIL SAMPLES
BRAINTREE CREEK SITE, WEST VIRGINIA**

INTRODUCTORY SUMMARY

Gives overview of results.

→ Last week, you sent us six fossilized samples from the Braintree Creek site. Having analyzed the samples in our lab, we believe they suggest the presence of coal-bearing rock. As you requested, this report will give a summary of the materials and procedures we used in this project, along with any problems we had.

Outlines procedure to be detailed in following paragraph.

→ As you know, our methodology in this kind of job is to identify microfossils in the samples, estimate the age of the rock by when the microfossils existed, and then make assumptions about whether the surrounding rock might contain coal.

Describes main equipment, in layperson's language.

LAB MATERIALS

→ Our lab analysis relies on only one piece of specialized equipment: a Piketon electron microscope. Besides the Piketon, we use a simple 400-power manual microscope. Other equipment is similar to that in any basic geology lab, such as filtering screens and burners.

Breaks down procedure into easy-to-read "chunks."

LAB PROCEDURE

Once we receive a sample, we first try to identify the exact kinds of microfossils that the rocks contain. Our specific lab procedure for your samples consisted of these two steps:

Step 1

We used a 400-power microscope to visually classify the microfossils that were present. On inspection of the samples, we concluded that there were two main types of microfossils: nannoplankton and foraminifera.



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Andrew Hawkes
December 12, 2012
Page 2

Step 2

Next, we had to extract the microfossils from the core samples you provided. We used two different techniques:

Nannoplankton Extraction Technique

- a. Selected a pebble-sized piece of the sample
- b. Thoroughly crushed the piece under water
- c. Used a dropper to remove some of the material that floated to the surface (it contains the nannoplankton)
- d. Dried the nannoplankton-water combination
- e. Placed the nannoplankton on a slide

Provides smooth transitions.

Itemizes steps because of their importance in procedure.

Uses parallel form in describing this process.

Foraminifera Extraction Technique

- a. Boiled a small portion of the sample
- b. Used a microscreen to remove clay and other unwanted material
- c. Dried remaining material (foraminifera)
- d. Placed foraminifera on slide

PROBLEMS ENCOUNTERED

The entire lab procedure went as planned. The only problem was minor and occurred when we removed one of the samples from the container in which it was shipped. As the bag was taken from the shipping box, it broke open. The sample shattered when it fell onto the lab table. Fortunately, we had an extra sample from the same location.

Does not bury sampling error—gives it proper treatment.

CONCLUSION

The types of fossils present in the sample come from rock of an age that might contain coal. This conclusion is based on limited testing, so we suggest you test more samples at the site. We would be glad to help you with this additional sampling and testing.

Ends with wrap-up that reinforces main point of report.

I will call you this week to discuss our study and any possible follow-up you may wish us to do.

Offers follow-up services.

Sincerely,



Joseph Rappaport
Senior Geologist

MEMO

TO: Jan Stillwright, Vice President of Research and Training
 FROM: Harold Marshal, Technical Supervisor **HM**
 DATE: October 15, 2012
 SUBJECT: Boat Problems During Summer Season

Gives abstract (or *summary*) in first paragraph.

Provides *capsule listing* of problems discussed in report.

Opens with most important point—then qualifies it. Explains problem in *layperson's language*, indicating possible consequences.

Uses listing to draw attention to four main lab problems on board.

INTRODUCTORY SUMMARY

- We have just completed a one-month project aboard the leased ship, *Seeker II*, in the Pacific Ocean. All work went just about as planned, with very few delays caused by weather or equipment failure.
- However, there were some boat problems that need to be solved before we lease *Seeker II* again this season. This report highlights the problems so that they can be brought to the owner's attention. My comments focus on four areas of the boat: drill rig, engineering lab, main engine, and crew quarters.

DRILL RIG

- Thus far, the rig has operated without incident. Yet on one occasion, I noticed that the elevator for lifting pipe up the derrick swung too close to the derrick itself. A quick gust of wind or a sudden increase in sea height caused these shifts. If the elevator were to hit the derrick, causing the elevator door to open, pipe sections might fall to the deck below.

I believe the whole rig assembly needs to be checked over by someone knowledgeable about its design. Before we put men near that rig again, we need to know that their safety would not be jeopardized by the possibility of falling pipe.

ENGINEERING LAB

Quite frankly, it is a tribute to our technicians that they were able to complete all lab tests with *Seeker II*'s limited facilities. Several weeks into the voyage, these four main problems became apparent:

- 1. Ceiling leaks
- 2. Poor water pressure in the cleanup sink
- 3. Leaks around the window near the electronics corner
- 4. Two broken outlet plugs

Although we were able to devise a solution to the window leaks, the other problems stayed with us for the entire trip.



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Jan Stillwright
October 15, 2012
Page 2

MAIN ENGINE

On this trip, we had three valve failures on three different cylinder heads. From our experience on other ships, it is very unusual to have one valve fail, let alone three. Fortunately for us, these failures occurred between projects, so we did not lose time on a job. And fortunately for the owner, the broken valve parts did not destroy the engine's expensive turbocharger.

Only an expert will be able to tell whether these engine problems were flukes or if the entire motor needs to be rebuilt. In my opinion, the most prudent course of action is to have the engine checked over carefully before the next voyage.

Uses simple language to describe technical problems.

Closes section with opinion that flows from facts presented.

CREW QUARTERS

When 15 men live in one room for three months, it is important that basic facilities work. On *Seeker II*, we experienced problems with the bedroom, bathroom, and laundry room that caused some tension.

Bedroom

Three of the top bunks had such poor springs that the occupants sank 6 to 12 inches toward the bottom bunks. More important, five of the bunks are not structurally sound enough to keep from swaying in medium to high seas. Finally, most of the locker handles are either broken or about to break.

Gives lead-in to three sections that follow.

Describes three problem areas in great detail—knowing the owner will want facts to support complaints.

Bathroom

Poor pressure in three of the commodes made them almost unusable during the last two weeks. Our amateur repairs did not solve the problem, so I think the plumbing leading to the holding tank might be defective.

Laundry Room

We discovered early that the filtering system could not screen the large amount of rust in the old 10,000-gallon tank. Consequently, undergarments and other white clothes turned a yellow-red color and were ruined.

CONCLUSION

As noted at the outset, none of these problems kept us from accomplishing the major goals of this voyage, but they did make the trip much more uncomfortable than it had to be. Moreover, in the case of the rig and engine problems, we were fortunate that injuries and downtime did not occur.

I strongly urge that the owner be asked to correct these deficiencies before we consider using *Seeker II* for additional projects this season.

Briefly restates problem, with emphasis on safety and profits.

Ends with specific recommendation.

MEMORANDUM

TO: Greg Bass
FROM: Mike Tran *MT*
DATE: July 22, 2012
SUBJECT: Replacement of In-House File Server

INTRODUCTION

Gives context for report.

In our weekly staff meeting, you asked me to recommend a solution to the problems with our in-house file server. As we discussed, our current file-serving computer is no longer meeting our needs. This report recommends that we replace the current server with the NTR PC905.

Summarizes conclusion of report.

SERVER REQUIREMENTS

Identifies three criteria to be discussed.

I identified three major criteria that any server upgrades or new server should meet. First, the upgrade or new server must be able to perform the tasks of a file-serving computer on our in-house network. Second, the option we choose must be priced within our \$4,000 budget for the project. Third, the new system must be online by September 1. After speaking with our current vendor, I learned that upgrading our current equipment would barely meet current needs, and that it would cost almost as much as a new system.

Performance

As a file server, the computer we buy must be able to satisfy these criteria:

- Store all programs used by network computers
- Store the source code and customer-specific files for Xtracheck
- Provide fast transfer of files between computers while serving as host to the network
- Meet SAS 70 network security requirements

Shows how NTR PC905 will fulfill criteria.

The NTR PC905 comes with a 300-GB hard drive. This capacity will provide an adequate amount of storage for all programs that will reside on the file server. Our requirements are for 70 GB of storage for programs used by network computers and 80 GB of storage for source code and customer-specific programs. The 300-GB drive will leave us with 150 GB of storage for future growth and work space. In addition, the PC905 is easily upgradable.

Addresses concerns for future upgrades.

The PC905 can transfer files and execute programs across our network. It can perform these tasks at speeds up to five times faster than our current file server. Productivity should increase because the time spent waiting for transfer will decrease.



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Greg Bass
July 22, 2012
Page 2

As a publicly held company, M-Global must meet SAS 70 standards for data security. The PC905 includes a customizable and usable interface for monitoring network activity.

Explains reason for criteria.

Budget

The budget for the new file server is \$4,000. The cost of the PC905 is as follows:

PC905 with 120-MB Hard Drive	\$2,910
Keyboard	112
Monitor	159
Total	\$3,181

Makes costs easy to find with simple table.

No new network boards need to be purchased because we can use those that are in the current server. We also have all additional hardware and cables that will be required for installation. Therefore the PC905 can be purchased for \$800 under budget.

Time Frame

Our sales representative at NTR guarantees that we can have delivery of the system within three weeks. Given this assurance, we can have the system in operation before the end of August.

Heading highlights major concern—installation schedule.

Additional Benefits

We are currently using NTR PCs at our customer sites. I am very familiar with the setup and installation of these machines. By purchasing a brand of computer currently in use, we will not have to worry about additional time spent learning new installation and operation procedures. In addition, we know that all our software is fully compatible with NTR products.

Ends with “extras”—that is, benefits not among major criteria but still useful.

The warranty on the PC905 is for one year. After the warranty period, the equipment is covered by the service plan that we have for all our other computers and printers.

CONCLUSION

I recommend that we purchase the NTR PC905 as the replacement computer for our file server. It meets or exceeds all criteria for performance, price, and installation.

Restates significant point already noted in introduction.

Feasibility of Using Open-Source Software at M-Global

Uses formal document format appropriate for scope of project and length of report.

Prepared for:

Greg Bass, Director of Information Systems

Prepared by:

Kellen Holmes and Kate Newman

April 20, 2012

MEMO

To: Greg Bass
From: Kellen Holmes and Kate Newman
Date: April 20, 2012
Subject: Feasibility Report for Open-Source Software

Enclosed is the study that you requested of the feasibility of open-source software at M-Global. There are many options available to us, but we believe that some open-source software could meet our needs and save on license fees.

Explains context of the feasibility study.

We should, however, be aware of the limitations of such software and of the different nature of technical support with this kind of software. We will not be able to turn to a vendor for technical support; instead, we will need to look to the community of users or create our own solutions. We believe that M-Global has the resources to support open-source software and even to contribute to the open-source software community.

Includes sources that are not cited in the report, but that may have provided useful background information.

We will be happy to meet with you to discuss our findings.

Invites follow-up meeting.

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EXECUTIVE SUMMARY

This report explores the feasibility of M-Global's moving from proprietary software, for which we pay license fees, to open-source software, for which no fees are paid. The open-source software movement is growing, and the types of software available through this movement are expanding quickly. Although open-source software is "free," there are costs involved in moving away from proprietary software. First of all, we have a major investment in our current software. Second, by adopting open-source software, we would be assuming the costs of troubleshooting, maintenance, and upgrades ourselves, and we would be losing the technical support of our vendors. However, in some cases, the savings offered by open-source software in cost, customization, upgrade time, and convenience can offset the costs of losing vendor support for our proprietary software contracts. M-Global should adopt some open-source software, but it should do so cautiously, and with clear guidelines for installation, use, and support of this software.

Uses paragraph format.

Identifies key disadvantages.

Identifies key advantages, but makes clear that there are concerns to be addressed.

Lists sections of report.

Defines unfamiliar and easily confused terms.

Provides background information to explain the interest in open-source software.

Emphasizes credentials of those who first developed the concept.

Open-source 2

INTRODUCTION

The purpose of this feasibility report is to determine whether open-source software is a viable, cost-effective alternative to the current proprietary software, for which M-Global pays licensing and maintenance fees. This report defines open-source software and explains the background of the open-source software movement. It then explains the advantages and disadvantages of using open-source software for a company like M-Global. Finally, it recommends a cautious approach that may make it possible for M-Global to save on software costs.

DEFINITION

There are two main types of software: proprietary software and open-source software. Proprietary software, which is currently used by M-Global, is software that is copyrighted and requires a license to use. Open-source software is “free” and uncopyrighted and does not require a license to operate. Open-source software should not be confused with software in the public domain. Software in the public domain is often software that was licensed at one time but is no longer supported, or it may be software that someone has simply made available to anyone who wants it. Many times, it is made available through file sharing or through a download from unreliable sources. As a result, public domain software may be unreliable and unsecured.

Proprietary Software

Proprietary software requires a license fee, has features available only through the vendors, does not let users modify the installed software, is typically controlled by a corporate vendor, does not have open code, and isn’t always user-friendly (Trappeler, 2009). Proprietary software has been the main type of software that companies and corporations have depended on for years, but the development of open-source software and the opportunities it provides have led many institutions to transition from proprietary software to open-source software.

Open-source Software

Open-source software is often made available through a Creative Commons or similar license agreement. Providers of open-source software often ask users to comply with restrictions and stipulations so that the software remains free, safe, and up-to-date. As a result, open-source software is appealing to many companies; however, much debate remains about whether or not this software is actually “free” and advantageous to use (Fishman, 2008).

HISTORY

There is much disagreement about when open-source software first became available. Some sources date its origin back to the 1970s (Elmer-Dewitt, Mondi, & Prime, 1984), but most people agree that the true birth of the free/open-source software movement happened around 1985 (Lessig, 2005).

Richard Stallman is credited with creating the concept of open-source software.

While he was a researcher on the MIT campus, he invented “a license that would ensure that the code he was building would forever remain free” (Lessig, 2005, p. 48). This license became known as the general public license; it has some limits regarding

Open-source 3

how a person can use a product, as well as the requirement that changes made to items such as program code have to be made available to others (Lessig, 2005). This innovative idea allows users to manipulate the code to improve the software and to share their improvements freely with other users through a “user innovation community.” User innovation communities start out as an idea, like Richard Stallman’s general public license (GPL; Lessig, 2005). The software is then improved with the help of many users, who are willing to spend their time and talent adding their contributions.

ADVANTAGES

M-Global has always considered three criteria when adopting new software: cost, customization, and the ability to upgrade. Open-source software offers advantages for all three of these criteria.

Cost

Open-source software is theoretically “free.” Many companies offer free software because it is a simple way for them to advertise and spread their brand to many clients (D’Silva, 2010). However, if an organization chooses to use these “free” software products, it may be expected to comply with certain conditions, like downloading a toolbar (D’Silva, 2010, p. 2). If M-Global is willing to accept these conditions, this “free” product will allow us to save money on development and program costs.

Customized Software

In his article “The People Own Ideas,” Lawrence Lessig (2005) lists the promises of free software, including the freedom to “study how the program works and adapt it to your needs” (p. 48). However, as Stephen Fishman (2008) reminds us, open-source software technically doesn’t fall into the public domain in every case. Therefore, it cannot be used in every possible way that a user wants. Yet open-source software provides more flexibility in customization and adaptation than proprietary software because users get the benefit of receiving the source code—the core part of the software—for free (Nagy, Yassin, & Bhattacherjee, 2010). Accordingly, any updates that other users have made to the software are also free to all users.

Development Time

The amount of time spent developing open-source software is significantly reduced, compared to creating and customizing proprietary software. Whereas proprietary software takes a tremendous amount of time to develop and perfect, open-source software begins with a solid version of the product, which becomes perfected as each user adds contributions to the development. This process reduces the amount of time between upgrades.

Convenience

Since a license is not required to use open-source software, it can be downloaded to any location and to an unlimited number of machines. In contrast, proprietary software licenses usually limit the number of installations or restrict access to computers directly tied to a network. Unlimited access makes open-source software an ideal product for many companies.

Clearly identifies criteria.

Open-source 4**DISADVANTAGES**

Although installation of open-source software can result in significant savings, it also has important disadvantages. Free software actually creates costs for both the creators and the users.

Defines what may be an unfamiliar term.

Sunk Costs

Sunk costs occur when a company invests a lot of money in proprietary software (Nagy et al., 2010). These sunk costs are one of the reasons many companies do not want to move to using open-source software. Companies may have invested considerable resources (either the time of their employees or fees paid to vendors) in customizing software so that it meets their specific needs. Companies may see changing their proprietary software for open-source software as a waste of these resources, even if open-source software provides more freedom than proprietary software.

However, Nagy et al. (2010) argue that “cost savings in licensing and using open source systems . . . may potentially be adequate to justify the sunk costs invested in prior proprietary systems” (p. 151). M-Global could continue using the proprietary software already in use but gradually migrate to open-source software as proprietary licenses come up for renewal. This approach would permit M-Global to recuperate the costs of the proprietary software and save money in the future.

Development and Support Costs

Support for open-source software can also be quite costly. External support for open-software products is often minimal, at best. This puts the burden for software maintenance and trouble shooting on in-house staff. Although it may be possible to use existing personnel, and thus to save on maintenance contracts, the current technology support staff must have the resources to manage open-source software (Trappeler, 2009). It's also worth keeping in mind that the hiring of consultants falls into the “support cost” category (Nagy et al., 2010). One possibility for M-Global would be to train the current software developers to develop open-source software, thus decreasing or nearly eliminating developmental and support costs.

Another cost of open-source software is the use of company time and resources to provide support to other users of the programs. For example, developers may ask for donations to fund research and development of open-source software (Kelty, 2001). In addition, users of open-source software are expected to provide whatever expertise they have to improve the product for all users. They are expected to share new applications and improve documentation of existing products. As an organization with its own programmers and documentation specialists, M-Global would need to consider the ethical obligations of joining the open-software community.

CONCLUSIONS AND RECOMMENDATIONS

Should companies like M-Global make the change to open source? The main concern in adopting open-source software is the investment in current proprietary software and the time that has to be spent in maintaining and upgrading open-source software. However, M-Global could decrease or nearly eliminate all of the

Open-source 5

negative costs by continuing the use of the current proprietary software, while preparing its programmers to use open-sourcing for future software needs.

Therefore, we recommend that M-Global begin using open-source software in the future. M-Global should begin by exploring the options in productivity software, such as office suites that include word-processing and spreadsheet programs. This type of software can be installed easily on individual machines, and problems with it will not interfere with company systems. Once we have grown more comfortable with maintaining and customizing open-source software and have learned through experience which providers meet our needs most reliably, we can begin exploring other types of software, perhaps even for database servers.

Before M-Global begins widespread use of open-source software, the organization should address the following concerns:

1. We will need to establish clear guidelines for the installation and use of open-source software, including offering employees a way to recommend or request software downloads.
2. We should consider the ethical issues surrounding the use of open-source software. Because we can assume that our programmers and documentation specialists will be creating and improving the products that we use, we should establish guidelines for sharing our improvements with other users of the software.

We do not believe that open-source software will meet all of the needs that are currently met by proprietary software; however, by moving gradually and carefully to open-source software, M-Global should see savings in its software costs.

Outlines a possible course of action.

Urge caution, and suggests policies and procedures that should be in place before widespread adoption of the change.

Emphasizes advantages in final statement.

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Uses APA style for reference list.

MEMO

DATE: July 25, 2013
 TO: Hank Worley, Project Manager
 FROM: Melanie Frank, Office Manager *MF*
 SUBJECT: Evaluation of Best Choice Software

Uses optional first heading for abstract section of ABC format. Gives background, main points, and scope statement.

Notes five main criteria to be evaluated.

Begins paragraph with most important point. Supports claim with evidence.

Uses specific example to document opinion.

Gives simple explanation of how spreadsheet works.

INTRODUCTORY SUMMARY

When the office purchased one copy of Best Choice Software last month, you suggested I send you an evaluation after 30 days' use. Having now used Best Choice for a month, I have concluded that it meets all our performance expectations. This memo presents our evaluation of the main features of Best Choice.

HOW BEST CHOICE HELPED US

Best Choice provides five primary features: word processing, file management, spreadsheet, graphics, and a user's guide. My critique of all five features is included here.

Word Processing

The system contains an excellent word-processing package that the engineers as well as the secretaries have been able to learn easily. This package can handle both our routine correspondence and the lengthy reports that our group generates. Of particular help is the system's 90,000-word dictionary, which can be updated at any time. The spelling correction feature has already saved much effort that was previously devoted to mechanical editing.

File Management

The file-manager function allows the user to enter information and then to manipulate it quickly. During one three-day site visit, for example, a field engineer recorded a series of problems observed in the field. Then she rearranged the data to highlight specific points I asked her to study, such as I-beam welds and concrete cracks.

Spreadsheet

Like the system's word-processing package, the spreadsheet is efficient and quickly learned. Because Best Choice is a multipurpose software package, spreadsheet data can be incorporated into letter or report format. In other words, spreadsheet information can be merged with our document format to create a final draft for submission to clients or supervisors, with a real savings in time. For example, the memo I sent you last week on budget projections for field equipment took me only an hour to complete; last quarter, the identical project took four hours.



M-Global Inc | 127 Rainbow Lane | Baltimore MD 21202 | 410.555.8175

Hank Worley

July 25, 2013

Page 2

Graphics

The graphics package permits visuals to be drawn from the data contained in the spreadsheet. For example, a pie chart that shows the breakdown of a project budget can be created easily by merging spreadsheet data with the graphics software. With visuals becoming such an important part of reports, we have used this feature of Best Choice quite frequently.

Shows relevance of graphics to current work.

User's Guide

Eight employees in my group have now used the Best Choice user's guide. All have found it well laid out and thorough. Perhaps the best indication of this fact is that in 30 days of daily use, we have placed only three calls to the Best Choice customer-service number.

Supplies strong supporting statistic.

CONCLUSION

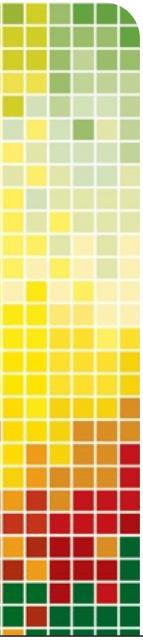
Best Choice seems to contain just the right combination of tools to help us do our job, both in the field and in the office. These are the system's main benefits:

Wraps up report by restating main points.

- Versatility—it has diverse functions
- Simplicity—it is easy to master

The people in our group have been very pleased with the package during this 30-day trial. If you like, we would be glad to evaluate Best Choice for a longer period.

Offers follow-up effort.



Chapter | 12 | Proposals and White Papers



>>> Chapter Objectives

In this chapter, students will

- Learn common guidelines for unsolicited, solicited, and grant proposals
- Read sample situations in which a proposal might be written
- Learn how to create unsolicited proposals that convince readers that a need exists
- Learn how to create solicited proposals that respond to an informal request
- Learn how to create solicited proposals that respond to a formal request for proposal (RFP)
- Learn the importance of reading and analyzing RFPs carefully
- Be introduced to important considerations in the process of writing grant proposals
- Learn the importance of matching a need with a granting organization
- Learn the ABC format for unsolicited, solicited, and grant proposals
- Analyze model unsolicited, solicited, and grant proposals
- Be introduced to the white paper as an informative, yet persuasive, document
- Learn guidelines for white papers
- Learn the ABC format for white papers
- Analyze a model white paper

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Mark Garibaldi, an account representative at M-Global's San Francisco office, works with M-Global's construction clients. He communicates regularly with clients who hire M-Global for construction work, clients who buy testing equipment that has been developed by the Equipment Design Lab, and with M-Global field supervisors who work on clients' projects. Recently, he has been hearing from clients and M-Global employees who are interested in ways to access manuals for M-Global equipment in the field. M-Global already makes these documents available as PDFs, but Mark wondered if there is a way to make this information available as e-books, so he asked Ted Kaler, a documentation specialist, what electronic formats were available to M-Global.

Ted researched e-publishing formats, asking advice on an electronic discussion list, reading articles in professional journals and trade magazines, and requesting white papers from software companies. Working with Mark, Ted prepared a memo proposal recommending that M-Global expand into publishing its documentation for a wide variety of e-readers and smart phones. He sent the proposal to Janet Remington, Director of Publications Development, and Janet accepted his proposal. Once the new software was in place, and documentation specialists at M-Global branches became comfortable using it for internal documents, they

began to include e-publishing platforms as options in project proposals that were submitted to clients.

The ability to write effective proposals and white papers is valued in all organizations, but it is especially important in companies that market products or services to other companies. At first glance, proposals and white papers don't seem to have much in common. Proposals resemble reports in appearance, whereas white papers look more like articles or papers you might write for your college classes. However, proposals and white papers are both important documents for decision making, and they have similar purposes—to persuade readers to adopt new practices or products. Although proposals and white papers are sales documents, they should avoid the hard-sell language and techniques of most marketing materials. Instead, they are written in an objective, informative style and depend on solid evidence and clear explanations, rather than on slogans and flashy images, for their persuasive force.

There are five main sections in this chapter. The first provides general guidelines for proposals. The next three sections discuss three specific types of proposals: unsolicited proposals, solicited proposals, and grant proposals. The fifth section describes guidelines for writing white papers. Each section includes guidelines specific to the type of document, as well as discussion of an M-Global model document.

>>> Proposals

Proposals are crucial to most organizations—indeed, many companies rely on them for their very survival. Proposals can generally be defined as follows:

Proposals may be *unsolicited*—that is, developed by a writer who wants to recommend a change—or they may be *solicited*, written at the request of the reader. They may be written for an *internal audience* to suggest changes within an organization, or they may be written for an *external audience* to offer a product or service to a client or to request funds from a granting organization. Finally, they may be formatted as *informal* documents or as *formal* documents. (See Chapter 10 for more on informal and formal document formatting.) Table 12–1 provides an overview of how these different elements of the proposal context affect its content and design.

Proposal: A document written to convince your readers to adopt or support an idea, a product, or a service. It can be directed to colleagues inside your own organization (*in-house proposals*), to clients outside your organization (*sales proposals*), or to organizations that fund research and other activities (*grant proposals*).

Table 12–1 ■ Basic types of proposals

	Internal Audience	External Audience
Unsolicited proposal	<p>Suggests changes within an organization.</p> <p>Often written as an informal, memo proposal.</p> <p>May be formatted as a formal document if the proposal is expensive or suggests a major change, or if the primary audience is at the highest decision-making level (such as a board of directors).</p>	<p>Recommends product or service to potential client.</p> <p>A rare form of proposal—may be written as an informal letter proposal or preproposal that offers to solve a problem and introduces the organization's qualifications.</p> <p>Usually followed by a formal, solicited proposal.</p>
Solicited proposal	<p>Suggests ways to solve problems or improve practices within an organization.</p> <p>Written at the request of another member of the organization.</p> <p>May be followed by a feasibility study.</p> <p>May be informal or formal in format, depending on complexity of the project and preferences of the reader.</p>	<p>Meets a specific need described by a client.</p> <p>Often a formal proposal written in response to a request for proposal (RFP).</p> <p>May be an informal letter proposal if it has been requested by a client as part of an ongoing business relationship.</p>
Grant proposal	<p>Requests support for special internal projects.</p> <p>Rare, although some organizations may make money available through a foundation or other special fund.</p> <p>Often written in informal, memo format.</p>	<p>Requests support to meet a community need.</p> <p>Formal document written in response to established guidelines or to a specific RFP.</p> <p>Addressed to nonprofit organizations, professional organizations, or government agencies.</p>

Guidelines for Proposals

Some basic guidelines apply to all proposals, regardless of their audience or format, or whether they are solicited, unsolicited, or submitted to a granting organization. These guidelines will help the proposal development process go smoothly and result in proposals that are designed to meet the readers' needs.

>> **Proposal Guideline 1: Plan Well Before You Write**

Begin your proposal-writing process by surveying the current situation. Identify the problem to be solved or the situation that could be improved by changing current practices or purchasing new equipment. Next, identify the best way to improve the current situation. To do this step, you will need to conduct research. You may need to interview people, or even to observe a situation in the field. It is often helpful to search for information

that has been published about similar situations. Reading articles published in professional and trade journals can provide important background information. Reading white papers offered by companies or government agencies can suggest specific solutions.

After you have begun to develop a basic plan, begin to identify details of your plan. Identify resources needed, such as funds, equipment, or special expertise. Develop a timeline and benchmarks for the project. Make a list of the major benefits that will result from your plan.

Finally, identify your readers. Begin by identifying the decision maker who is in a position to authorize the project that you are proposing. You should also identify advisers and any receivers who will be expected to put your proposal into action. The Planning Form at the end of the book will help you define your purpose, audience, and organization. Once you identify the decision makers, spend time brainstorming about their needs before you begin writing. Proposals that betray an ignorance of client needs often do so because the writer began writing too soon about the product or service.

>> **Proposal Guideline 2: Make Text Visually Appealing**

The page design of proposals must draw readers into the document. Remember—you are trying to sell a product, a service, or an idea. If the layout is unappealing, then you will lose readers before they even get to your message. Also, remember that your proposal may be competing with others. Put yourself in the place of the reader who is wondering which proposal to pick up first. How the text looks on the page can make a big difference. Following are a few techniques to follow to help make your proposal visually appealing:

- Use lists (with bullets or numbered points) to highlight main ideas.
- Follow your readers' preferences in font size, type, line spacing, and so forth. Proposals written in the preferred format of the reader gain a competitive edge.
- Use headings and subheadings to break up blocks of text.

These and other techniques help to reveal the proposal's structure and lead readers through the proposal.

>> **Proposal Guideline 3: Edit Carefully**

In the rush of completing proposals, some writers fail to edit carefully. That is a big mistake. Make sure to build in enough time for a series of editing passes, preferably by different readers. There are two reasons why proposals of all kinds deserve this special attention:

1. They can be considered contracts in a court of law. If you make editing mistakes that alter meaning (such as an incorrect price figure), you could be legally bound to the error.
2. Proposals often present readers with their first impression of you. If the document is sloppy, they may assume that your organization's work will be sloppy as well.



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Proposal Guidelines

- Plan well before you write
- Make text visually appealing
- Edit carefully

M-Global Proposals

Like many organizations, M-Global depends on (1) in-house proposals to breathe new life into its internal operations, (2) sales proposals to request work from clients, and (3) occasional grant proposals to seek research funds from outside organizations. Proposals are a main activity in healthy and growing organizations

like M-Global. Below are brief descriptions of proposals written at M-Global. The first case described here is an internal solicited proposal. The second is an internal unsolicited proposal. The third is an external solicited proposal and the fourth is an external grant proposal. The sections that follow include longer discussion of M-Global case studies.

■ **In-house proposal for security protocol training:** James Oliver, Chief Financial Officer, has received the results of an internal audit that found problems in the way client information is being digitally secured. He asks Greg Bass, Director of Information Systems (IS), to propose changes that will improve IS security and training of all affected employees.

■ **In-house proposal for change in purchasing practices:** Mack Boh, Facilities Maintenance Supervisor at the Baltimore branch office, writes a proposal to Brenda Seymour, Purchasing Director, suggesting that M-Global use environmentally friendly cleaning products whenever possible. The proposal describes a system for trials of products for effectiveness; each branch will use the system to develop its own list of approved products.

■ **Sales proposal for dam removal project:** The Minnesota Department of Natural Resources issues a Request for Proposals for the removal of an earthen dam from a state park. The dam, built in the 1930s, is no longer safe, and it is to be removed as the first step in a river restoration project.

■ **Grant proposal for new equipment design:** Oilarus, Ltd., a British oil company, sometimes gives research-and-development funds to small companies. Such funding usually goes toward development of new technology or products in the field of petroleum engineering. Angela Issam, who works in M-Global's Equipment Design Lab decides to apply for funding for a research project. Her proposed project, if successful, would provide a new piece of oil-drilling safety equipment that would reduce the chance of offshore oil spills at production sites.

>>> Unsolicited Proposals

Many proposals written to internal audiences are *unsolicited proposals*. The writer recognizes a need in the organization that others may not have noticed. Proposing a change in your organization is a good way to be noticed. It tells your readers (usually your supervisors) that you are a problem solver, that you have initiative, and that you are interested in the success of the organization. Because of the impact that unsolicited proposals can have on your organization, they should be well thought out, well researched, and well written. Unsolicited proposals are defined as follows:

Unsolicited proposals are often written for readers who are not familiar with the situation, or who have not realized the need. Even if readers are aware of a problem, your solution will probably be new to them. This means that you will need to provide solid data and clear explanations of the current situation, and of your solution. Because your readers will be decision makers at higher levels in your organization, you should write unsolicited proposals with an attitude that is not overly negative about the current situation, but that is helpful and enthusiastic.

ABC Format for Unsolicited Proposals

Unsolicited proposals use an ABC format that emphasizes the benefits of improving the current situation. The beginning and ending sections should be easy to read and stress just a few points. They provide a short buffer on both ends of the longer and more technical body section in the middle.

Establishing need is crucial in unsolicited proposals, of course, when readers may not be psychologically prepared to accept a change that costs them money. In the abstract, you capture the reader's attention with a capsule summary of the entire proposal. This one- or two-paragraph starting section permits space only for what the reader really must know at the outset, such as the following:

- Purpose of the proposal
- The needs that exist in the current situation
- How the current needs will be met
- The main advantage of your solution
- Overview of proposal sections to follow

A common complaint about informal proposals is that writers fail to establish the need for what is being proposed. Do not simply try to dazzle readers with the good sense and quality of what you are proposing. Instead, lay the groundwork for acceptance by first showing the readers that a strong need exists.

The body of your proposal should include these basic sections:

1. **Description of problem or project and its significance.** Give a precise technical description, along with any assumptions that you have made on the basis of previous contact with the readers. Explain the importance or significance of the problem, especially to the readers of the proposal. Consider including research such as data you have collected in your own organization and information you have gathered from other sources. This approach shows your interest and expertise in the subject, and it can help convince your readers that the current situation should be improved.

Unsolicited proposal: A document submitted without a request to convince your readers to adopt an idea, a product, or a service. Unsolicited proposals are usually written as informal documents and often addressed to internal audiences.

ABC Format: Unsolicited Proposal

- **ABSTRACT:** Gives a summary or "big picture" for those who make decisions about your proposal.
 - The need—a problem to be solved or situation to be improved
 - Summary of the solution
- **BODY:** Gives the details about exactly what you are proposing to do.
- **CONCLUSION:** Drives home the main benefit and makes clear the next step.

2. **Proposed solution or approach.** Describe the specific tasks you propose in a manner that is clear and well organized. If you are presenting several options, discuss each one separately—making it as easy as possible for the reader to compare and contrast information.

3. **Personnel.** If the proposal involves people performing tasks, it may be appropriate to explain qualifications of participants.

4. **Schedule.** Even the simplest proposals usually require some sort of information about the schedule for delivering goods, performing tasks, and so on. Be both clear and realistic in this portion of the proposal. Use graphics when appropriate (see Chapter 3 for guidelines on creating Gantt and milestone charts).

5. **Costs.** Place complete cost information in the body of the proposal unless you have a table that would be more appropriately placed in an attachment. Above all, do not bury dollar figures in paragraph format. Instead, highlight these figures with indented or bulleted lists, or at least place them at the beginnings of paragraphs. Because your readers will be looking for cost data, it is to your advantage to make that information easy to find. Finally, be certain to include all costs—materials, equipment, personnel, salaries, and so on.

The conclusion gives you the opportunity to control the readers' last impression. It also helps you avoid the awkwardness of ending proposals with the statement of costs, which is usually the last section in the body. In this closing section, you can

- Emphasize a main benefit or feature of your proposal
- Restate your interest in doing the work
- Indicate what should happen next
- Encourage your readers to contact you with questions

Regarding the last point, sometimes you may ask readers to call if they have questions. In other situations, however, it is appropriate to say that you will follow up the proposal with a phone call. This approach leaves you in control of the next step.

Incidentally, for informal sales proposals, there is a special technique that can push the proposal one step closer to approval. After your signature, insert an *acceptance block*. As shown here, this item makes it as easy as a signature for the reader to accept your proposal, rather than his or her having to write a return letter.

ACCEPTED BY LMN DEVELOPMENT, INC.

By: _____

Title: _____

Date: _____

Because unsolicited proposals are often formatted as informal documents, you may have to put supporting data or illustrations in attachments that follow the conclusion. Cost and schedule information, in particular, is best placed at the end in well-labeled sections. Make sure that the proposal text includes clear references to these visuals. If you have more than one attachment, give each one a letter and a title (for example, "Attachment A: Project Costs"). If you have only one attachment, include the title but no letter (for example, "Attachment: Résumés").

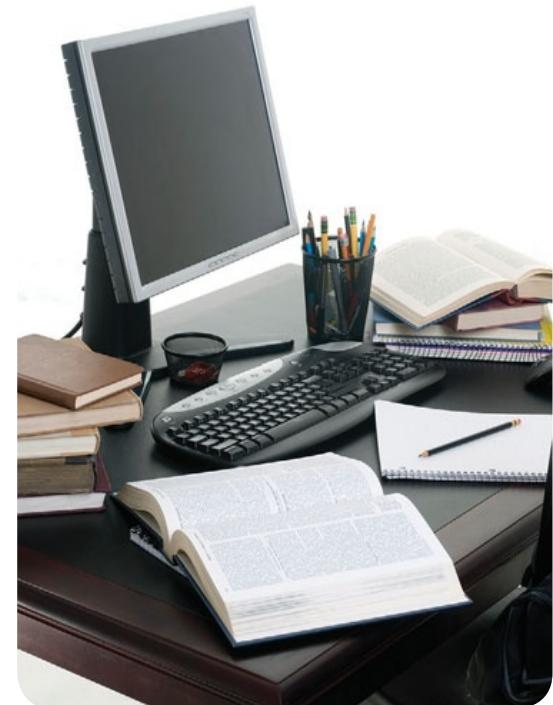
M-Global Case Study for an Unsolicited Proposal

Model 12–1 on pages 426–427 is an example of an unsolicited proposal that was written to solve a problem in a construction company that often works as a subcontractor for M-Global’s Cleveland office. As construction manager for Conners Construction, Walker Smith visits construction sites where crews from Conners are working. He talks to supervisors at those sites, and compiles records about activities on the job. He has heard comments that the number of accidents seems to have increased, and he has researched company records to see if crew supervisors’ impressions are accurate.

After finding that the number of accidents has been increasing, Walker writes a short proposal to Jack Conners, president of Conners Construction. In his proposal, Walker summarizes the current situation and offers data to support his conclusion that there is a problem with workplace safety. He also anticipates Jack’s questions about the cause of the accidents, examining several possibilities and identifying the most likely source of the problem—a need for training for construction site employees.

Walker’s recommendation shows that he has considered an in-house option and researched an outside option. He clearly explains his reasons for recommending the outside option and explains the next step—a meeting with the M-Global representative who can work with Conners Construction on workplace safety training.

Like many internal, unsolicited proposals, Model 12–1 is written in a memo format. It clearly outlines the need for a change, and it shows that the writer is willing to put the change into effect once it has been approved.



Perkmeup/Dreamstime.com

>>> **Solicited Proposals**

Companies that sell products or services to other organizations depend on *solicited proposals* for their success. These proposals are usually written by teams and may be long and complex. Some companies have teams whose only responsibility is writing sales proposals. Solicited proposals are defined as follows:

Some proposals may be solicited by a client as part of an ongoing business relationship. The client company may already be familiar with services and products that your company provides, and may want to know if you can help it with a new situation. Often, however, solicited proposals are written in response to requests for proposal, or RFPs. RFPs are defined as follows:

Solicited proposal: A document requested by the reader to help the reader solve a problem through the purchase of a product or a service. Solicited proposals are usually written as formal documents and addressed to external audiences.

Request for proposal (RFP): A document sometimes sent out by an organization that wants to receive proposals for a product or service. The RFP gives guidelines on (1) what the proposal should cover, (2) when it should be submitted, and (3) to whom it should be sent. As writer, you should follow the RFP guidelines diligently in planning and drafting your proposal.

If you are writing a proposal in response to an RFP, you should read and analyze the RFP carefully. Pay close attention to the following information:

- The statement of need
- Details of the information requested
- Criteria for awarding the contract
- Formatting requirements (follow these strictly)
- Submission requirements, including deadline, recipient information, and whether the proposal is to be submitted digitally or as a print copy

Make sure that you meet all of the requirements of the RFP exactly. Your attention to detail in your reading of the RFP will reflect your organization's attention to detail and quality of work. Failure to follow any of the guidelines in an RFP can result in your company's losing a contract.

Requests for proposal may be announced on Web sites, in newspapers, and in a number of other locations. They may come from commercial companies, government agencies, or even nonprofit organizations, like the RFP in Figure 12–1. They can range from less than a page long to dozens of pages in length.

An effective solicited proposal shows that the writer understands the situation described by the request, and that the writer's organization is well qualified to help the reader solve the problem. You may feel that you need more information about the situation being addressed in the proposal, or about the process for awarding contracts. Many commercial clients will give you more information if you give them a call. In fact, they may be pleased that you care enough about the project to target the audience. (Government agencies generally will not give you more information, in order to maintain their objectivity in the contract-awarding process.)

Solicited proposals are often formatted as formal documents and should follow the guidelines for formatting discussed in Chapter 10. Like formal reports, formal proposals should include the following elements:

- **Title Page:** Includes the project title (sometimes preceded by *Proposal for* or similar wording), the reader's name (sometimes preceded by *Prepared for . . .*), your name or the name of your organization spelled out in full (sometimes preceded by *Prepared by . . .*), and the date of submission.
- **Letter/Memo of Transmittal:** Place the company proposal number (if there is one) at the top of the letter or memo of transmittal, above the date. Your organization, or the client, may also ask that you include the project title beneath the attention line, using the exact wording that appears on the title page. The exact placement of this information depends on your organization's letter style.

The first paragraph should mention what your proposal responds to (e.g., a formal RFP, a conversation with the client).

The body of the letter should emphasize one main benefit of your proposal, although the executive summary and proposal proper mention benefits in detail. Stress

Figure 12–1

- Request for proposal (RFP) for research grant

Source: <http://www.cptsc.org/research-grants.html>.

Research Grants

The Council for Programs in Technical and Scientific Communication (CPTSC) invites interested members to apply for research grants up to \$1,500. Proposed research projects should relate to one or more of the following CPTSC goals:

- To promote programs in technical and scientific communication,
- To promote research pertaining to programmatic issues in technical and scientific communication, or
- To develop opportunities for the exchange of ideas and information concerning programs, research, and career opportunities.

CPTSC funds projects that contribute to our collective knowledge about all aspects of program administration. Successful projects in the past have compared programs via surveys, conducted textual analyses to inform program marketing, and studied the state of the professoriate. Funds may be used for expenses, materials, salary, and/or travel. CPTSC encourages faculty-student collaborations on projects.

Applications

To apply for a CPTSC research grant, interested CPTSC members should submit a 2–3 page proposal that contains the following information:

1. Project title on all pages
2. Name, institutional affiliation, and contact information for the project investigator(s), on page 1, separable from items 3–6.
3. A brief project description
4. A discussion of the significance of the project to members of CPTSC and identification of potential publication locations
5. An outline of the project methodology or research tasks, including IRB [institutional review board] approval if human subjects are involved in any capacity
6. A projected budget statement (excluding institutional overhead and indirect costs. Request a waiver from your institution if necessary.)

Specific information will be provided each year.

what you can do to solve a problem, using the words *you* and *your* as much as possible (rather than *I*, *we*, *my*, and *our*).

Use the last paragraph to retain control by orchestrating the next step in the proposal process. When appropriate, indicate that you will call the client soon to follow up on the proposal.

■ **Executive Summary:** Briefly mentions the problem, proposed solution, and cost, emphasizing the main benefits of your proposal.

■ **Appendices:** You can help readers by placing technical details from the proposal text in appendixes. Any supporting information can also be placed in appendixes, but following are some common items included there:

- Résumés
- Organization charts
- Company histories
- Detailed schedule charts
- Contracts
- Cost tables
- Detailed options for technical work
- Summaries of related projects already completed (see Model 12–6 on pages 472–478)
- Questionnaire samples

This material is often printed from separate files and thus is not paged in sequence with your text. Instead, it is best to use individual paging within each appendix. For example, pages in an Appendix B are numbered B-1, B-2, B-3, and so on.

Formal solicited proposals often make use of *boilerplate* text, or standardized text that is repurposed from document to document. Common boilerplate sections include information about a company's history, its expertise, and its experience. Using boilerplate text saves proposal-writing teams time and can make the proposal-writing process more efficient. However, you should check boilerplate text and images to make sure that they fit seamlessly into each proposal. You may need to revise boilerplate text a bit to make it suitable to the particular project that is being described.



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ABC Format for Solicited Proposals

Because solicited proposals can be complex and are usually competing with other proposals, the ABC format can help you write clear, effective proposals.

In an abstract, you capture the client's attention with a capsule summary of the entire proposal. This starting section emphasizes what the reader really must know at the outset, such as the following:

- Purpose of proposal
- Reader's main need
- Main features you offer, as well as related benefits
- Overview of proposal sections to follow

The body of your proposal should be aimed toward readers who need supporting information. The body should include background information and research that illustrates your

understanding of the requestor's current situation, and it should emphasize the benefits of your proposal. It may also include information such as schedules, costs, qualifications, and risk management, as appropriate to the project, product, or service being proposed.

Formal sales proposals traditionally contain three basic types of information: (1) technical, (2) management, and (3) cost. Following are some general guidelines for presenting each type. Remember that the exact wording of headings and subheadings varies depending on proposal content.

1. Technical sections

- Respond thoroughly to the client's concerns, as expressed in writing or meetings.
- Follow whatever organization plan can be inferred from the request for proposal.
- Use frequent subheadings with specific wording.
- Back up all claims with facts.

2. Management sections

- Describe who will do the work.
- Explain when the work will be done.
- Display schedules graphically.
- Highlight personnel qualifications (but put résumés in appendixes).

3. Cost section

- Make costs extremely easy to find.
- Use formal or informal tables when possible.
- Emphasize value received for costs.
- Be clear about add-on costs or options.
- Always total your costs.

The conclusion gives you the chance to restate a main benefit, summarize the work to be done, and assure clients that you plan to work with them closely to satisfy their needs. Just as important, this brief section helps you end on a positive note. You come back full circle to what you stressed at the beginning of the document—benefits to the client and the importance of a strong personal relationship. (Without the conclusion, the client's last impression would be made by the cost section in the discussion.)

Case Studies for Solicited Proposals

Model 12–2 on pages 428–431 is a solicited sales proposal formatted as an informal document. RBP Software is preparing to release a new product, and it will need documentation

ABC Format: Solicited Proposal

■ ABSTRACT:

Overview of the scope and desired outcomes

- Scope of the proposal
- Restatement of the situation or problem
- Summary of proposing organization's qualifications
- Benefits of the proposal
- Overview of the general organization of the proposal

■ BODY:

Details of the proposed plan, product, or service

- Summary of the current situation
- Background information and data as appropriate
- Technical information
- Management information
- Cost information
- (Appendices—appear after text, but support body section)

■ CONCLUSION:

- Benefits of accepting the proposal
- Unique qualifications of the proposing organization

to support its new software. Steven Nickels, a documentation specialist with Professional Documentation, Inc., wrote the letter proposal in response to a verbal request from David Barker for a proposal to write the documentation. Steven addresses David by first name, indicating that they have a well-established business relationship. In fact, Steven has developed several documentation projects for RBP Software. His letter proposal emphasizes the client's concerns, and clearly explains how Professional Documentation, Inc., will meet those concerns. Steven closes his letter proposal with information about the next step and with an acceptance block to speed up the proposal process.

Model 12–3 on pages 431–451 is a solicited, formal proposal written in response to a request for proposal published by M-Global. M-Global is seeking a better way to maintain its drillships. The proposal includes all of the sections of a formal document, is designed to help readers find the information they need, and is suited to readers with different management and technical interests. The proposal uses headings to call attention to specific information such as the scope and organization of the proposal, the benefits of the service for M-Global, and the qualifications of Hydrotech Diving and Salvage. Schedule and cost information is placed in tables, so that it can be found easily. The conclusion indicates that Hydrotech clearly understands M-Global's need for the hull-cleaning service.

>>> Grant Proposals

Grant writing is an important process for nonprofit organizations and researchers. In fact, there are companies that specialize in helping organizations write effective applications for grants. Although grant proposals are not trying to convince readers to buy a product or service or to change procedures in an organization, they are still business proposals. This fact may seem strange because grant proposals are asking for money rather than offering a product or service, but like other business proposals, grant proposals seek to help granting organizations reach their objectives. The difference is that granting organizations are interested in solving problems in a community, rather than in commercial gain. Grant proposals are defined as follows:

Grant proposal: A document written to convince your readers to support a specific project that meets the needs of a social or professional community. Directed to organizations that fund research and other activities, grant proposals help granting organization meet their goals for improving communities. These communities may be local, or they may be global. Grant proposals may seek to improve social conditions, or they may seek support for research to add to knowledge in a profession or to improve the quality of life for many people through improvements in specific bodies of knowledge.

Grant proposals are often written as formal documents in response to specific requests for proposal or standing grant programs. Some organizations, such as universities or government agencies, may also have internal programs that provide grants to improve services to constituents.

The grant-proposal writing process is similar to the process for writing proposals for a business purpose. However, important differences in the goal of grant proposals result in important differences in the early stages of the grant-proposal writing process, and in the way that grant proposals are focused. Grant proposals are written to meet a community need. That community may be small, like a local theater group, or even an underserved constituent group in an organization, like nontraditional students at a university. The community may be a professional community, for example, health care professionals. The community can even be national or global, such as people without access to affordable energy.

Once a need has been identified, the next step is to clearly define it and to identify an organization or program that is designed to meet the need that you have identified. Consider the following examples:

- A local theater group wants to begin offering a children's theater program. The board of directors submits a grant proposal requesting start-up funds for the program to a large nonprofit arts foundation.
- Nontraditional students at a university have started an organization and want space for a lounge where they can meet, talk, and study together. They write a proposal to the university's dean of students requesting space for a lounge and money to purchase furniture, a coffeemaker, and a microwave.
- A county health department wants to improve health literacy among its clients. A doctor in the department reads that a medical technology company offers grants for community health literacy programs. He works with administrators and health education experts to develop a specific plan and write a proposal that meets the requirements of the health technology company's program.
- A team of research engineers is interested in developing solar energy technology that can be used on a small scale. They search Web sites that list grants awarded by government agencies and find a grant to encourage small-scale energy technologies for developing countries. They work with proposal writers in their company to develop a formal proposal that responds to an RFP.

Notice that in all of these examples, the granting agency has a specific goal of meeting the needs of individuals or communities. When you write a grant proposal, you should keep the goal of the granting agency in mind, and emphasize how your project will meet the needs of people in a specific community.

Most grants are written in response to a request for proposal (RFP) or request for application (RFA). These documents should be carefully read and analyzed, just as they are for commercial sales proposals. Granting agencies may have very specific guidelines about formats, and they often ask for information about your organization's resources and experience. Grant proposals may have many of the same sections as solicited proposals, including a title page, a letter of transmittal, and an executive summary, discussed on pages 405–410. However, granting organizations may ask that information about your organization be included in the appendixes. This material may include the following:

- Résumés or academic vitae of researchers
- Brochures about the organization
- Mission statement
- List of the board of directors and organization officers
- List of organization projects and accomplishments



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ABC Format: Grant Proposal

- **ABSTRACT:** Overview of the project
 - Statement of need
 - Mission of your organization
 - Explanation of how the proposed program will meet the goals of the granting organization
- **BODY:** Details of the proposal
 - Background information about your organization
 - Detailed explanation of the situation, including data and other supporting research
 - Objectives to be used to evaluate the success of the proposed program
 - Importance of proposal to the community
 - How results will be shared (for research grants)
 - Budget
- **CONCLUSION:** Importance of the project
 - Summary of community needs to be met
 - How community needs fit the granting organization goals
 - Main reason why your organization is best suited to meet the community need

- Financial statements
- Letters of support from community stakeholders

Writing a proposal is just the first step in the grant process. Grants usually include record keeping and reporting procedures, which are beyond the scope of this book. Grant writing is both an art and a skill that are valued in many organizations.

ABC Format for Grant Proposals

The ABC format is useful for grant proposals, just as it is for the other proposals in this chapter.

The abstract of a grant proposal should explain the current situation, identify the beneficiaries of your proposal, and make the connection between your proposal and the granting organization clear. Use the abstract to show that you have identified a need that the granting organization can help meet. Grant proposals must clearly establish your organization's qualifications to carry out the proposed project. If the proposal is responding to an RFP or a specific program announcement, that information should be included in the abstract as well.

The body of a grant proposal should illustrate a well-thought-out approach to the situation. It should demonstrate that you have done your research on the granting agency and on the problem that you are addressing. It should also make clear that your organization is uniquely qualified to meet this community need. Clearly outline the steps of the project. Include information about schedules, materials, personnel, and budgets. If your organization has been successful with similar projects or grants in the past, include this information. Identify clear objectives. Granting agencies want to know whether the projects they fund are successful, and you need to explain how you will measure success. Grant proposals that support research projects should include information about the research team, about record keeping, and about how the results of the research will be shared—whether as articles published in journals or as products made available to those who need them.

The conclusion of grant proposals summarizes the proposed program and its impact on the community. Emphasize the main features of your project, as well as and how you are meeting the mission of the granting organization.

Case Study

M-Global encourages its employees to volunteer with local organizations. Model 12–4 on pages 452–459 is a grant proposal that was written by Ahmir Safi, a documentation specialist with M-Global’s Denver office, with the help of the director of the Silver

Rush Museum, Eva Kline. Although both of them wrote the proposal, only Kline's name appears on the proposal, which is appropriate for the grant program. Safi is active in the local historical society and is a member of the board of directors of the Silver Rush Museum. The museum is a designated National Historic Landmark and therefore eligible for a grant from the National Park Service for maintenance and improvements.

The proposal explains the history of the building and its importance to the community. It clearly outlines the need for renovation to preserve the landmark. It includes specific objectives for the project, details of how the renovations will be completed, and a budget and timeline. The proposal also includes information about the organization, emphasizing that it will use the grant money responsibly to meet the goals of the National Park Service.

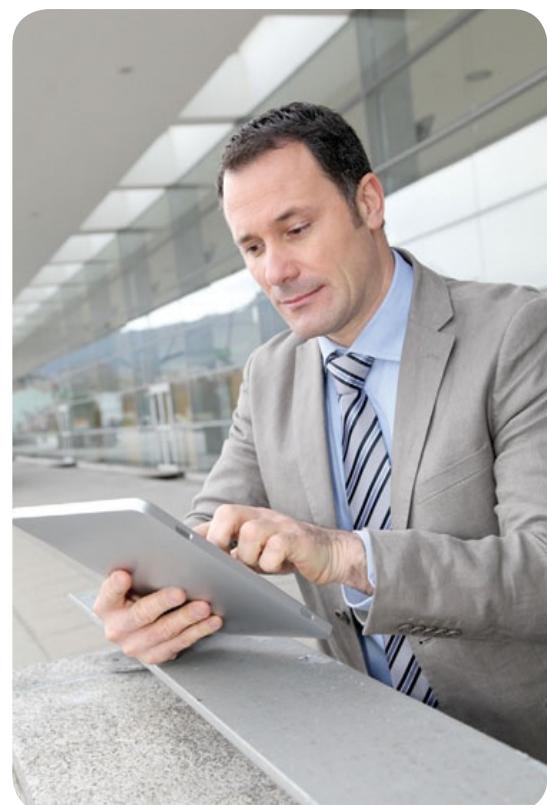
>>> White Papers

As noted earlier in this chapter, white papers are not formatted like proposals, but they are similar in purpose and tone. The term *white paper* originally referred to informative documents published by government agencies about public policy. Government white papers are still primarily informative, but most white papers today are marketing documents published by businesses. White papers still retain their educational purpose, however, in spite of their sales goal. A white paper can be defined as follows:

White papers can provide valuable information about innovations in business and industry. Readers know that white papers are also marketing documents, so they look for documents that emphasize information. Readers request white papers from company Web sites or from online services that include a database of white papers provided by participating companies. To receive a white paper, you usually have to register with the Web site, which provides the sponsor of the white paper with information about readers who are interested in the subject. Because readers must request white papers, they prefer documents that are primarily informative. They usually have technical knowledge of the subject but are seeking information about innovations in the field.

White papers are usually written collaboratively. Writers, subject matter experts, and marketing specialists usually work together to create a document that educates readers, while establishing the company as a leader in the field. White papers can be used to promote a new product or service that the company is offering, or they can aim to build customer loyalty by providing information about new developments in the field.

White paper: A document designed to educate industry customers or to help readers solve a problem, usually not longer than 15 pages. White papers are objective in tone but persuasive in purpose, created to build customer trust and loyalty. In style and format, they usually resemble articles in trade journals or academic papers.



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Guidelines for White Papers

White papers are a hybrid of informative research documents and marketing material. As a result, they can be very challenging to write. These guidelines will help you write white papers that represent your organization well.

>> **White Paper Guideline 1: Know Your Audience**

As with all technical communication, it is important to know who your readers are. The audience for most of the documents that we discuss in this book is a mixed audience of technical experts, business experts, and nonexperts. White papers may have a narrower audience. A white paper that describes a new pollution-control device for diesel engines may be written primarily for automotive engineers.

>> **White Paper Guideline 2: Include the Problem and Solution in the Title**

Readers usually order white papers from a Web site. Thus, they may be scanning a list of white paper titles to find what they need. Provide the key information in your title.

>> **White Paper Guideline 3: Use Analogies and Metaphors to Explain New Concepts**

Because white papers introduce new processes, or mechanisms, it may be useful to include metaphors and analogies familiar to readers to Metaphors or analogies should use concepts that are familiar to the reader to explain the innovation described in the paper.

>> **White Paper Guideline 4: Use Graphic Elements to Provide Information**

Illustrations, charts, and graphs can help readers understand the new ideas presented in white papers. (See Chapter 13 for information about creating effective graphics.) White papers should also include headings, marginal notes, and other elements to guide the readers to the information that they want. Because most white papers are made available as PDFs, readers may print them, so any illustrations should be clear when printed in black and white.

White Paper Guidelines

- Know your audience
- Include the problem and solution in the title
- Use analogies and metaphors to explain new concepts
- Use graphic elements to provide information
- Cite sources correctly

>> **White Paper Guideline 5: Cite Sources Correctly**

White papers often include information from published articles. Your white paper should consistently follow a citation format, such as those published by the APA or the CSE. (See Appendix A.) White papers include in-text citations as well as bibliographies. If your organization has a style guide, follow the recommended citation format.

ABC Format for White Papers

White papers are organized like journal articles or academic papers. They use the ABC format and usually use the problem/solution organization discussed in Chapter 4. The abstract identifies the problem, and the body explains the solution.

The abstract of a white paper clearly identifies the problem that the readers seek to solve. An abstract may also include information about the readers for whom the document is intended, such as information about the technical background and level of expertise needed to understand the paper.

The body of a white paper should use research and data to outline clear criteria for a solution, criteria that your company's product or service meets. The body should include information drawn from research of the published information about the problem as well as from data resulting from your own organization's research. Including information from published articles shows your readers that you have researched the topic and suggests that the recommendations in the white paper are based on objective criteria. It indicates that your priority is providing your readers with the information that they want, instead of just marketing a product. White papers may avoid mentioning a specific product or service until near the end of the body, and they may mention the product or service only briefly. If readers want to know more about your company's specific product or service, they will read about it on the company Web site or contact the company directly.

The conclusion of white papers should summarize the problem and the solution. White papers that cite published research should include a reference list of the works cited. They may also include a bibliography of recommendations for further reading on the subject.

Case Study for a White Paper

This chapter opens with a case where Ted Kaler, a documentation specialist in M-Global's San Francisco office, wants to learn more about e-publishing. As part of his research on the topic, Ted requested the white paper in Model 12–5 on pages 460–471. This white paper, distributed by the Adobe software company, helps readers learn a new way to use a product that they may already have access to. It was created as a form of customer support, and to encourage customer loyalty. It is clearly organized and uses headings, illustrations, and marginal notes to help readers find the information that they need. While not specifically urging readers to buy the software, this white paper promotes it by educating readers about an innovative way to use the product.

ABC Format: White Papers

- **ABSTRACT:** Definition of the Problem
- **BODY:** Organization that moves from general information about the solution to your specific product or service
 - Historical/background overview to set stage for new technology
 - Evidence, data, and information from published sources
 - Criteria for solution, followed by your solution
 - Brief mention of product or service or perhaps no mention at all
- **CONCLUSION:** Summary of the problem and solution
 - Review of the problem
 - Benefits of the solution, including your product or service if it is specifically mentioned
 - Bibliography

>>> Chapter Summary

- Proposals and white papers use an objective tone to persuade readers to adopt a product, service, or idea.
- Proposals may recommend a solution to a problem, or they may recommend an improvement in a satisfactory situation.
- All proposals require careful planning and audience analysis.
- Like other documents, proposals should use page design and graphic elements for clarity and visual appeal.
- Proposals should be carefully edited for correctness and appropriateness to the context.
- Proposals are written for a variety of reasons and for internal and external audiences.
- Unsolicited proposals should convince readers that a need exists and should offer a clear plan for meeting that need.
- The ABC format can help writers create unsolicited proposals that will get noticed by readers.
- Solicited proposals may respond to informal or formal requests.
- Solicited proposals that respond to a formal request for proposal (RFP) should adhere to every detail of the RFP.
- The ABC format can help writers create proposals that meet the criteria required by readers.
- Grant proposals seek support for projects or research that will improve people's lives.
- Grant proposals can be written to support local organizations and communities.
- Grant proposals for research seek to build a specific body of knowledge.
- Grant proposals should emphasize how the proposed project fulfills the mission of the granting organization.
- The ABC format can help writers create grant proposals that establish a need, that show an organization's qualifications to conduct a program or complete a project, and that connect the granting organization's interests with the interests of the writer's organization.
- White papers can help build customer loyalty and promote a company's image.
- Although white papers are persuasive, they are written in an objective tone and are designed to educate readers about innovations.
- The ABC format can help writers create white papers that are useful to readers while promoting a company's products or services.

>>> Learning Portfolio

Communication Challenge The Black Forest Proposal: Good Marketing, or Bad Business?

To strengthen its proposals, M-Global hired a new proposal writer at the corporate office in Baltimore. Ben Sadler came well recommended, having both advertising and marketing experience with technical firms. After he finished his first major proposal at M-Global, he had some disagreements during an internal review of his draft by one of the firm's technical experts. This case study provides background information on the project and an overview of decisions Ben made in writing the proposal. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Background on Black Forest Project

Jim McDuff and his staff hired Ben Sadler for a specific reason—although business was going fairly well, they decided the company needed new direction and energy in its marketing. Staff members seemed to be taking for granted that clients would always return and that word of mouth would keep new clients coming through the doors. Company leaders knew such an attitude was dangerous. Because they wanted to venture into new types of work, they believed the time was right for a new marketing expert. Ben Sadler seemed to be the catalyst the firm needed.

Just after arriving, Ben learned about a request for a proposal recently issued for a large construction job—building a new university campus in southern Germany. The project at Black Forest University included four buildings, for a total of \$135 million in construction. These buildings would become the centerpiece of the new campus. M-Global had thus far done no major construction work in Germany, nor had it done much work at colleges and universities anywhere in the world. Yet Ben felt the firm had the technical tools and the personnel to be a contender. After convincing his immediate boss, Kurt Fleisch, Director of Marketing, that the proposal was worth writing, Ben went to work.

Proposal Strategy

Although Ben had research assistance from M-Global employees in the United States and Germany, he wrote the draft himself. Following are parts of the writing and marketing strategy he planned to use:

- **Experience:** He emphasized the large construction jobs M-Global had done for other types of government-related agencies in Germany and around the

world. Although M-Global had done no major college or university construction, Ben believed that including work for government agencies would be an adequate substitute.

- **Technical Experts:** Although M-Global's London and Munich offices had no experts to coordinate large-scale construction, Ben knew the company could bring in experts from the United States. Admittedly, it would be more expensive to import talent—plus these high-salary individuals would be able to visit the site only periodically. Yet this arrangement satisfied the minimum technical requirements in the industry. Ben felt comfortable about including the experts' résumés in the proposal and highlighting their experience, without mentioning the fact that they did not work out of the German office. That fact seemed to him to be an internal matter.
- **Costs:** When Ben calculated the tentative cost for the project, he was surprised that the figure was so high. The extra personnel costs previously noted were apparently part of the problem. But Ben also thought some costs might have been overstated because M-Global was not used to bidding on such jobs in Germany. (M-Global's corporate accounting manager had done the tentative cost estimate.) Believing the figures were inflated, Ben cut about 10 percent from personnel costs mentioned in the draft. He thought M-Global would perform more efficiently than the accounting manager had estimated.
- **Proposal Strategy:** Ben wanted to come on strong in the executive summary with what he saw as the benefits M-Global could offer. He focused on three main selling points: (1) availability of a nearby office and lab in Munich for project coordination, (2) experience with other large construction jobs in the United States, and (3) M-Global's history of good working relationships in Germany and the rest of Europe.
- **Personal Contacts:** Ben happened to have a close friend at a former firm (not a competitor of M-Global's) who had gone to college with an official now on the Black Forest University board of directors. Ben wanted to use this "friend of a friend" connection to get a meeting with the board member, perhaps to find out more about the project. He might then get the chance to give part of the "M-Global story" that was not revealed in the proposal.

Questions and Comments for Discussion

After Ben completed the draft, it was reviewed first by J. R. Link, one of the top technical experts at the Baltimore branch and an old-timer with M-Global. J. R. met with Ben and expressed reservations about the project and about the proposal. The questions that follow reflect their conversation, as well as some other concerns about the proposal:

1. J. R. first wondered why Sadler had proposed on the job in the first place. Given that such proposals cost M-Global \$10,000 or \$15,000 to write, why did he bother with the Black Forest job when M-Global didn't have experience on large construction jobs in Germany? Most projects out of the Munich office were environmental studies. Wouldn't it have been a long shot to get the Black Forest job? And shouldn't M-Global managers have some ethical concern about trying to get a job when they knew they didn't have the experience that other competing firms probably had (or at least should have)?

What is your view of the practical and ethical concerns raised by J. R.?

2. J. R. also questioned whether Ben was being deceptive about how technical experts would be provided for the project. If the résumés were to be included in the proposal, shouldn't M-Global also mention that these experts resided in the United States? This matter didn't seem to be an "internal" one, as Ben stated.

What's your view of the way Ben handled the issue of outside experts from the United States? How much of this sort of information must be included in a competitive proposal?

3. Ben had an honest disagreement about the calculation of costs by the accounting manager. He may have been right or wrong in his reservations about the accountant's estimate. Putting this point aside, was it procedurally correct for him, as proposal writer, to make changes in the costs submitted by an adviser? Why or why not? Was it ethical?
4. Ben chose a direct approach to proposal content by placing main selling points first (in the executive summary). Do you think this strategy is appropriate in all cultures? Why or why not? (If possible, do some research on technical communication in Germany, Japan, or China before answering the question.)
5. As noted earlier, Ben decided to pursue a connection he had on the board of directors of Black Forest University. Was this strategy ethical? Would it work? What are some possible results of such a strategy?
6. Have two students in the class conduct a role-play of the conversation between J. R. Link and Ben Sadler. The students can use the information just presented and any additional points that conceivably could be put forth by these two men, considering the sketches provided of them.

Write About It

Assume the role of J.R. Before your meeting with Ben, you were contacted informally by Kurt Fleisch about your concerns about the Black Forest proposal. Now that you and Ben have had a chance to talk, write a memo to Kurt explaining how you feel about the issues raised in the discussion questions.

Collaboration at Work Proposing Changes in Security

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Assume your school is reviewing all issues related to (1) the safety of students, faculty, and staff and (2) the security of equipment. This review has not been triggered by any particular event or problem; it is simply a periodic evaluation of conditions on campus. One step in the process has been

to request that five consulting firms visit campus, spend a day on a field investigation, and then submit a proposal that lists specific work to be done and the cost of the work. Your school will choose one firm to do the job.

Team Assignment

Assume your team is one of five consulting firms submitting a proposal. As a preliminary step, team members toured the campus, recorded observations, and collected initial ideas to propose. After discussing your observations, agree on three to five main changes to propose to the school's administration. (As an alternative, your team could focus on proposing three to five changes in one particular activity, building, or area of campus.)

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?

EXECUTIVE SUMMARY

This proposal outlines features of a custom-made accessory designed for today's sailors—whether they be racers, cruisers, or single-handed skippers. The product, Teak Cam Cleat Spacers, has been developed for use primarily on the Catalina 22, a boat owned by many customers of the 10 Bosun's stores. However, it can also be used on other sailboats in the same class.

The predictable success of Teak Cam Cleat Spacers is based on two important questions asked by today's sailboat owners:

- Will the accessory enhance the boat's appearance?
- Will it make the boat easier to handle and therefore more enjoyable to sail?

This proposal answers both questions with a resounding affirmative by describing the benefits of teak spacers to thousands of people in your territory who own boats for which the product is designed. This potential market, along with the product's high profit margin, will make Teak Cam Cleat Spacers a good addition to your line of sailing accessories.

2. Analysis: Conclusion

Review the following conclusion section from a formal, solicited sales proposal. Discuss its tone and page design. Are they appropriate to a formal solicited proposal? Is the use of a numbered list effective?

Conclusion

Why should a marine supply dealer consider carrying Teak Cam Cleat Spacers? This product satisfies two common criteria of sailboat owners today: It enhances the appearance of any sailboat, and it makes the boat easier to handle. The potential success of this product is based on its ability to meet these criteria and the following features and benefits:

1. It is practical, allowing quick, one-handed cleating.
2. It is ideally suited for a variety of sailors, whether they are racing, cruising, or sailing single-handedly.
3. It is a high-quality, handcrafted product that enhances the appearance of any sailboat.
4. It is a product that benefits the dealer by making a valuable addition to her or his inventory. It complements existing sail accessories and satisfies a customer need.
5. It is geared toward a sizable potential market. Today there are thousands of sailboats in the class for which this accessory is designed.
6. It is affordably priced and provides a good profit margin.

3. Analysis, M-Global context: Solicited Proposal

Review the solicited proposal that follows, submitted by MainAlert Security Systems to the M-Global, Inc., office in Atlanta. Evaluate the effectiveness of every section of the proposal.

- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Executive summary

Review the following executive summary for a formal, solicited sales proposal. Evaluate its effectiveness as an overview of the proposal.

200 Roswell Road
Marietta Georgia 30062
(770) 555-2000

September 15, 2012

Mr Bob Montrose
Operations Manager
M-Global Inc
3295 Peachtree Road
Atlanta Georgia 30324

Dear Bob,

Thank you for giving MainAlert Security Systems an opportunity to submit a proposal for installation of an alarm system at your new office. The tour of your nearly completed office in Atlanta last week showed me all I need to know to provide you with burglary and fire protection. After reading this proposal, I think you will agree with me that my plan for your security system is perfectly suited to your needs.

This proposal describes the burglary and fire protection system I've designed for you. This proposal also describes various features of the alarm system that should be of great value. To provide you with a comprehensive description of my plan, I have assembled this proposal in five main sections:

1. Burglary Protection System
2. Fire Protection System
3. Arm/Disarm Monitoring
4. Installation Schedule
5. Installation and Monitoring Costs

BURGLARY PROTECTION SYSTEM

The burglary protection system would consist of a 46-zone MainAlert alarm control set, perimeter protection devices, and interior protection devices. The alarm system would have a strobe light and a siren to alert anyone nearby of a burglary in progress. Our system also includes a two-line dialer to alert our central station personnel of alarm and trouble conditions.

Alarm Control Set

The MainAlert alarm control set offers many features that make it well suited for your purposes. Some of these features are as follows:

1. Customer-programmable keypad codes
2. Customer-programmable entry/exit delays
3. Zone bypass option
4. Automatic reset feature
5. Point-to-point annunciation

I would like to explain the point-to-point annunciation feature, because the terminology is not as self-explanatory as the names of the other features. Point-to-point annunciation is a feature that enables the keypad to display the zone number of the point of protection that caused the alarm. This feature also transmits alarm-point information to our central station. Having alarm-point information available for you and the police can help prevent an unexpected confrontation with a burglar.

Interior and Perimeter Protection

The alarm system I have designed for you uses both interior and perimeter protection. For the interior protection, I plan to use motion detectors in the hallways. The perimeter protection will use glass-break detectors on the windows and door contacts on the doors.

There are some good reasons for using both interior and perimeter protection:

1. Interior and perimeter protection used together provide you with two lines of defense against intrusion.
2. A temporarily bypassed point of protection will not leave your office vulnerable to an undetected intrusion.
3. An employee who may be working late can still enjoy the security of the perimeter protection while leaving the interior protection off.

Although some people select only perimeter protection, it is becoming more common to add interior protection for the reasons I have given. Interior motion detection, placed at carefully selected locations, is a wise investment.

Local Alarm Signaling

The local alarm-signaling equipment consists of a 40-watt siren and a powerful strobe light. The siren and strobe will get the attention of any passerby and unnerve the most brazen burglar.

Remote Alarm Signaling

Remote alarm signaling is performed by a two-line dialer that alerts our central station to alarm and trouble conditions. The dialer uses two telephone lines so that a second line is available if one of the lines is out. Any two existing phone lines in your office can be used for the alarm system. Phone lines dedicated to alarm use are not required.

FIRE PROTECTION SYSTEM

My plan for the fire protection system includes the following equipment:

1. A 10-zone fire alarm panel
2. Eight smoke detectors
3. Water flow switch
4. Water cutoff switch
5. Four Klaxon horns

The 10-zone fire alarm panel will monitor one detection device per zone. Because each smoke detector, the water flow switch, and the water cutoff switch has a separate zone, the source of a fire alarm can be determined immediately.

To provide adequate local fire-alarm signaling, this system is designed with four horns. Remote signaling for the fire alarm system is provided by the MainAlert control panel. The fire alarm would report alarm and trouble conditions to the MainAlert control panel. The MainAlert alarm control panel would, in turn, report fire alarm and fire trouble signals to our central station. The MainAlert alarm panel would not have to be set to transmit fire alarm and fire trouble signals to our central station.

ARM/DISARM MONITORING

Because 20 of your employees would have alarm codes, it is important to keep track of who enters and leaves the office outside of office hours. When an employee arms or disarms the alarm system, the alarm sends a closing or opening signal to our central station. The central station keeps a record of the employee's identity and the time the signal was received. With the arm/disarm monitoring service, our central station sends you opening/closing reports on a semi-monthly basis.

INSTALLATION SCHEDULE

Given the size of your new office, our personnel could install your alarm in three days. We could start the day after we receive approval from you. The building is now complete enough for us to start anytime. If you would prefer the construction to be completed before we start, that would not present any problems for us. To give you an idea of how the alarm system would be laid out, I have included an attachment to this proposal showing the locations of the alarm devices.

INSTALLATION AND MONITORING COSTS

Installation and monitoring costs for your burglary and fire alarm systems as I have described them in this proposal are as follows:

- \$8,200 for installation of all equipment
- \$75 a month for monitoring of burglary, fire, and opening/closing signals under a two-year monitoring agreement

The \$8,200 figure covers the installation of all the equipment I have mentioned in this proposal. The \$75-a-month monitoring fee also includes opening/closing reports.

CONCLUSION

The MainAlert control panel, as the heart of your alarm system, is an excellent electronic security value. The MainAlert control panel is unsurpassed in its ability to report alarm status information to our central station. The perimeter and interior protection offer complete building coverage that will give you peace of mind.

The fire alarm system monitors both sprinkler flow and smoke conditions. The fire alarm system I have designed for you can provide sufficient warning to allow the fire department to save your building from catastrophic damage.

The arm/disarm reporting can help you keep track of employees who come and go outside of office hours. It's not always apparent how valuable this service can be until you need the information it can provide.

I'll call you early next week, Bob, in case you have any questions about this proposal. We will be able to start the installation as soon as you return a copy of this letter with your signature in the acceptance block.

Sincerely,

Anne Rodriguez Evans

Anne Rodriguez Evans

Commercial Sales

Enc.

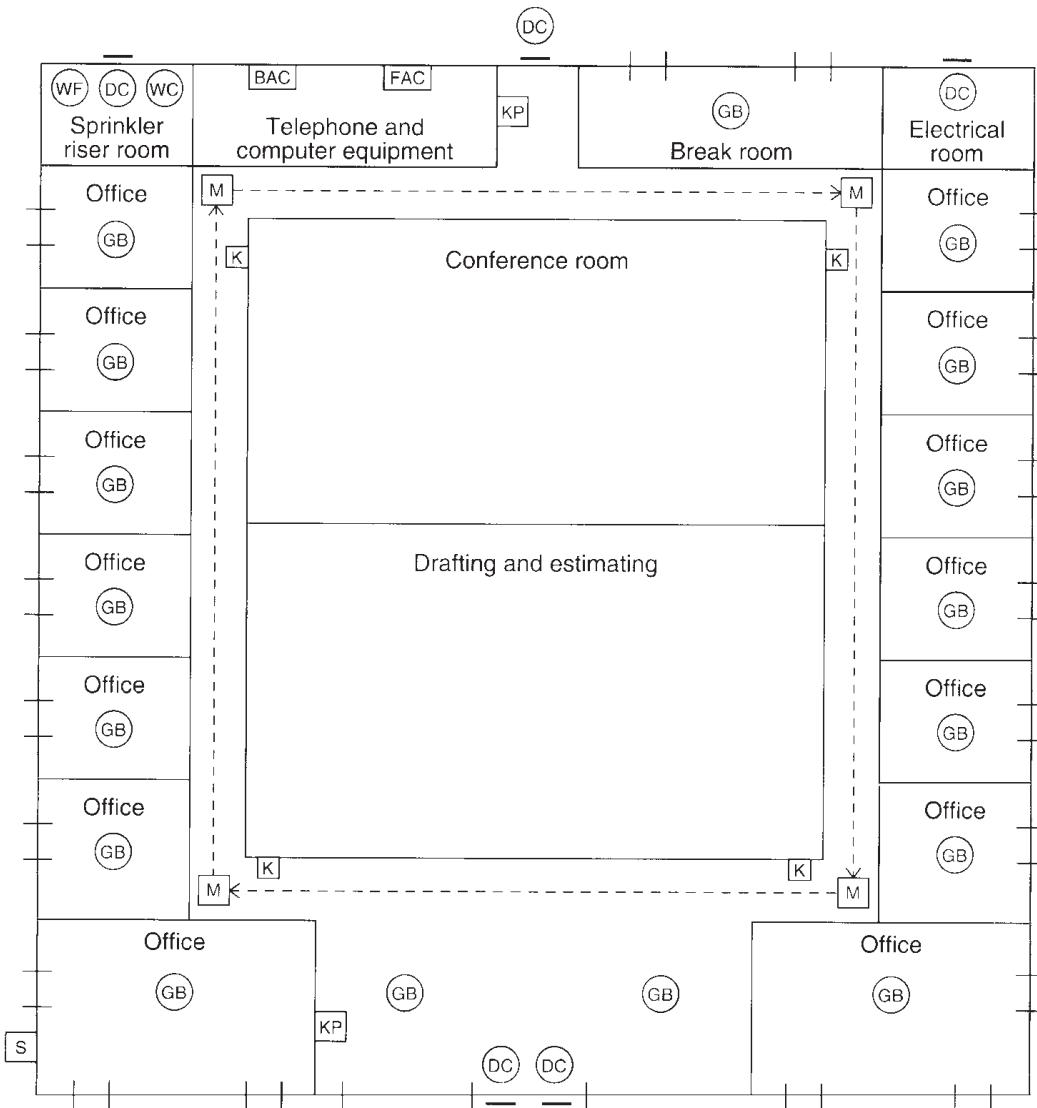
ACCEPTED by M-Global, Inc.

By: _____

Title: _____

Date: _____

ALARM SYSTEM LAYOUT FOR M-GLOBAL, INC.-ATLANTA, GA



LEGEND

[BAC] Burglar alarm control
[FAC] Fire alarm control

- | | | | |
|------|-----------------|------|----------------------|
| [K] | Klaxon horn | [WC] | Water cutoff switch |
| [KP] | Keypad | [WF] | Water flow switch |
| [M] | Motion detector | [GB] | Glass-break detector |
| [S] | Siren | [DC] | Door contact |

4. Analysis, M-Global Context: Boilerplate

Review the project sheets in Model 12–6 on pages 471–478. Which projects sheets should be included as appendixes for a proposal for a construction project? For testing of water or soil for environmental cleanup? For training? For equipment design and installation?

5. Analysis: Grant RFPs

Choose a type of project or a local organization that might be eligible for grants, such as a local museum, animal shelter, or social service agency. Spend some time browsing and searching two useful grant RFP portals: www.grants.gov and www.foundationcenter.org. Be prepared to report on the kinds of grants listed on those Web sites and the requirements to meet those grants. Describe the mission of one of the granting organizations.

6. Analysis: White Paper

Search the Internet for a white paper on a subject related to your major, a class that you are taking, or a technology that interests you. You may need to request the white paper and provide an e-mail address. (Many white papers are available for free, so do not pay for one.) Identify the intended audience. Evaluate the white paper for its usefulness to the reader as an introduction to an innovative practice or product.

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

7. Practice, M-Global Context: Introductory Summary

For this assignment, select one of the projects in Model 12–6 at the end of this chapter. Now assume that you were responsible for writing the proposal that resulted in the project. In other words, work backward from the project to the informal proposal that M-Global used to get the work. Write a short introductory summary for the original proposal. Focus on the main reason you think the client would have for hiring M-Global. If necessary, invent additional information to complete this assignment successfully.

8. Practice: Needs Section

As this chapter suggests, informal proposals—especially those that are unsolicited—must make a special effort to

establish the need for the product or service being proposed. Assume that you are writing an informal proposal to suggest a change in procedures or equipment at your college. Keep the proposal limited to a small change; you may even see a need in the classroom where you attend class (audiovisual equipment? lighting? heating or air systems? aesthetics? soundproofing?). Write the needs section that would appear in the body of the informal proposal.

9. Practice, M-Global Context: Conclusion or Closing

For this assignment, as with Assignment 7, select a project from the project sheets in Model 12–6 at the end of this chapter. Assume that you were the M-Global employee responsible for writing the informal proposal that resulted in the work described in the project. Write an effective conclusion or closing for the proposal.

10. Practice, M-Global Context: Boilerplate

For this assignment, review the information about the history of M-Global in Model 1–1 on pages 25–34. Assume that you are a member of “The Pub,” the Publications Development team at M-Global. Write a one-paragraph history of M-Global that could be used in all formal M-Global proposals. Remember that this document will be boilerplate and will be used in all of the company’s proposals, whether they are for construction projects, environmental projects, training, equipment development, or some other kind of project. Thus, this history must be general enough to be used in any of these documents, but it should emphasize M-Global’s experience and expertise.

11. Practice, M-Global Context: Unsolicited Proposal

Use your past or present work experience to write an unsolicited proposal suggesting a change at M-Global, Inc. Possible topic areas include changes in operating procedures, revisions in company policies, additions to the workforce, alterations of the physical plant, or purchase of products or services.

- Place yourself in the role of an employee of M-Global. The proposal may be solicited or unsolicited—whichever best fits your situation.
- Make sure that your proposal topic is limited enough in scope to be covered fully in an informal proposal with memo format.
- Choose at least two levels of readers who could conceivably be decision makers about a proposal such as the one you are writing—for example, branch or corporate managers. For information about branch and corporate managers at M-Global, review Model 1–1 on pages 25–34.

12. Practice, M-Global Context: Solicited Proposal

Select a product or service (1) with which you are reasonably familiar (on the basis of your work experience, research, or other interests) and (2) that could conceivably be purchased by a company like M-Global.

- Put yourself in the role of someone representing the company that makes the product or provides the service.
- Assume that you have an ongoing relationship with Janis Black, a purchasing agent for M-Global. Janis has let you know that M-Global is looking for a new source for the product or service.
- Write an informal sales proposal in which you propose purchase of the product or service by M-Global.

13. Practice, M-Global Context: Grant Proposal

Write a grant proposal in which you propose an improvement in (1) the facilities used by a local nonprofit organization or (2) the facilities of a park, school, or other civic property.

- Select a topic that is reasonably complex and yet one about which you can locate information.
- Place yourself in the role of a member of the community, who is proposing the change.
- Assume that you are applying to a program offered by M-Global to help improve facilities for local nonprofit organizations and local governments. The proposed program must include renovation or construction of physical facilities. M-Global will provide grants of up to \$5,000, and will also provide site testing and construction design expertise.

14. Practice: Unsolicited Proposal

Choose Option A or B. Your instructor may ask that you submit your subject for approval before you begin writing your proposal.

Option A: School Related

- Write a proposal in which you propose a change in some feature of the school that you attend or have attended.
- Choose from topics such as operating procedures, personnel, curricula, activities, and physical plant.
- Select an audience that would actually make decisions on such a proposal.
- Write an informal or formal proposal, as seems appropriate for the topic and setting.

Option B: Work Related

- Write a proposal in which you propose a change in an organization where you currently work, or where you have worked in the past.

- Choose a topic about which you have work experience, research knowledge, or keen interest. Make sure you have good sources of information.
- Write an informal or formal proposal, as seems appropriate for the topic and setting.

15. Practice: White Paper

Assume the role of a marketing specialist for College Success 1-2-3, a company that publishes study guides and sells tutoring services online. Create a white paper that is designed for college students in a general studies class that you are taking or have taken. The white paper should offer basic study tips for an introductory, general study class in a specific subject (such as composition, biology, history, or Spanish).

16. Ethics Assignment

Reread this chapter's "Communication Challenge" and its "Questions and Comments for Discussion." Put yourself in the position of Jim McDuff, company president. You've just had a phone call from J. R. Link, your old friend and colleague, who proceeds to relate his concerns about Ben Sadler. Put bluntly, J. R. thinks you should fire Sadler immediately before he does serious damage to the firm. You indicate you'll think about it, talk to Sadler, and then call J. R. to tell him your decision. If you were Jim McDuff, how would you handle the conversation with Sadler? (Remember why you hired him.) Would you fire him, praise him, or seek to moderate or redirect his efforts? Explain your position in detail in an essay.

17. International Communication Assignment

- Assume you are a consultant asked to propose a one-week training course to one of M-Global's offices outside the United States. (See the map on page 25 of Model 1-1 for a list of these seven locations.) Most or all seminar participants are residents native to the country you choose—not U.S. citizens working overseas.
- Choose a seminar topic familiar to you—for example, from college courses, work experience, or hobbies—or one that you are willing to learn about quickly through some study.
- Research work habits, learning preferences, social customs, and other relevant topics concerning the country where the M-Global office you have chosen is located.
- Write M-Global, Inc., an informal or a formal proposal that reflects your understanding of the topic, your study of the country, and your grasp of the proposal-writing techniques presented in this chapter.

Optional Team Approach: If this assignment is done by teams within your class, assume that members of your team work for a company proposing training seminars at M-Global offices around the world. Each team member has responsibility for one of M-Global's non-U.S. offices.

Different sections of the proposal will be written by different team members, who may be proposing the same seminar for all offices or different seminars. Whatever the case, the document as a whole should be unified in structure, format, and tone. It will be read by (1) the vice president for international operations at the corporate office, (2) the vice president for research and training at the corporate office, and (3) all six branch managers in Venezuela, England, Saudi Arabia, Kenya, Germany, and Japan.



18. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Many educational institutions sponsor credit or noncredit service projects that permit participating students to learn new skills while also helping people in a near or distant location. Determine the type of service learning activities, if any, that are available through your college or university. Then write a proposal for a new service-learning project that you believe would fit your campus and provide an important service to your local community, another domestic location, or an international setting. Direct your proposal to individuals who actually would consider such a proposal on your campus, and cover as much information as possible that would help them move to the next step in the decision-making process.

Memo

To: Jack Conners

From: Walker Smith

Date: July 17, 2012

Subject: Construction Site Safety Training

Clearly identifies goal of the proposal.

Because short, informal, and internal, does not require heading for introduction section.

Draws attention to important data with table.

Ends introduction section with two main advantages.

Identifies problem and solution sections clearly by headings.

Several of the crew supervisors have mentioned that the accident rate at our job sites seems to be increasing. When I checked our records to see if their impressions were correct, I learned that over the past six months we have had a troubling increase in accidents over previous six-month periods. (See the table below.) That record is unacceptable.

Time period covered	Minor accidents (first aid at job site)	Major accidents (emergency room visit)
July 2010–Dec. 2010	10	0
Jan. 2011–June 2011	12	1
July 2011–Dec. 2011	14	0
Jan. 2012–June 2012	26	4

Although the accidents were generally minor, clearly we need to improve job site safety before someone is seriously hurt. Of course, we want to avoid the costs related to these injuries, but we also owe it to our employees to provide a safe work environment. We want to continue to be proud of our safety record.

Construction site safety problems

As the table above shows, a review of our job site accident reports indicates that accidents have been increasing, although the number of employees working at our construction sites has not increased. The only conclusion is that safety practices are not being followed appropriately.

I considered several possibilities for the increase in the number of accidents we have been experiencing:

Equipment failure? Our equipment is in good shape. We have a clear schedule for maintaining equipment, and the process for repairing and replacing equipment seems to be working well. Faulty equipment is not the cause of most accidents.

Low-quality materials? Although some of our clients have tried to cut costs by using lower-grade materials, we have generally been able to convince them that using higher-quality building materials is a long-term investment. Even if we were using lower-grade materials, none of the accident reports suggest that materials were to blame.

Shortcuts to save time? This may be a contributing factor. We have been trying to complete jobs more quickly to save money for our clients, or to avoid paying fines for missing deadlines. Although we may want to revisit our schedule

plans, there are other considerations. Crew supervisors need to make sure that safety is not sacrificed for time savings. Also, to save time, we have adopted some new techniques and equipment that our employees are not familiar with. We have relied on on-the-job learning, which is clearly not working.

Makes conclusion from data clear.

Unskilled employees? During the past six months, we have hired 21 new employees to work construction. Many of these are recent high school or trade school graduates we have hired as part of our program to encourage more people to enter the construction trades. That means that almost 30 percent of our on-site workers are new to our company, and most of them are new to construction. We have assumed that the employee handbook we give them, along with instruction from their unions and from our more experienced employees, would be enough. Clearly, that hasn't been the case.

Offers reader options and clearly leaves final decision to him.

Solution: Training program offered by M-Global

After considering several options, including requiring attendance at safety seminars and developing our own safety training program, I think that the construction safety program offered by the local offices of M-Global is our best solution.

I am familiar with M-Global's program through its projects where we have worked as subcontractors. I have also asked people who have been through M-Global's construction safety program, and they recommend it. Their accident rates have dropped as much as 60 percent after the training.

Last week, I spoke to Lou Tia, who runs the M-Global construction safety program here in Cleveland. She said that they can offer a two-part program for us. The first part of the program includes job site visits to observe how we work, what safety precautions we have in place, and how well employees are following safety practices. The second part is a series of workshops. For 20 employees (the number we can comfortably fit into the break room at the main equipment lot), the cost would be \$750 per session—a rate she can give us because we have a business relationship with M-Global. We can also negotiate for a contract at a yearly rate. This would cover regular safety training sessions and site safety audits. Because we have been hiring so many new employees, we might want to consider this option.

In the conclusion, emphasizes importance of project to the financial success and ethical practices of the organization.

Conclusion

There are good business and ethical reasons for starting a formal safety program at Conners Construction. Keeping our accident rate low saves us money on worker's comp, and our good record in the past has kept our insurance rates low. We definitely don't want to let this accident trend continue, or we may be facing major medical costs, and even fines, at some point in the future. At the same time, Conners Construction has always been proud to be thought of as a great company to work for. This reputation has allowed us to hire reliable, top-quality employees, and our safety record has made us a leader in the industry.

If you would like to talk more about our proposal, just let me know. I will be happy to set up a meeting with Lou Tia of M-Global.

Invites future contact.



3450 Jones Mill Road
Neming Georgia 30092 (404) 555-8438

January 15, 2012

Mr David Barker
Technical Communication Manager
RBP Software
PO Box 123456
Atlanta Georgia 30339

Dear David:

I enjoyed meeting with you and learning about your new General Ledger software product. Because you require a March release, I can understand why you want to choose an approach to documentation and get the project started.

This proposal describes a strategy for completing the documentation in the 10 weeks between now and your March deadline. Included are these main sections:

1. Selection of the Best Format
2. Adoption of a Publication Plan
3. Control of Costs
4. Conclusion

Shows understanding of client's main concern—scheduling.

Asserts ability to meet scheduling need.

Gives helpful overview of sections to follow.

Uses list to itemize important points—that is, the basis for his assessment.

SELECTION OF THE BEST FORMAT

I think your customers will be best served by a combined installation and user's guide. It uses a functional approach to show how General Ledger works. My assessment results from these completed steps:

1. Interviews with support staffers responsible for providing technical support to customers using the company's other accounting products
2. Interviews with programmers developing General Ledger, who have an intimate knowledge of how it works
3. Conversations with you that clarified your organization's general expectations for the documentation

The assessment is also based on my experience developing documentation for other products. I strive to use clear, concise prose and ample white space to provide a visually appealing text. The text will be enhanced and supplemented with graphics depicting General Ledger's feature screens. The screens themselves will be captured directly from the program and inserted into the text by your staff using your in-house publishing system.

David Barker

January 15, 2012

Page 2

This approach will yield a thorough and easy-to-use document that will allow your customers to take full advantage of General Ledger's many innovative features.

As you know, writing documentation is a cooperative effort. Each member of the General Ledger product team will play a key role during the development process. To keep us all on track, I have put together a publication plan that shows how the project will progress from beginning to end.

ADOPTION OF A PUBLICATION PLAN

The publication plan shows how we can have the documentation ready for General Ledger's March unveiling. The four major steps are described here.

Define the Project

Much of this work has already been accomplished as a result of doing the research for this proposal. As a preliminary step, we will meet and review the project's scope and priority within the organization. We will detail the resources that will be available to complete the project. Most important, we will look at expectations: management's, yours, and the customers'.

Develop a Schedule

This step is the key to the publication process and ensures a common understanding of what has to be done and in what period of time. It has three basic steps:

- We define the tasks that are part of the project.
- We define the resources we have available to deal with the identified task.
- We assign tasks to the most appropriate individuals.

Manage the Project

What is good project management? In this plan, good management is essentially good communications. In the first two steps listed above, we define the information that project members must have to understand how the document will be produced and their roles in that process. Ongoing management of the project will be a matter of keeping the channels of communication open.

Perform a Postmortem

The last step is an evaluation of the effectiveness of the publication plan. It provides the opportunity for us to learn how to do future documentation better. It is important to look back at what went right and what went wrong during a project and to share this information with our client. You will get a complete postmortem report from me after the project is completed.

Continues emphasis on benefits to reader.

Leads in smoothly to next section.

Starts with overview of sections to follow.

Organizes paragraph around three main points.

Uses bulleted list for primary steps in project.

Introduces section with question to attract attention to passage.

David Barker
January 15, 2012
Page 3

Shows interest in following through.

→ Throughout the project, this management system will guide us in completing General Ledger's documentation on time and within budget.

Places benefit in heading.

CONTROL OF COSTS

Good documentation helps to sell software. By working smart, we can develop documentation that will enhance General Ledger's appeal, and we can do it at a reasonable cost.

Shows he can meet project criteria—but also clarifies the assumptions he is making.

My experience in this area and the management system described here will reduce waste and duplication of effort, two factors that affect cost. These savings mean I can bring the project in within the 200-hour cap you mentioned.

This estimate assumes that three of the program's four main features are in a complete, or "fixed," state and that the fourth main feature is about 50 percent complete. This estimate also assumes that all programming will be finished by March 5, which will allow time to put the guide through final review and production.

Returns to main concern of reader—scheduling.

CONCLUSION

The functional approach, which describes a product in terms of its operations, is the documentation format that will best serve General Ledger customers. Your goal of having the documentation ready by March will be aided by adopting a four-step publication plan. The plan will define the strategy for writing the documentation and will help keep costs down.

Retains control of next step.

I'll call you in a few days, David, to answer any questions you might have about this proposal. I can begin work on the documentation as soon as you sign the acceptance block and return a copy of this letter to me.

Sincerely,

Steven Nickels

Steven Nickels
Documentation Specialist

Includes acceptance block to simplify approval process.

Enclosure

→ ACCEPTED by RBP Software

By: _____

Title: _____

Date: _____



Hydrotech Diving and Salvage Inc
Industrial Complex
Belle Chasse Louisiana 70433

February 25, 2012

Peter Hancock
Purchasing Manager
M-Global Inc.
127 Rainbow Lane
Baltimore MD 21201

Dear Mr. Hancock:

Your February 1, 2012, RFP details the need for improved hull maintenance on your excelsior-class drillships. Traditional approaches to hull cleaning, as you know, have become costly and inefficient. This proposal offers Hydrotech's innovative and affordable solution to M-Global's maintenance needs.

Recent technology has spurred development of mobile hull-maintenance systems that can be used on anchored vessels almost anywhere. This equipment, used regularly, will greatly reduce the accumulation of marine growth. As a result, your ships will cruise faster and more efficiently.

I'll give you a call next week to answer any questions you may have about how Hydrotech can improve hull maintenance at M-Global.

Sincerely,

A handwritten signature in black ink that reads "Stephen B. Wilson".

Stephen B. Wilson
Underwater Maintenance Supervisor

sf

Refers briefly to problem.

Emphasizes Hydrotech's main selling point: an innovative cleaning system.

Stays in control of proposal process by saying he will call.

Mentions benefit in title:
increased efficiency.

INCREASED EFFICIENCY FOR M-GLOBAL, INC.

Prepared by
Hydrotech Diving and Salvage, Inc.

for

Peter Hancock

Purchasing Manager

M-Global, Inc.

February 25, 2012

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Uses white space and indentation to make contents page highly readable.

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EXECUTIVE SUMMARY

Marine growth on hulls can reduce the speed of ships, increase fuel consumption, and cause more frequent hull repairs. Excelsior-class drillships have a particularly large hull surface area below the waterline. If marine growth is allowed to accumulate, excessive drag will occur between the hull and the water.

The removal of marine growth usually is expensive and time-consuming. Hydrotech, however, offers a hull maintenance system that provides a more convenient and economical way to clean and preserve oil tanker hulls. The Seasled Hull Maintenance System uses a diver-operated, self-propelled, scrubbing and painting device that can be brought directly to your anchored vessels. The primary benefits to your company include the following:

1. Bottom cleaning and preservation completed in about 100 hours, 30 hours less than most conventional cleaning systems; and
2. Hull maintenance done at times and locations convenient for you.

Because the Seasled System reduces the cost of each cleaning, you can now afford annual hull maintenance and semiannual inspections. This regular attention will contribute significantly to the average cruising speed and fuel efficiency of your ships.

Provides overview of problem ...

... and solution.

Focuses on main benefits to client.

Uses style that appeals to busy management readers—short paragraphs, numbered points, no technical jargon.

Summarizes entire proposal.

INTRODUCTION

Repeats background information for readers who start with introduction.



Recent technology has made many contributions to the petroleum-shipping industry. A new method of hull cleaning and repair has been developed that offers many advantages to oil tanker operators. We believe this new method will contribute significantly to the success and prosperity of M-Global. Maintaining clean hulls increases ship cruising speed and fuel efficiency.

Shows understanding of problem mentioned in RFP but doesn't belabor it, as client already knows problem exists.



Purpose

This proposal describes the benefits you receive using the new Seasled Hull Maintenance System. Your company will save time and money by using this service regularly for all excelsior-class drillships.

Shows that Hydrotech has done its homework in preparing proposal.



Description of Hull Maintenance Problem

M-Global operates a fleet of six excelsior-class drillships engaged in worldwide exploration for petroleum. Your vessels travel to oceans and ports around the world, where many forms of marine growth collect on ships' hulls. Because the excelsior-class drillship has a large hull surface area below the waterline, even light marine growth causes excessive drag between the hull and the water.

Furthermore, if marine growth is allowed to accumulate for an extended period, the hull will deteriorate. Marine growth results in slower ship speed, increased fuel consumption, and more frequent major hull repair.

Scope

This proposal reflects our thorough research and more than ten years' experience on hull maintenance and cleaning for tankers. Besides relying on our own experience, we have consulted experts at firms such as the following:

1. Yamamoto Shipbuilding Service Consultants
Kure, Japan

2. Marine Corrosion Consultants

Belle Chasse, Louisiana

3. Ocean Science Center

Key West, Florida

The result has been the development of the Seasled System. This proposal explains how using Seasled reduces cleaning time while maintaining safety-conscious crew procedures. We also cover features of scheduling as well as the backgrounds of key people who will work on the program. Then you will find a cost estimate, per ship, for both maintenance and inspection procedures.

Proposal Format

For ease of reference, this proposal is divided into these three major sections:

Refers to remaining sections so readers don't have to consult contents.



1. **Seasled: How It Will Work for M-Global, Inc.**—which describes the equipment, crew, and procedures
2. **Schedule and Qualifications**—which provides information on schedules, services, and personnel
3. **Reduced Costs Using Seasled**—which provides information on the cost of our hull-cleaning service

Gives brief overview of subsections to follow.



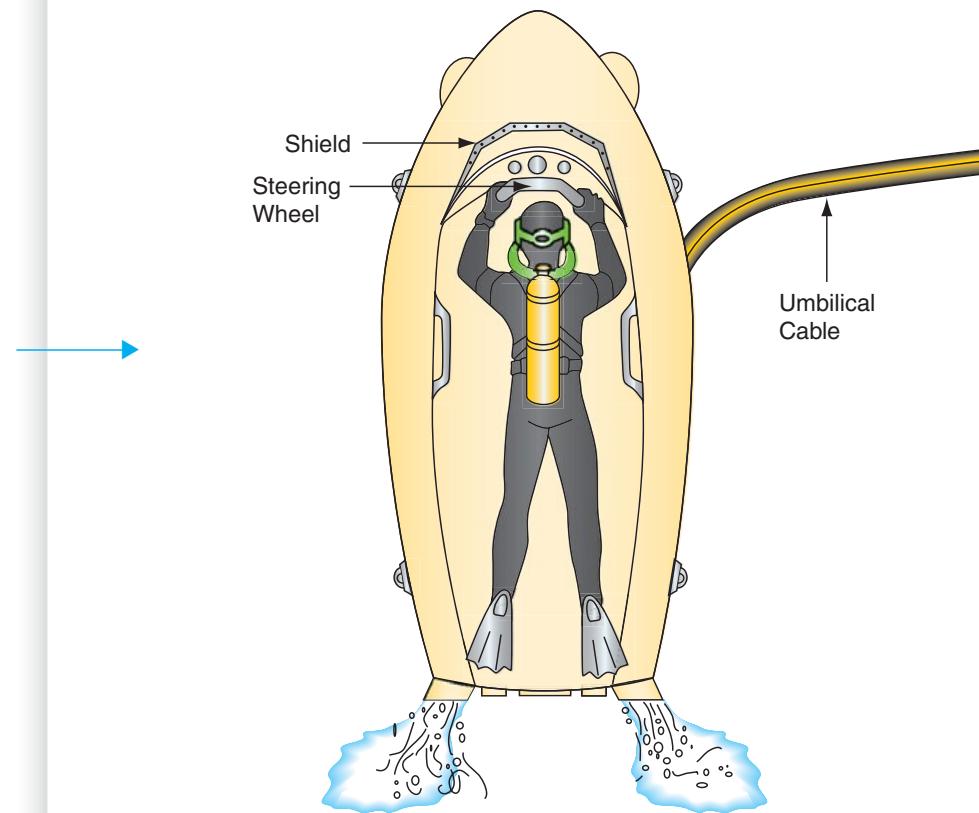
SEASLED: HOW IT WILL WORK FOR M-GLOBAL, INC.

This section describes the equipment and procedure used for Seasled hull maintenance of the excelsior-class drillship. The main services proposed are semiannual inspections and annual cleanings (which include spot painting of bare or badly worn sections).

Shows that Hydrotech has done its homework in preparing proposal.

Time-Saving Equipment

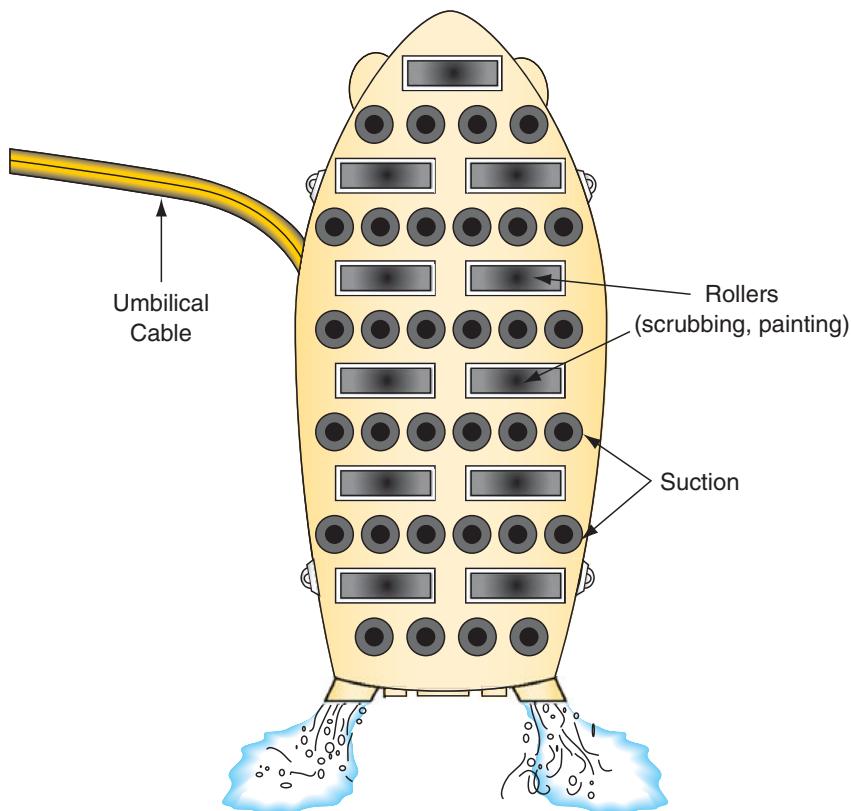
Recent advances in underwater technology have yielded specialized equipment that has revolutionized the ship maintenance industry. The Seasled Hull Maintenance System is a self-propelled, diver-operated device capable of cleaning 400 square feet of hull surface per hour. (See Figures 1, 2, and 3 for top, bottom, and side views of this device.)



Shows, with comments and figures, that Seasled incorporates latest technology and that Hydrotech helped develop it.

■ **Figure 1** ■ Seasled: Top view

Hydrotech Diving and Salvage, Inc., helped develop the Seasled System and has used it successfully for the past two years. The system is quite reliable, as well as extremely efficient in removing marine growth.



■ **Figure 2** ■ Seasled: Bottom view

As Figures 1 and 2 show, Seasled is designed to scrape and then paint the worn portions of the hull. All power and materials are transmitted to the sled through an umbilical to the tanker. It's simply a matter of lowering Seasled and the operator into position and then letting the device do its work.

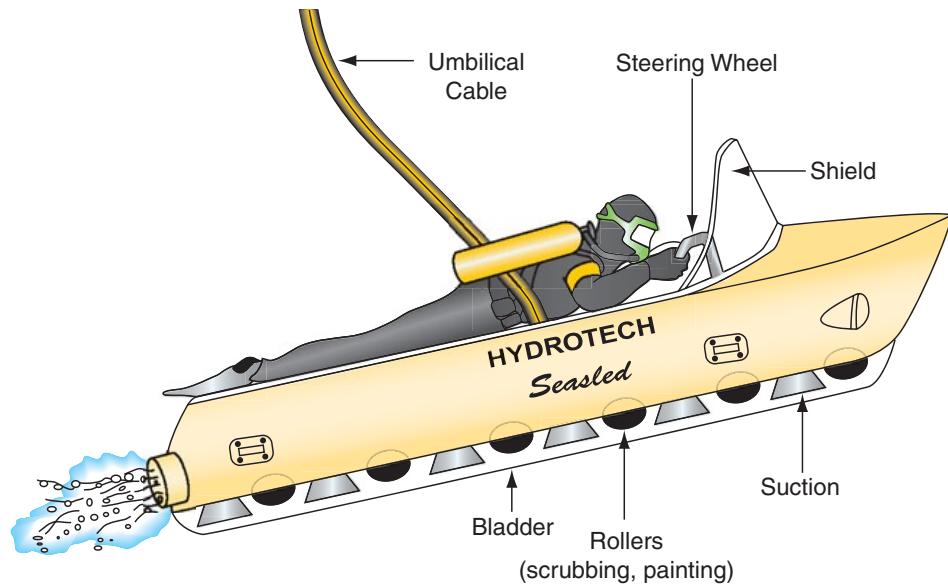


Figure 3 Seasled: Side view

■ **Figure 3 ■ Seasled: Side view**

Mobility That Makes Sense

Mobility is the real advantage of Seasled. Any scheduled layover of your drillships can be transformed from lost shipping time to convenient maintenance time.

In the past, drillship operators were often required to take vessels hundreds of miles to deepwater ports where expensive pier space was needed to perform regular hull maintenance. Now our mobile hull-cleaning system can be transported to anchored vessels at locations that are more convenient for you.

You'll also be glad to know that the equipment is easily transferred from small craft to tanker deck by use of the cargo-lifting davits you already have on board.

Explicitly states difference between results from old and new systems.



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Furthermore, the hull cleaning and paint repair can be conducted while the ship is at anchor in calm water.

Diving Crew and Procedure

Our diving crews consist of highly trained professionals who ensure high standards of safety and productivity. A typical diving crew for hull maintenance includes the following members:

1. Two experienced diving supervisors
2. Six certified commercial divers
3. Four vocationally trained tenders
4. Two equipment technicians

These workers are on call 24 hours a day and will supervise the transport of the equipment to the desired location. Once they are aboard your ship, the system is assembled and operable in less than 12 hours.

Our personnel work 12-hour shifts around the clock with a diving supervisor on duty at all times. The hull-cleaning and paint-repair operations are conducted as follows:

1. Two divers, operating the sleds, start on the port and starboard sides of the bow and work toward the stern.
2. Each diver is monitored and assisted from topside by a tender.
3. Two standby divers are on deck and ready to assist the working diver in case of an emergency.
4. An equipment technician monitors and maintains the system.

Describes procedures with short paragraphs and lists.

During the entire operation, a surface-supplied life-support system and standard diving equipment are used by the diving crew.

Diver Rotation

The working divers are relieved every 4 hours, and the rotation proceeds as follows:

1. The off-going divers are off duty for 12 hours following their dive.
2. The on-coming divers are on call 8 hours before their dive.
3. The on-coming divers act as standby divers for the 4 hours immediately preceding their dive.

Emphasizes use of safe techniques.



Completion Time

Table 1 lists individual tasks in the left column and the maximum completion time for each task in the right column. As you can see, the maximum completion time for an average excelsior-class drillship is 101 hours—far less than other methods.

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TABLE 1
JOB COMPLETION TIME:
CLEANING THE EXCELSIOR HULL WITH SEASLED

Task	Completion Time
System Assembly	12 Hours
Hull Cleaning	75 Hours
Paint Repair	8 Hours
System Disassembly	6 Hours
Total Maximum Completion Time	101 Hours

Uses table for easy access to job time data.

The completion time was calculated for an excelsior-class drillship with a draft of 30 feet and 60,000 square feet of hull surface below the waterline.

SCHEDULE AND QUALIFICATIONS

This section provides a recommended maintenance schedule and a description of services and personnel available to M-Global.

Stress benefits to clients
in subheadings.

→ Schedules That Save Money

As you know, each ship should have annual cleanings and semiannual inspections to ensure that heavy growth does not develop. The thicker the encrustation, the harder it is to remove. Thus a regular maintenance schedule is needed to keep your ships operating at peak performance and to help us complete each job on time.

We realize that your ships run on irregular schedules because of the constantly changing requirements of your customers. Here are the two main features of our scheduling that respond to your specific needs:

→ 1. Hydrotech keeps a record of each ship's annual cleaning and semiannual inspections and contacts you to arrange a periodic rendezvous for hull cleaning.

2. If you need unscheduled work, Hydrotech *guarantees* that it can mobilize a crew to leave Hydrotech's headquarters within 72 hours of your call to us.

This quick response time provides the flexibility you need to keep your fleet seaworthy and profitable.

Emphasizes with
numbered points how
Hydrotech will meet
important scheduling
requirements.

→ Variety of Services Available to You

Hydrotech offers many other maintenance and emergency services. Those that are frequently required include the following:

1. Removal of obstructions from propellers and shafts
2. Sea suction and discharge clearing
3. Recovery of lost equipment
4. Emergency damage-control repairs
5. Assistance to vessels that have run aground
6. Ship salvage operations

Introduces related
services so client knows
Hydrotech is a full-
service firm despite its
small size.

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As you know, problems such as these are all too common in the shipping industry. Response time often determines whether schedules will be met, whether equipment can be recovered, or even if lives are saved. At Hydrotech, we respond to emergency calls with speed and dedication. You will receive the highest priority in an emergency.

Assures the reader that M-Global will receive priority service.

Professionals Who Make the Difference

Since it was started, Hydrotech has recruited professionals with experience in all phases of diving, underwater construction, and ship repair. Our personnel have the education and experience necessary to ensure safe, efficient, and professional performance for our customers. Some of our key personnel available to M-Global are the following individuals:

- William Baily Jr., President and Chief Executive Officer, Hydrotech—formerly Commander, Naval Undersea Systems Center, U.S.N. (Retired)
- Joseph Smith, Senior Vice President, Hydrotech—formerly Commander, Naval Ship Repair Facility, U.S.N. (Retired)
- John Delong, Diving Personnel Superintendent, Hydrotech—formerly Master Diver, Naval Diving and Salvage Facility, U.S.N. (Retired)
- Samuel Johnson, Operations Officer, Hydrotech—formerly Commander, Naval Undersea Construction Center, U.S.N. (Retired)

Stresses experience in list of firm's personnel.

Lists criteria to further support claims of company's professionalism.

All crew members are carefully selected by our personnel department, under the supervision of Mr. Delong. The following list gives requirements for specific positions:

- 1. Diving supervisors—selected from our senior divers or former U.S.N. Master Divers
- 2. Divers—selected from our senior tenders or former U.S.N. First Class Divers
- 3. Tenders—graduates of certified commercial diving schools; must complete our in-house training program
- 4. Equipment Technicians—trade school graduates with at least two years' experience in our equipment repair shops

Our selection and promotion policy is time-consuming, but this policy pays off for you in terms of high productivity and safety records that which are among the best in the diving industry. We accept nothing less.

REDUCED COSTS USING SEASLED

As noted earlier, the Seasled System introduces increased efficiency, and thus reduced costs, to hull-cleaning projects. The charge for hull cleaning and paint repair for your vessels will vary by location, due to transportation costs. For your convenience, we have assigned flat rates for five geographic areas:

- Region 1—Southeastern U.S. (includes Georgia, Florida, Louisiana, and Texas)
- Region 2—The northern quadrant of the Western Hemisphere (except that area designated Southeastern U.S.)
- Region 3—The southern quadrant of the Western Hemisphere
- Region 4—The northern quadrant of the Eastern Hemisphere
- Region 5—The southern quadrant of the Eastern Hemisphere

Table 2 lists the charges for hull maintenance and semiannual inspection *per ship*. These costs are guaranteed through 2012 and include all transportation charges. As mentioned in your RFP, M-Global, Inc., will provide room and board for our crews on-site.

Introduces innovative “flat rate” fee structure to simplify cost estimating for client.

Displays maintenance and inspection costs in table.

Guarantees costs through specific date to make budget more predictable.

TABLE 2
HULL MAINTENANCE AND INSPECTION CHARGES PER SHIP

Service	<i>Regions</i>				
	Region 1	Region 2	Region 3	Region 4	Region 5
Maintenance	\$25,000	\$30,000	\$35,000	\$40,000	\$40,000
Inspection	\$ 5,000	\$ 7,000	\$ 9,000	\$11,000	\$11,000

Our portable hull-maintenance system rates apply only to excelsior-class drill-ships up to 40 feet in length. Special rates can be quoted for loaded tankers on an individual basis.

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CONCLUSION

Hull cleaning on drillships used to be expensive and time-consuming. Ships had to be taken hundreds of miles to deepwater ports, where expensive pier mooring was needed to perform underwater hull maintenance.

A new hull maintenance system, which can be brought to your anchored vessels, is now available. The Seasled Hull Maintenance System uses a diver-operated, self-propelled scrubbing and painting device. This portable system can clean the bottom of an excelsior-class drillship and paint damaged areas in about four days.

Our diving crew can rendezvous with your ships at times and locations that fit your schedule and can turn lost time into money-saving maintenance time. To keep your ships operating at maximum efficiency, we recommend annual hull cleaning and semiannual inspections of all surfaces beneath the waterline.

We look forward to tailoring a hull maintenance schedule to fulfill your individual requirements.

Returns to client's major concerns—regular schedules and cost savings.

**PROPOSAL FOR WINDOW RESTORATION PROJECT
FOR SILVER RUSH MUSEUM**

Prepared by
Eva Kline, Director

Silver Rush Museum
Silver City, Colorado

Prepared for
John Davis, Director
National Park Service
April 27, 2011

Includes title page
with illustration that
represents the project.



Johnsfon/Dreamstime.com

Silver Rush Museum
1864 Heritage Rd.
Silver City, CO 80212

Mr. John Davis
Director
National Park Service
Save America's Treasures Grant Program
4567 Ridge Rd.
Washington, DC 20240

Dear Mr. Davis:

I enjoyed speaking with you last week about the needs of the Silver Rush Museum located in Silver City, Colorado. In response to your interest in the museum, I am submitting this proposal to renovate the windows of the historic museum.

This proposal outlines the history of the Silver Rush Hotel, need for renovation, and project objectives. This project will benefit the building by:

- Reglazing and painting windows, cornices, exterior wood trims, and the historic cupola
- Renovating the historic glass panes

I'll give you a call next week to discuss and answer any questions or comments you may have regarding this proposal.

Sincerely,

Eva Kline
Director of Museum Operations
Silver Rush Museum

Refers in letter of transmittal to earlier contact, provides context for proposal.

Calls attention with bulleted list to main goals of the project.

Invites future contact.

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INTRODUCTION

The Silver Rush Museum, headquarters for the Silver Rush and a National Historic Landmark, invites your investment in a \$79,200 window restoration project. This proposed project addresses the significant deterioration of the hotel's iconic 122-year-old exterior.

Summarizes details of request in first paragraph.

The Silver Rush Museum is the only building still standing in the Silver City area that played a significant role in the Colorado Silver Rush. The museum building, originally a hotel, receives international attention as being the icon of this era.

The proposed renovation is pragmatic and cosmetic. The grant will pay to paint and re-glaze 100 windows, cornices, exterior wood trims, and the historic cupola on this 1889 pioneer hotel building.

DISCOVERING WESTERN AMERICA

Explains historical significance of building.

Built in 1889 as a luxury hotel, the Silver Rush Museum building was at the center of our nation's westward expansion. Over its 120-year history, it served as the Silver Rush's headquarters, a U.S. Army housing unit, and a railroad office for pioneers pushing west. Its significant historic events include:

PIONEER HOTEL—In 1848, when the Silver Rush began, many people saw it as an opportunity to open and expand businesses. Thus, Jedediah and Maggie Jones opened the luxurious Silver Rush Hotel to serve travelers as the railroad pushed west to Silver City. The hotel cost \$180,000 to construct and had 100 guest rooms. It featured winding stairs to the fourth floor, covered with red Brussels carpet.

THE SILVER RUSH—Between 1848 and 1865, this four-story pioneer hotel became the headquarters for the Silver Rush. The Silver Rush, which was spawned from the Gold Rush, brought thousands of people from all around the world to this historic hotel.

THE RAILROAD—In 1867, Union Pacific railroad began advancing into Colorado, and Silver City became a vital destination for pioneers. Members of the U.S. military were assigned to protect parts of the railroad from Cheyenne and Arapaho tribes. These men were often housed in the Silver Rush Hotel.

SILVER CITY HERITAGE—In 1963, the building was saved from dereliction and transformed into the Silver Rush Museum. The museum interprets events that took place in the building as well as Silver City's role in the historical development of the American West. Each year, the museum attracts more than 20,000 visitors.

Chronological History of the Museum

Silver Rush Hotel	1848–1865
Military Housing	1865–1868
Silver Rush Hotel (again)	1869–1872
World's Hotel and Epileptic Sanitarium	1881–1883
Garment Factory	1933–1953
Vacant	1953–1963
Silver Rush Museum	1965 to present

Indicates purpose clearly →

A NEED FOR RENOVATION

To protect its historic structure, preservationists recommend that the building's original wood trim be painted, and that the windows be reglazed every 10 to 12 years. These tasks have not been done since 1980.

The window glazing is loose and falling from many of the windows. The deteriorating windows create a serious threat to the museum's 20,000 visitors each year. In addition, the museum would lose historic glass from falling glass windowpanes. The window gaps also make it difficult to heat and cool the museum areas.

The loose window glazing and putty also allows rainwater from heavy storms to come in between the panes. During a brief cloudburst in May 2009, several valuable artifacts were damaged. Although most artifacts are not kept near windows, in that instance water came in through a window and soaked through the floor in the Grand Ballroom and onto artifacts below.

Silver Rush Museum has 200 windows, each of which has 18 wavy-glass panes. Most windows must be reglazed to prevent the glass from falling out. This project is costly and labor-intensive, and it requires hydraulic equipment to reach the second, third, and fourth floors.

The museum has selected the 100 windows in the most perilous condition. Among these are windows original to the building and some replacement windows installed in 1980, as well as 8 windows in the historic cupola. Wrought-iron fire escapes and other railings are also in need of protective coating. Receipt of this grant would make the comprehensive and coordinated repair of all these features possible.

The museum board has taken care of window maintenance and repair over the years, but with such major investment necessary, the work is beyond the scope of the museum's capabilities. The Silver Rush Historical Association is a nonprofit corporation and receives no tax support.

Other than the deteriorating windows, Silver Rush is in remarkable condition for a 163-year-old building. Its two lower floors are in pristine condition and are open to the public as a museum. The top two floors are as the garment factory left them. Those floors are used for artifact storage and are not open to the public. The entire building is structurally sound and is safe for visitors and staff.

PROJECT OBJECTIVES

By repairing, reglazing as necessary, and reinforcing the wooden frames, sashes, and cornices, the Silver Rush Museum will continue to appear as it did in the 1861 photograph (see Artifact A). That is the primary goal. Repairs will also:

- Ensure the safety of passersby, visitors, and staff from falling glass windowpanes
- Protect the building's interior historical integrity and valuable artifact collections for future generations
- Allow the museum to remain one of the anchors of historic Silver City so that the local tourism economy flourishes
- Eliminate blight in a changing 150-year-old residential neighborhood of working-class residents
- Encourage nearby businesses and home owners to maintain their properties

States clearly the objectives that will measure the success of the project.

In 2008, the museum saw visitors from all 50 states and 62 foreign countries. With proper care, this National Historic Landmark will be as it appeared to silver miners more than 160 years ago.

METHODS

Charles Glenwood, a local architect and engineer, has developed plans within historic building standards.

The project involves painting 100 exterior window trims. The colors will match the existing paint to preserve the building's historical appearance. Windows will be glazed as necessary. This project does not involve rebuilding the wood windows. Any damaged sills will be rebuilt in the museum's workshop by maintenance staff and will not figure into the cost of the project.

The cost estimates come from major local contractors who have worked with the museum in previous years. They are familiar with the procedures involved in preserving a historic building of this size. The amount of the grant we request is based on their estimates of the projected 2011 costs.

SOURCE OF NONFEDERAL MATCH

Since 1963, the Silver Rush Historical Association, a nonprofit corporation, has owned and operated the Silver Rush National Historic Landmark. The association

depends solely upon admissions and donations to operate and maintain the 163-year-old building. The association has nearly 400 members in two dozen states.

The Silver Rush Historical Association Board of Directors has voted to authorize use of reserve funds as a match for this project. Late members set these funds aside in an endowment for emergencies and large projects. The monies are invested and will be converted into cash when needed. There are no federal dollars in the museum's match.

The association will also continue to seek additional private donations to help with this project.

Makes budget information easy to find in table.

PROJECT BUDGET

Item	Cost	Federal Grant Funds	Match/Cost Share
Window and Trim Painting and Reglazing, Materials	\$40,150.00	\$20,075.00	\$20,075.00
Labor	\$118,250.00	\$59,125.00	\$59,125.00
Total	\$158,400.00	\$79,200.00	\$79,200.00

Creates a clear timeline.

PROJECTED TIMELINE

June 1, 2011—Decision to award funds is announced. Allow four weeks for preparation of plans and specifications.

July 1, 2011—Allow two weeks to advertise and receive bids.

July 24, 2011—Open bids and read aloud. Allow one week to review bids, if necessary.

July 31, 2011—Award winning bid.

August 1, 2011—Send notice to proceed.

Depending on the weather, work will begin around August 1, 2011. Contractors and painters have suggested a nine-month timeline to allow for inclement weather and minimum interference with museum operations.

A PROVEN RECORD

Since 1963, the Silver Rush Historical Association has salvaged this National Landmark from demolition and restored it into a museum that deals with the building's own history and its strong ties to the historical pattern of development of the American West.

In the past, the museum has installed innovative geothermal heating and cooling systems, using 12 ground-source heat pumps that circulate liquid through 110 wells, each 90-feet deep.

Although it is not a part of this project, the museum board is currently raising money to convert the building's 103-year-old freight elevator into a passenger elevator, which will make the four-story building fully handicapped-accessible. To date, the museum has cash and commitments totaling \$171,000 toward the \$300,000 elevator cost. These funds are nonfederal and are not part of the local match that is committed to this project.

Your support for the window restoration project will help restore the grandeur to this historic building. Once funded, work on this nationally significant historic project will begin promptly.

Shows reliability of organization requesting grant.

eBooks: From Adobe® InDesign® to the Kindle Store

Title clearly describes innovation being explained

Table of Contents

- 1 A multiplicity of formats
- 2 Step 1: Export InDesign document to EPUB
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- 10 Step 4: Distribute your converted EPUB file on Amazon.com

Readers are expected to know how to use InDesign

Use of steps to indicate that a procedure is being taught

Kindle and PDF

While this paper describes how to convert an EPUB file for compatibility with Amazon devices, the Kindle DX does include native support for PDF files. For the Kindle 1 and 2, however, users must convert their PDF files in order to view them. This conversion can be accomplished either by using Amazon's fee-based online conversion service or following steps 2–4 of this paper to convert the PDF file to the MOBI format, replacing all references to EPUB with PDF. Since PDF is designed for static page layout—and not for reflow—results will be better if you convert from an EPUB file.

As eReader devices like Amazon's Kindle increase in popularity, Adobe InDesign users are asking how to prepare their eBook documents for reading on the Kindle and selling on the Amazon.com Kindle Store. This paper describes how best to accomplish this task. Generally, InDesign users must first export an InDesign document into an EPUB file. Then they must convert it using open source software into the MOBI format to view on a Kindle reading device or to sell on the Amazon.com Kindle Store.

A multiplicity of formats

Although many eBook file formats exist, two are most prevalent: the EPUB format, created by the International Digital Publishing Forum (to which Adobe belongs), and the AZW format, created by Amazon. Because the Kindle doesn't recognize EPUB files, users of a variety of content creation tools that create EPUB files—including InDesign—must convert these files to a format the Kindle can read. And since tools to convert to the native AZW format aren't generally available, users must convert EPUB files to an alternative format, MOBI, to view on the Kindle or to sell on the Kindle Store.

This white paper provides a step-by-step guide to display your EPUB book on the Kindle:

1. Export InDesign document to EPUB.
2. Convert EPUB to alternative MOBI format.
3. Preview on a Kindle device (optional).
4. Upload to Amazon.com.

Requirements

To accomplish this conversion, you need the following:

- **Adobe InDesign CS3 or CS4 software**—While you can export to EPUB with InDesign CS3, InDesign CS4 includes enhanced EPUB export features—like local formatting preservation and floating anchored objects—that simplify the conversion process.
- **Adobe Digital Editions software**—Digital Editions is a free, lightweight eBook reading application for PC and Mac. You can use it to read and organize your eBook collection, as well as preview the EPUB files you export from InDesign.
- **Calibre**—A free, open-source eBook conversion tool, Calibre runs on Windows®, Mac OS, and Linux®. Because the Kindle doesn't include native support for the EPUB format, this paper describes the use of Calibre to convert EPUB to the MOBI format (which is supported natively in the Kindle).

To preview your converted documents you need a Kindle and its USB cord. If you don't own a Kindle, you can preview your converted documents online through Amazon's Digital Text Platform (<http://dtp.amazon.com>) Also, if you want to upload your eBooks to sell on Amazon.com, you'll need an Amazon.com account.

Step 1: Export InDesign document to EPUB

One of the features in InDesign CS4 is the ability to export an InDesign document directly to the EPUB format. As mentioned previously, this open document format is interoperable among a variety of handheld eReader devices (like the Sony Reader), desktop reading

applications for the PC or Mac (like Adobe Digital Editions), and smartphone reading applications that display eBooks on your mobile phone (like Stanza or Shortcovers).

To get started, create your document and add your text and images. While this paper doesn't review how to set up an InDesign document, the training resources at Adobe.com can point you in the right direction should you need more information. See www.adobe.com/support/training/products/indesign.html

Once you have your document set up, review the following tips to ensure your file is exported properly to the EPUB format. Remember that these tips are general guidelines for exporting production-quality EPUB files and are not necessarily specific to the MOBI conversion workflow discussed later.

Layout

InDesign will export all your text frames as one single flow of text and in the order the frames are threaded together. You'll need to verify that you have threaded the frames in the correct order. Remember also that the export feature doesn't preserve individual object positioning on the page; it exports all the elements into one continuous flow of text. To achieve perfect object positioning, you'll most likely have to manually style the EPUB file after export (see link below for more information on manual styling).

Styling

Key points placed
in margins



If your InDesign document contains local formatting (a manually bolded word without a Character Style applied to it, for example), make sure you select the Local Formatting option under Base for CSS Styles in the Digital Editions Export Options dialog. Local formatting export is supported in the latest version of InDesign CS4 (v. 6.0.3). If you're using InDesign CS3, only Character Styles, Paragraph Styles, and Object Styles are preserved during the export.

Chapters

If you're working with a long document with an expected final file size over 300KB that you intend to display on a device, you'll want to separate each chapter into a separate InDesign document. To export all the chapters into the same EPUB document, create an InDesign book (File > New > Book). From there, add the individual chapters using the Book panel (automatically appears when working with a book), and then select Export Book for Digital Editions from the Book panel commands.

Font embedding

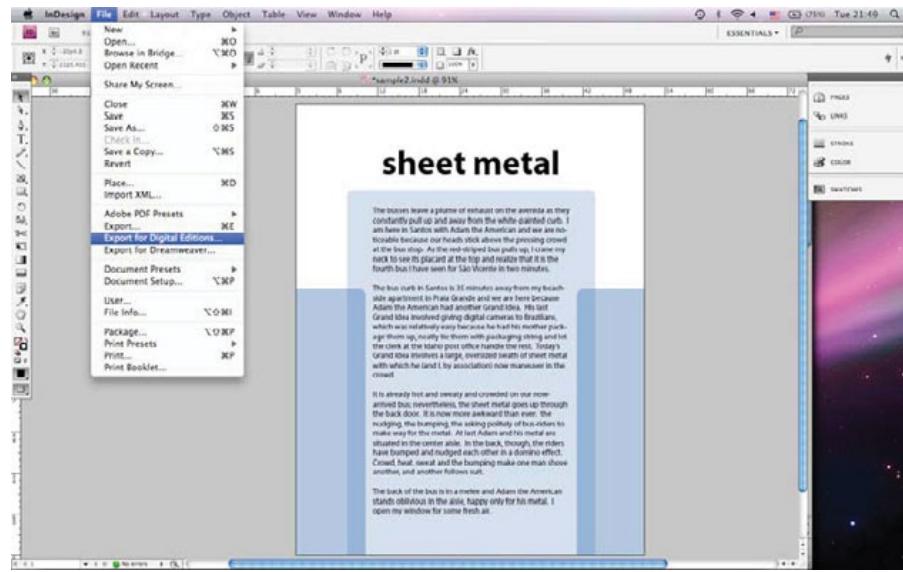
In general, all fonts used in the document will be embedded in the resulting EPUB file. Note that although EPUB supports font embedding, the MOBI format as displayed on the Kindle does not. Consequently, you'll see the standard Kindle font in your final document when displayed on a Kindle device. In EPUB, OpenType fonts are supported during the export, as are most TrueType fonts—but you should always test to ensure you see the results you expect.

Images

If the Formatted option is selected in the Images panel of the export dialog box, the exported images will be reformatted to the size to which you have scaled them in your InDesign document. This scaling reduces the file size of the final EPUB file. You will also want to anchor your images to the relative area to which they belong in the text, or else they may all end up at the beginning or the end of the document. Again, to achieve perfect image positioning, you may need to manually style the EPUB file after export (see link below). For more information on working with image captions, see the sidebar entitled Image captions.

For other tips on how to set up your document for correct export to the EPUB format, as well as how to perform post-export manual editing, see “Producing ePub Documents from InDesign” at <http://blogs.adobe.com/digitaleditions/inddesign-epub.html>

After your document is correctly formatted, export it to the EPUB format by choosing File > Export to Digital Editions.



Screen shots illustrate steps

Then select a location to save the EPUB file.

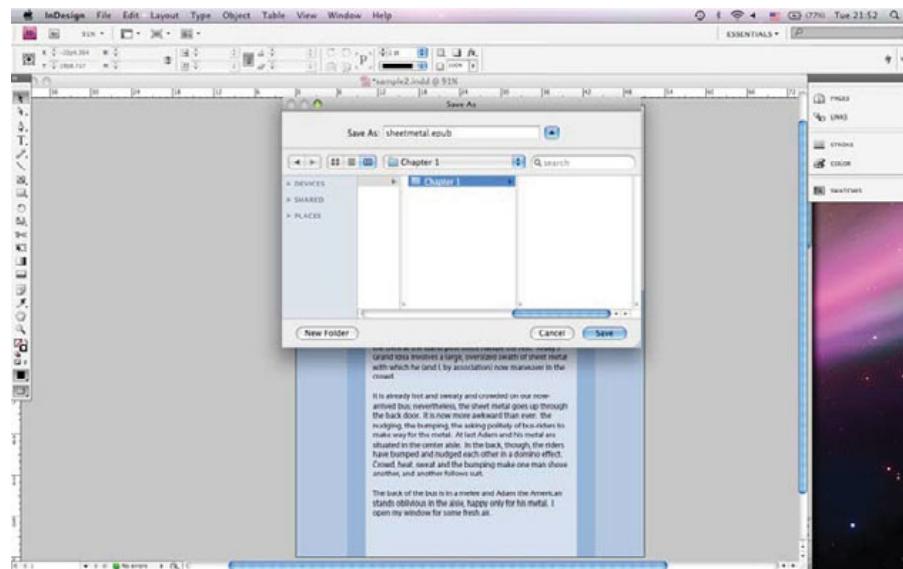
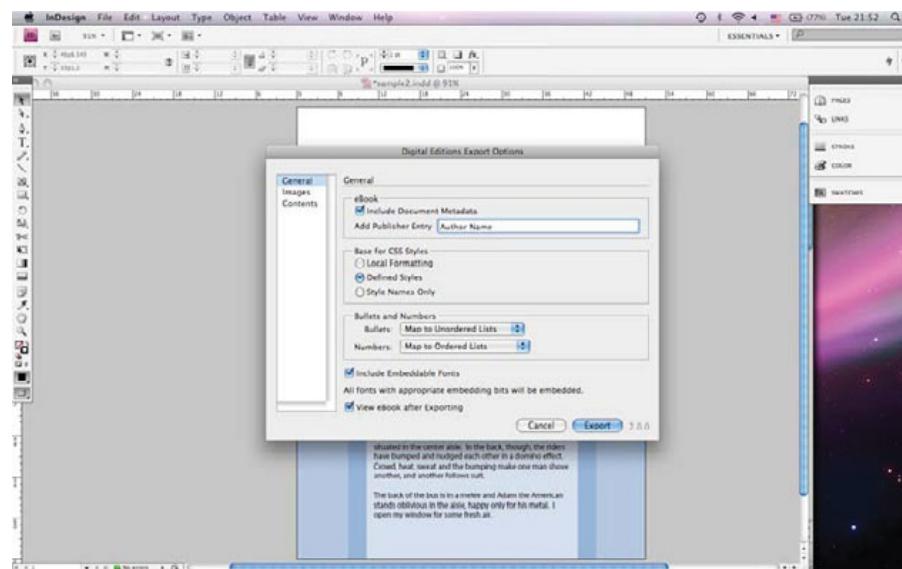


Image formats

If you're having trouble deciding whether to output your images into GIF or JPEG format, you can read more about the differences between the two formats at www.adobe.com/devnet/contribute/articles/convert_images.html

In the Digital Editions Export Options dialog box, select the EPUB options that fit your needs best. You have the option to add publisher metadata, define the styling source, select image output type (GIF or JPEG), and adjust the table of contents, among others.



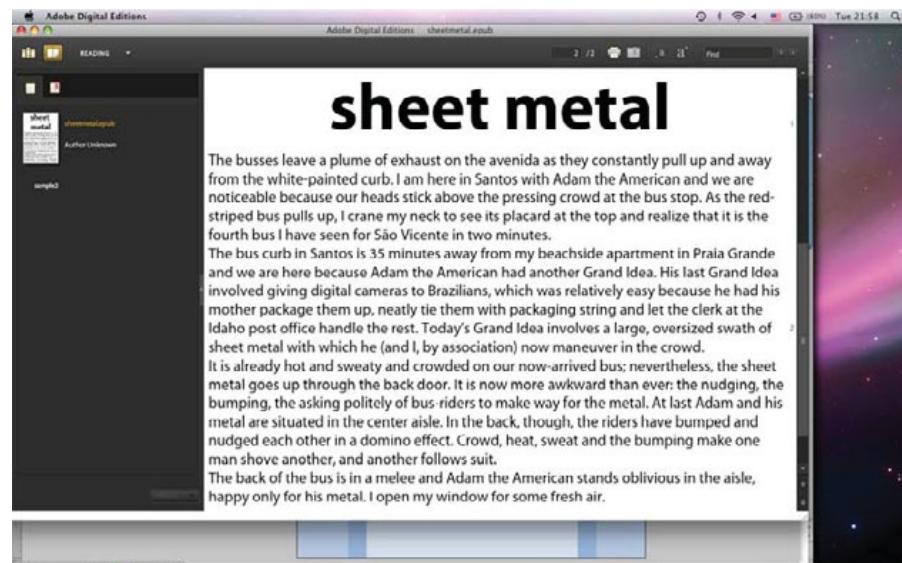
Previewing EPUB in Digital Editions

Adobe Digital Editions is a free, lightweight eBook reading application for PC and Mac. In the workflow outlined in this paper, it is used to preview EPUB files for accuracy before converting them to the MOBI format. In addition, Digital Editions allows you to:

- Read and easily navigate your EPUB/PDF eBookfiles
- Organize your digital books and view title metadata
- Insert annotations and bookmarks
- Play multimedia SWF files embedded in eBooks
- Transfer eBooks to supported devices

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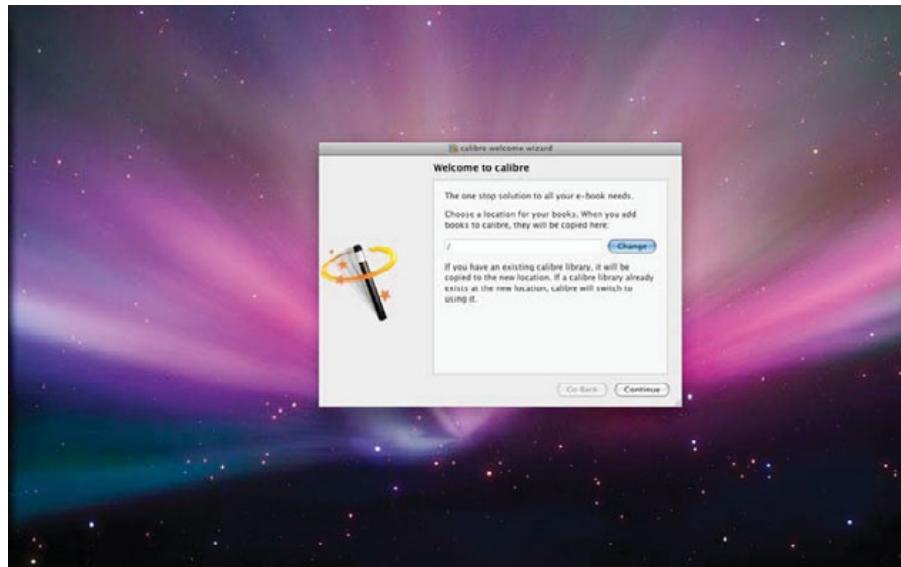


Step 2: Convert EPUB to MOBI

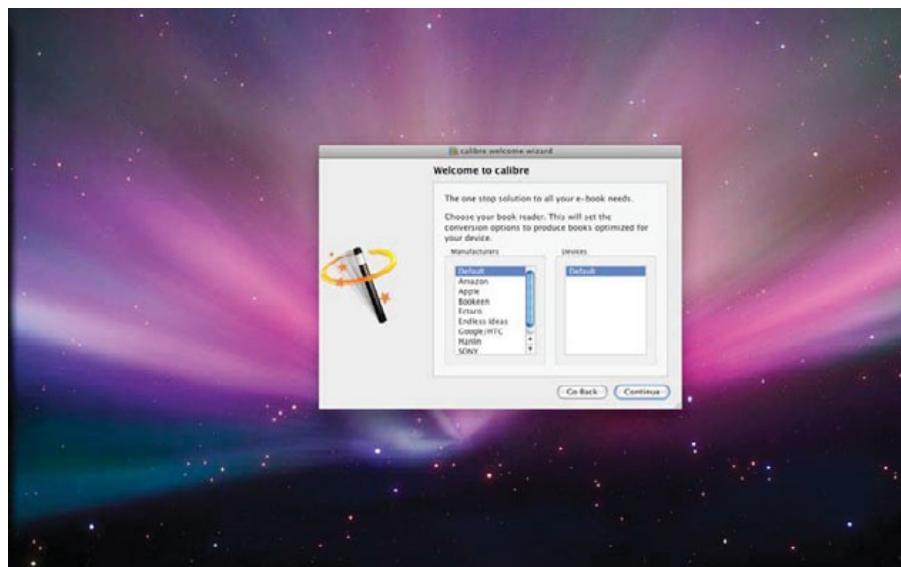
With an EPUB file in hand, the next task is to convert it to the MOBI format. One of the simplest ways to accomplish this is with the free, open-source Calibre conversion program. It runs on Windows, Mac, or Linux and is available for download at <http://calibre.kovidgoyal.net/download>.

Calibre Setup

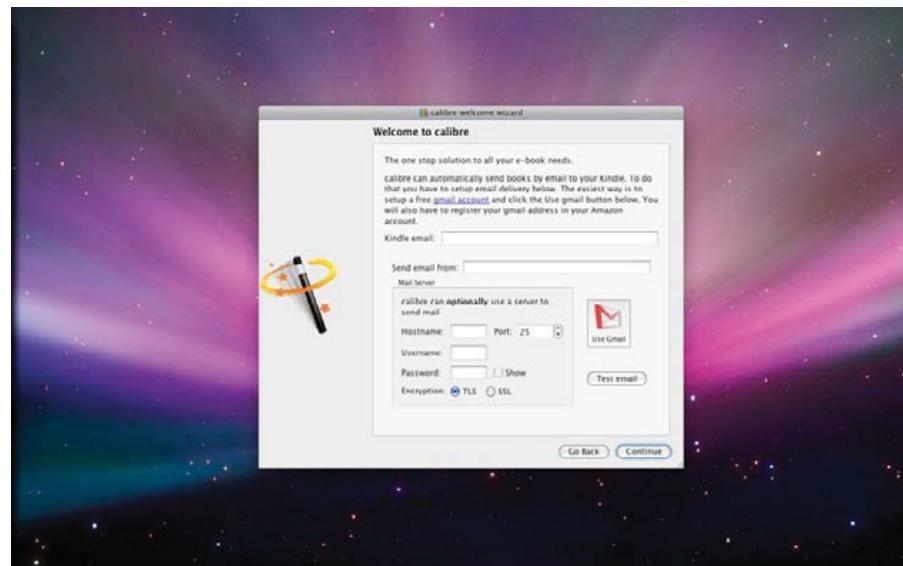
To get started with Calibre, download and install it. After installation, one of the first prompts asks where you want to store the books that you'll be converting. Select a location on your hard drive and click Continue.



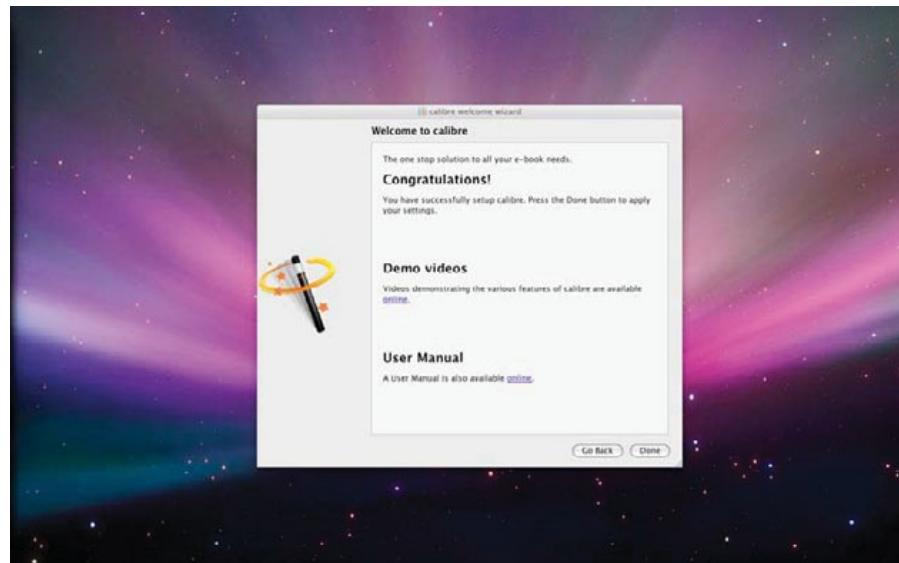
Next, in order to optimize the output of converted files, Calibre asks what type of eReader device you have. Since this example assumes you'll be mainly reading on a Kindle, go ahead and select Amazon under Manufacturers and your Kindle version under Devices. If you plan to convert books to a variety of formats, however, you might consider leaving the setting to Default.



Should you plan to use the Amazon fee-based wireless delivery service, fill in the e-mail addresses requested on the following screen.



You should then see a screen indicating that you have successfully set up Calibre.

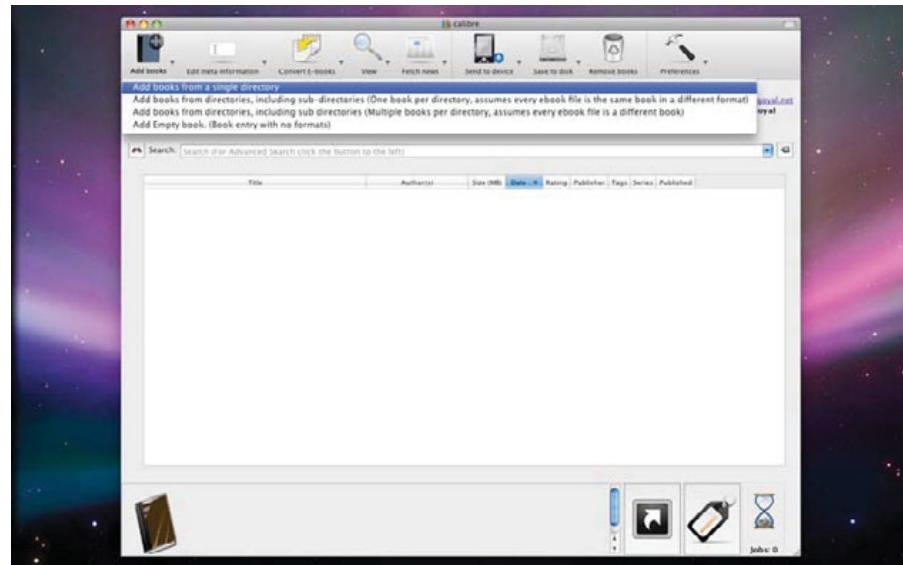


Converting EPUB to MOBI in Calibre

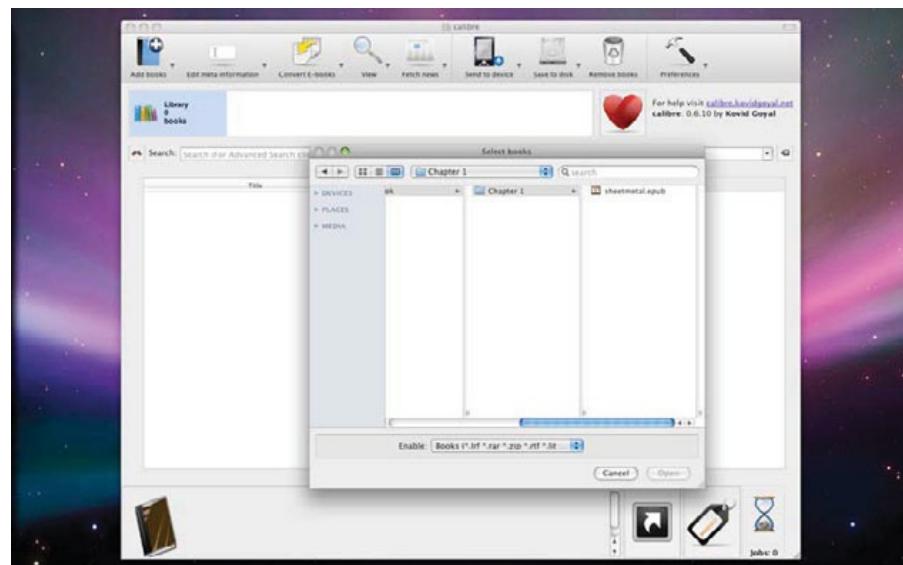
Converting an EPUB book to the MOBI format in Calibre is a two step process: Add the EPUB file to the Calibre library, and then initiate conversion of the EPUB file.

Adding EPUB files to the library

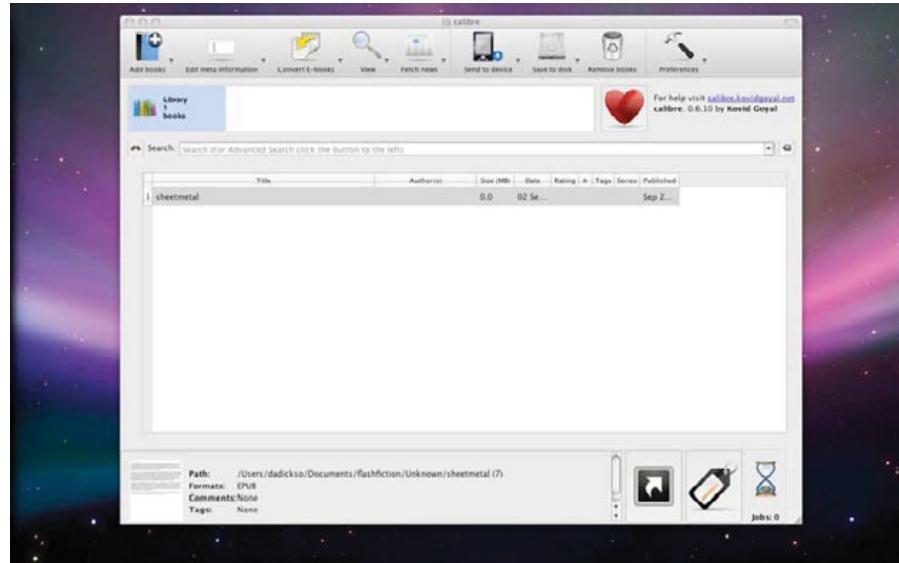
To add a single EPUB file to the library, click the “Add books” icon in the upper left corner of the program. If you have multiple books to upload to the library at once, click the triangle immediately to the right of the icon, and select from the available bulk upload options.



Next, select the EPUB file on your hard drive that you wish to upload to the library.



You will be able to see the EPUB book in the list of available titles when the uploading process is complete.

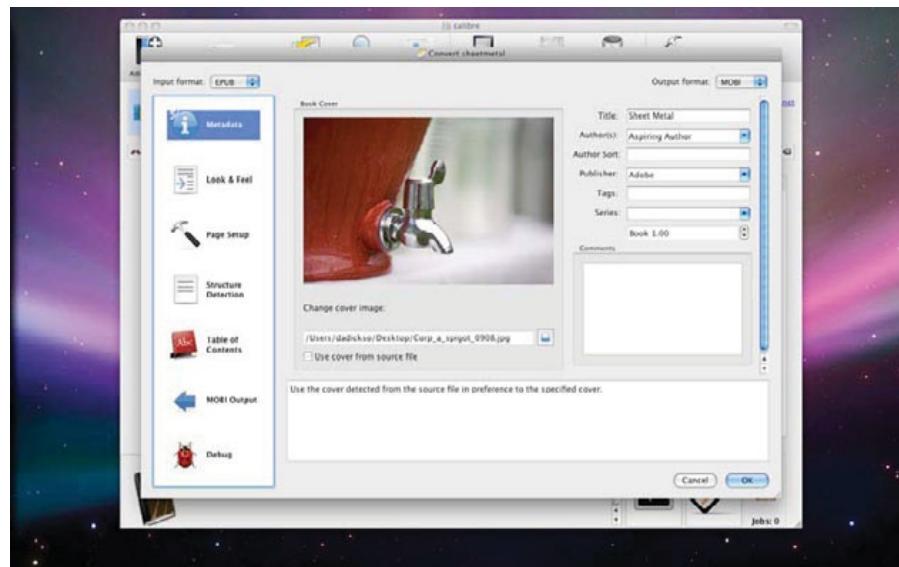


Initiating the conversion

After you have your EPUB file in the Calibre library, you must convert it to the MOBI format. To do this, select the EPUB file from the list of available titles and then click the Convert E-books icon on the top menu bar.

After you've clicked this icon, the conversion dialog screen appears. Make sure that the output format field in the upper right corner reads MOBI.

The panels on the left side allow you to adjust the conversion options. In the Metadata panel, you can edit the book's title, author, publisher, and cover image. The Look & Feel panel provides fine-tuned adjustments on line spacing, font height, and non-roman characters. If you didn't select the Kindle as the output profile during the setup process, you can do so in the Page Setup panel. The other panel options provide features for advanced users. When you are satisfied with the selections you have chosen, initiate the conversion by clicking OK.

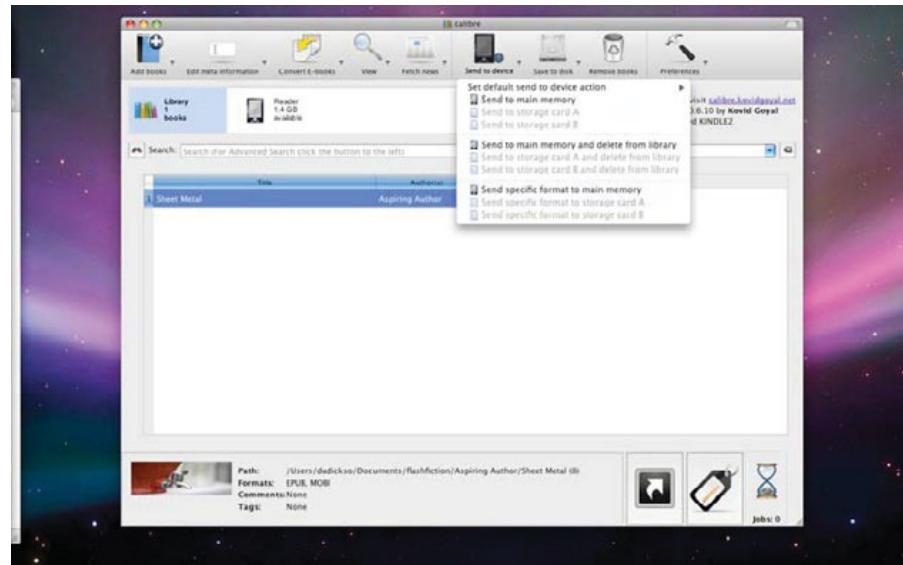


eBooks and content protection
eBooks sold in online bookstores generally have content protection applied to them, using a solution such as Adobe Content Server 4 software. Content protection allows the bookseller to specify sharing and printing rights. As a result, the Calibre program cannot convert EPUB files with this content protection. The program will, however, convert unprotected books, like self-authored publications or books in the public domain.

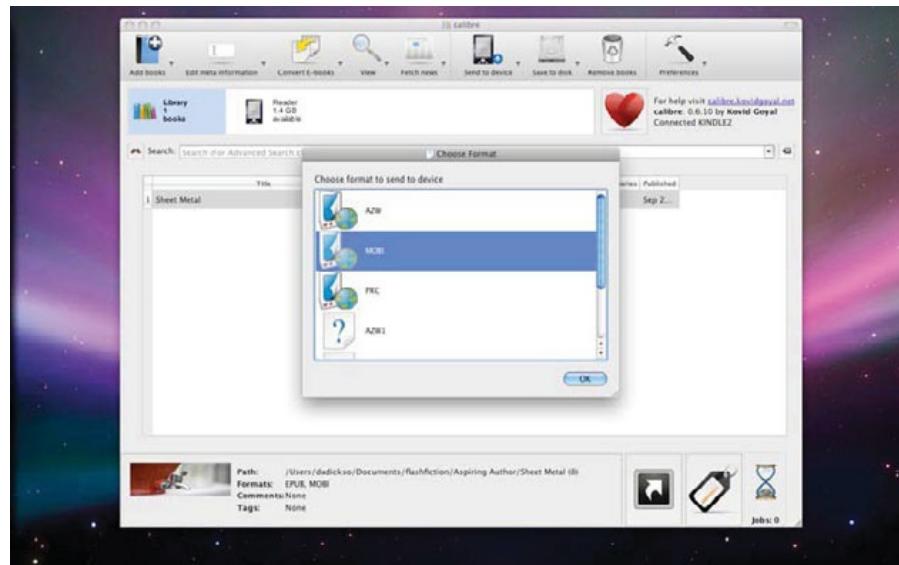
You will know the conversion process is complete when the hourglass stops spinning in the lower right-hand corner and a message displays on your screen. After converting a file, Calibre stores the completed file in the library folder you selected during the first step of the setup process. Use a file browser to navigate to this folder, and verify the newly converted MOBI file is located in a folder named after the author.

Step 3: Preview on a Kindle (optional)

To transfer your book to a Kindle device, first ensure that the Kindle is connected to your computer via the USB cable. Then select the title from the available title list within the Calibre library. Click on the triangle next to the “Send to device” icon in the upper menu bar and then select “Send specific format to main memory”.



A dialog box appears asking which format you would like to send to the connected Kindle device. Since you just converted your EPUB file to the MOBI format, select MOBI.



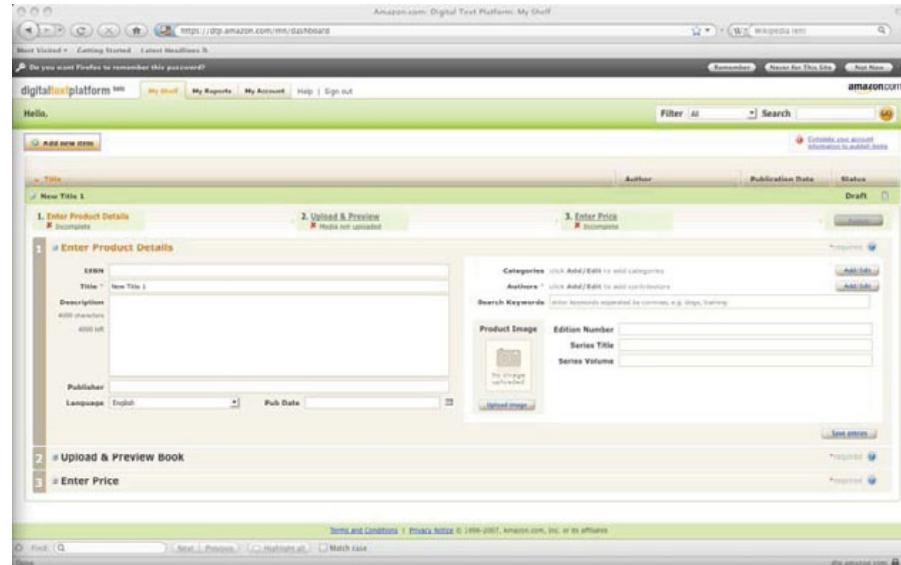
After the hourglass stops spinning and you receive a completion message, you should be able to view your content on your Kindle device.

Alternatively, you may choose to transfer your converted MOBI files manually to your Kindle. To do this, open the folder you selected as the Calibre library during the first step of the Calibre setup process. Then connect your Kindle and navigate to its contents using a file browser. To transfer your file, simply copy it from your hard drive to the Documents folder on your Kindle.

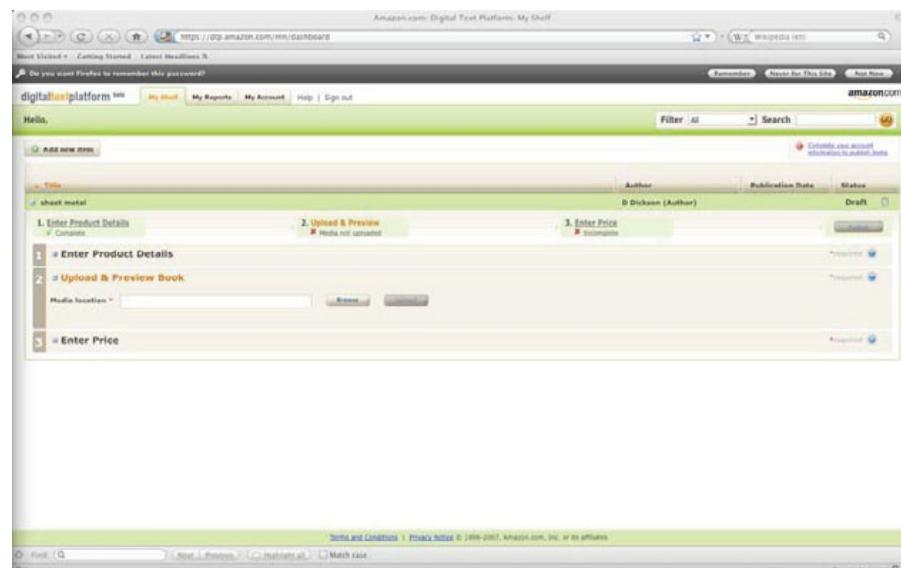
Step 4: Distribute your converted EPUB file on Amazon.com

Some authors may wish to distribute their converted EPUB documents using Amazon.com's self-publishing tool, the Digital Text Platform. To do this, you'll need to log in with your existing Amazon account (or create a new one) at <http://dtp.amazon.com>.

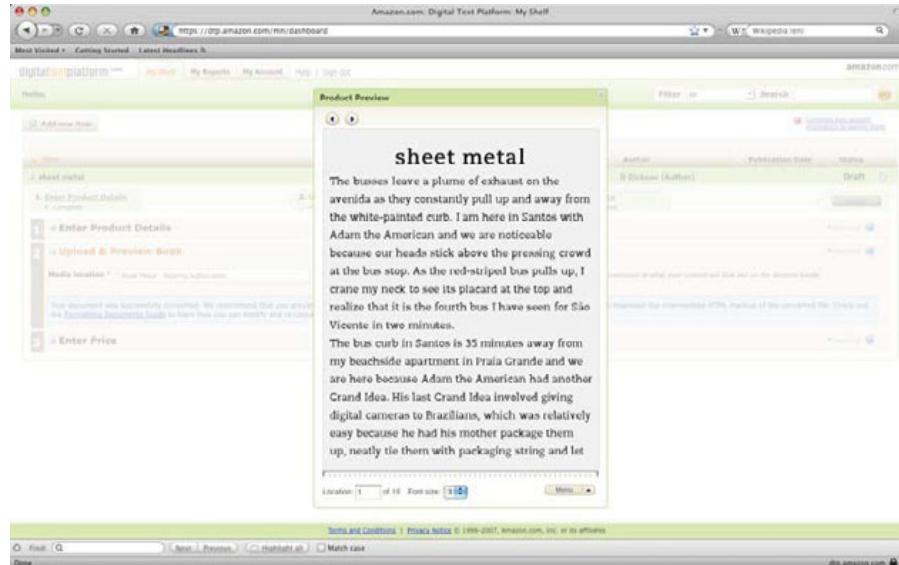
After you have logged in, click the “Add new item” button at the upper left corner of the screen. Then enter a few required details about your book, including title and the author’s name. You also have the option to submit a product image and contribute a short description of your work. After you’ve finished with this screen, remember to click “Save entries.”



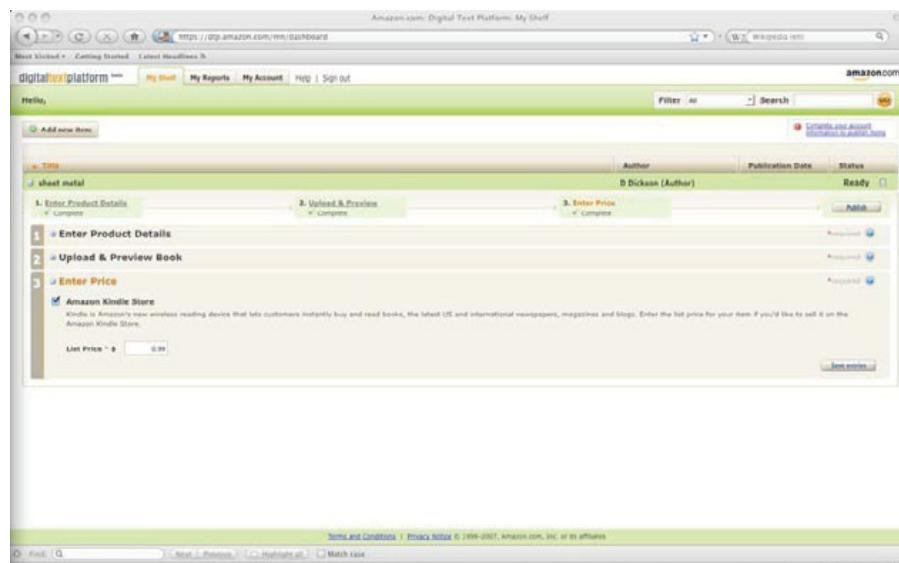
Next, Amazon will prompt you to upload your book. Browse to the location of your converted MOBI file on your hard drive (in your Calibre library location, under a folder with the author’s name) and then click “Upload”.



After you've uploaded the file successfully, preview it to ensure that it will display as you expect. Click the Preview button to display how your file will appear on the Kindle.



After you are finished previewing, choose Menu > Close in the preview dialog box to return to the previous page. Then click Enter Price. In this text field, enter the price for which you wish to sell your eBook in the Kindle Store. Note that your price must be greater than US\$0.99 and less than US\$200. When you are finished, click "Save entries".



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Finally, when you are ready to distribute your eBook in the Kindle Store, click Publish at the upper right side of the screen. Amazon may ask you on a subsequent screen for more information on where to deposit your earnings.

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PROJECT: Sentry Dam**CLIENT:** Sanborne County Water Authority

David R. Frazier/Photo Researchers, Inc.

Brief Project Description

M-Global worked from January through April of 2005 on field and laboratory work preceding construction of Sentry Dam. After submitting its geologic and engineering report, the M-Global team worked with the water district on final dam design. It also gave some help during construction. The dam was completed in July 2007. Because Sentry is a high-hazard dam—meaning that its failure would cause loss of life—safety was crucial.

Main Technical Tasks

- Drilled 20 soil borings at the site to sample soil and rock
- Drilled 15 test wells to find the depth to groundwater and to check on water seepage in the dam area
- Lab-tested the soil, shale, and other samples from borings to evaluate the strength of material on which the dam would rest
- Designed an overflow spillway that would be anchored in strong bedrock, not weak shale
- Monitored water seepage in the foundation and dam during construction
- Certified the dam's safety after construction

Main Findings or Benefits

- Completed field and lab work on schedule and at budget
- Designed innovative concrete dam spillway that bypassed weak shale and connected with strong bedrock



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PROJECT: Completed Ocean Exploration Program**CLIENT:** Republic of Cameroon

Harald Sund/The Image Bank/Getty Images

Brief Project Description

During the spring of 2004, M-Global used its drillship Dolphin to examine the ocean floor over a 10-mile stretch off the Cameroon coast. M-Global collected data on-site and then tested and analyzed samples at its labs. After sending the report on the study, M-Global met with the client concerning conclusions and recommendations for further offshore use of the coastline.

Main Technical Tasks

- Kept Dolphin on-site for two months to map the seafloor, to drill borings, and to observe ocean habitats
- Used sonar to develop a profile on the surface of the ocean floor and its near-surface geology (return time of sound waves helped gauge the depth to the floor and to sediments below the floor)
- Drilled successfully for samples from Dolphin's drilling platform, often in difficult weather
- Analyzed samples from the borings to estimate geologic age and stability of the ocean floor
- Viewed ocean life and geology firsthand at some locations, using a small submersible craft with a one-person crew

Main Findings or Benefits

- Concluded that most of the zone was too environmentally and geologically sensitive to be used for offshore drilling of oil and gas
- Found two locations where a pipeline might be safely placed, with minimum damage to ocean life and minimum risk of geologic disturbance (such as earthquake or ocean avalanche)



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PROJECT: Monitored Construction

of General Hospital

CLIENT: Floor County, Florida

Pearson Education



Pearson Education

Brief Project Description

M-Global was hired to observe construction of General Hospital to make sure that all construction work was done according to agreed-on standards and legal specifications. M-Global had one or more employees on site continuously during the entire construction process.

Main Technical Tasks

- Checked quality of masonry, steel, and other materials used in the building's foundation and main structure
- Ascertained that heating, plumbing, and other systems were installed according to legal codes and according to contract
- Served as liaison between medical staff and construction personnel so that interior construction was done correctly
- Completed final "sign-off" for entire facility before it opened

Main Findings or Benefits

- Guaranteed client that all materials and procedures used in construction were up to contract standards
- Spent over 50 extra hours (without charge) consulting with doctors, nurses, and other technical staff about interior construction and placement of major pieces of equipment
- Billed client at 10% below proposed fee because of other work recently contracted with the county for the same calendar year



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PROJECT: Examined Big Bluff Salt Marsh

CLIENT: State of Georgia



David A. Ponton/Mira.com

Brief Project Description

Georgia hired M-Global to explore the environmental quality of the Big Bluff Salt Marsh, located on Paradise Island off the Atlantic coast. The island is owned by the state. Developers have approached the state about buying island land for building condominiums and other tourist-related structures. M-Global's fieldwork, lab work, and research resulted in a report about the level of development that the marsh can tolerate.

Main Technical Tasks

- Took inventory of wildlife and grasses throughout the marsh
- Consulted with wetlands experts around the U.S. about notable features of Big Bluff Salt Marsh
- Tested soil and water for current levels of pollution
- Researched two other Atlantic coast salt marshes where development has occurred to determine compatibility of development and marshes

Main Findings or Benefits

- Concluded that Big Bluff Salt Marsh serves as a nursery and feeding ground for fish caught commercially along the coast
- Learned from Environmental Protection Agency (EPA) that any major development of Big Bluff Salt Marsh could be a violation of federal wetlands policy and thus could be challenged by the EPA
- Recommended that the state sell land next to the marsh only if it would be used for low-impact activities—such as day trips by visitors—and not for construction of homes and businesses



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PROJECT: Designed and Installed Control Panel for Nuclear Plant
CLIENT: Russian Government



Ben Edwards/Stone/Getty Images

Brief Project Description

In 2002, M-Global's safety experts and mechanical engineers were hired to design a new control panel and to retrofit it into an existing plant. The panel was designed, manufactured, installed, and tested by M-Global—with the help of several subcontractors.

Main Technical Tasks

- Spent one week at site observing operators using old panel
- Hired ergonomic and nuclear power experts to help evaluate old panel design and to suggest features of new design
- Designed and manufactured panel
- Installed panel at Russian plant and observed one full week of testing, when panel was used at plant under simulated conditions
- Remained on-site for three days after full power was resumed in order to continue training operators on use of new panel

Main Findings or Benefits

- Designed panel that international experts considered to be as safe as any currently in use
- Stayed on schedule, keeping the plant out of use only two weeks



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PROJECT: Designed and Taught Seminar
in Technical Writing
CLIENT: Government of Germany



Stockbyte/Getty Images

Brief Project Description

The government of Germany has greatly increased the number of technical experts in departments in the City of Bonn. M-Global's Munich office was selected to design and teach an in-house technical writing seminar for 20 mid-level government employees in Bonn. They work in agriculture, health, and engineering. Although in different fields, the individuals write the same types of reports.

Main Technical Tasks

- Met with members of the seminar and their managers to determine needs of the group
- Examined sample reports from all participants
- Studied the government's style guidelines
- Designed and taught a three-day seminar, using a manual of guidelines and samples tailored for the group
- Evaluated actual on-the-job reports written by participants after the seminar

Main Findings or Benefits

- Received "very good" to "excellent" ratings from all 20 participants on the written critiques completed on the last day of the course
- Wrote a final report to client that documented improvement shown in participants' reports written after the seminar, as compared with those written before the seminar



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PROJECT: Designed and Created Documentation
of Data Security Procedures

CLIENT: Kansas Department of Social and Health Services



Daisuke Morita/Photodisc/Getty Images

Brief Project Description

In response to public concerns about the security of private data, the Kansas Department of Social and Health Services undertook a systematic documentation of all security protocols for personal information. Using the recommendations of an Information Systems Audit, M-Global created on-line and print documentation of computer security procedures.

Main Technical Tasks

- Identified procedures to be documented
- Designed information architecture for procedural documentation
- Created on-line help files to be used by computer operators
- Created print-format guide to data security procedures

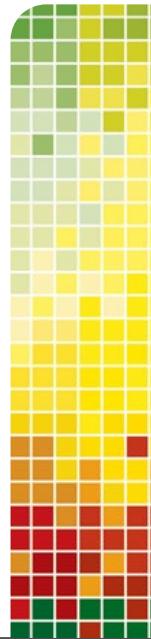
Main Findings or Benefits

- Assisted in meeting public expectations of privacy of confidential information
- New documentation contributed to improved security rating in follow-up audit
- Recognized by Kansans for Security and Privacy for contributions to security of state records.



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Chapter | 13 | Graphics



>>> Chapter Objectives

In this chapter students will

- Learn terms for the different types of graphics commonly used in technical documents
- Understand why graphics are useful in technical documents
- Learn guidelines that apply to all graphics
- Learn specific guidelines for tables, pie charts, bar charts, line graphs, flowcharts, organization charts, technical drawings, photographs, and screen captures
- Learn the to avoid the problems of misused graphics
- Analyze sample graphics

Shon Williams, Director of Public Information at M-Global, always contributes to the organization's annual report. Among the sections he has been asked to write is a description of M-Global's environmental work. This description will also be used by the Marketing Department in press releases as a way to interest industry magazines in profiling M-Global's environmental efforts.

Shon has gathered stacks of data about M-Global's environmental projects and internal ecofriendly initiatives from project reports and quarterly reports from each of the organization's branches and major departments. To make sense of the information, he has created a set of spreadsheets to track the various environmental activities at M-Global. Now his challenge is to put this information in a form that can be understood easily by stockholders and other readers. He decides to convert the data in the spreadsheets into line charts, bar charts, and pie charts to make the information easily accessible. Using his spreadsheet program, he will find it easy to create graphics that can be published in print and electronic forms.

Technology has radically changed the world of graphics. Now, almost anyone with a computer and

the right software can quickly produce illustrations that used to take hours to construct. As a result, today there are sophisticated graphics in every medium—newspapers, television, Web sites, and, of course, technical documents.

Because readers expect graphics to accompany text, you as a technical professional must respond to this need. Well-designed and well-placed graphics keep your documents clear and user-friendly. Your graphics do not have to be fancy, however. Nor is it true that adding graphics will necessarily improve a document. Readers are impressed only by visuals that are well done and clarify the information in the text.

Because so many different types of graphics are available, technical professionals must first understand the basics of graphics before they apply sophisticated techniques. To emphasize these basics, this Chapter (1) defines some common graphics terms, (2) explains the main reasons to use graphics, (3) suggests guidelines for using color, (4) gives some general suggestions for incorporating graphics into text, (5) lists specific guidelines for seven common graphics, and (6) shows you how to avoid graphics misuse.

>>> Terms in Graphics

The lack of a uniform terminology for graphics in the professions can lead to some confusion. For the purposes of this chapter, however, some common definitions are adopted. They are listed here:

- **Graphics:** This generic term refers to any nontextual portion of documents or oral presentations. It can be used in two ways: (1) to designate the field (e.g., "Graphics is an area in which he showed great interest") or (2) to name individual graphic items ("She placed three graphics in her report"). Graphics can be divided into *tables* and *figures*.
- **Illustrations, visual aids:** Used synonymously with *graphics*, these terms also can refer to all nontextual parts of a document. The term *visual aids*, however, often is limited to the context of oral presentations.

- **Tables:** Illustrations that place numbers or words in columns and rows.
- **Figures:** All graphics other than tables. Examples include charts (pie, bar, line, flow, and organization), engineering drawings, maps, and photographs.
- **Charts:** A subset of *figures*, charts are a type of graphic that displays data in visual forms—such as bars, columns, or pie shapes.
- **Graphs:** A subset of *figures*, graphs display data in visual form using a horizontal axis and a vertical axis, line graphs in particular.
- **Technical drawing:** A subset of *figures*, a technical drawing is a representation of a physical object. Such illustrations can be drawn from many perspectives and can include *exploded* or *cutaway* views.
- **Photograph:** Another subset of *figures*, photographs accurately document their subject.
- **Screen capture:** Another subset of *figures*, screen captures present images of all or part of digital displays on devices such as computers and smart phones.

Of course, you may see other graphics terms. For example, some technical companies use the word *plates* for figures. Be sure to know the terms your readers understand and the types of graphics they are familiar with.

>> Reasons for Using Graphics

Although the technology for producing graphics is constantly changing, the rationale for using them remains the same. Before exploring specific types of illustrations, this section covers some reasons why readers might choose graphics to accompany text.

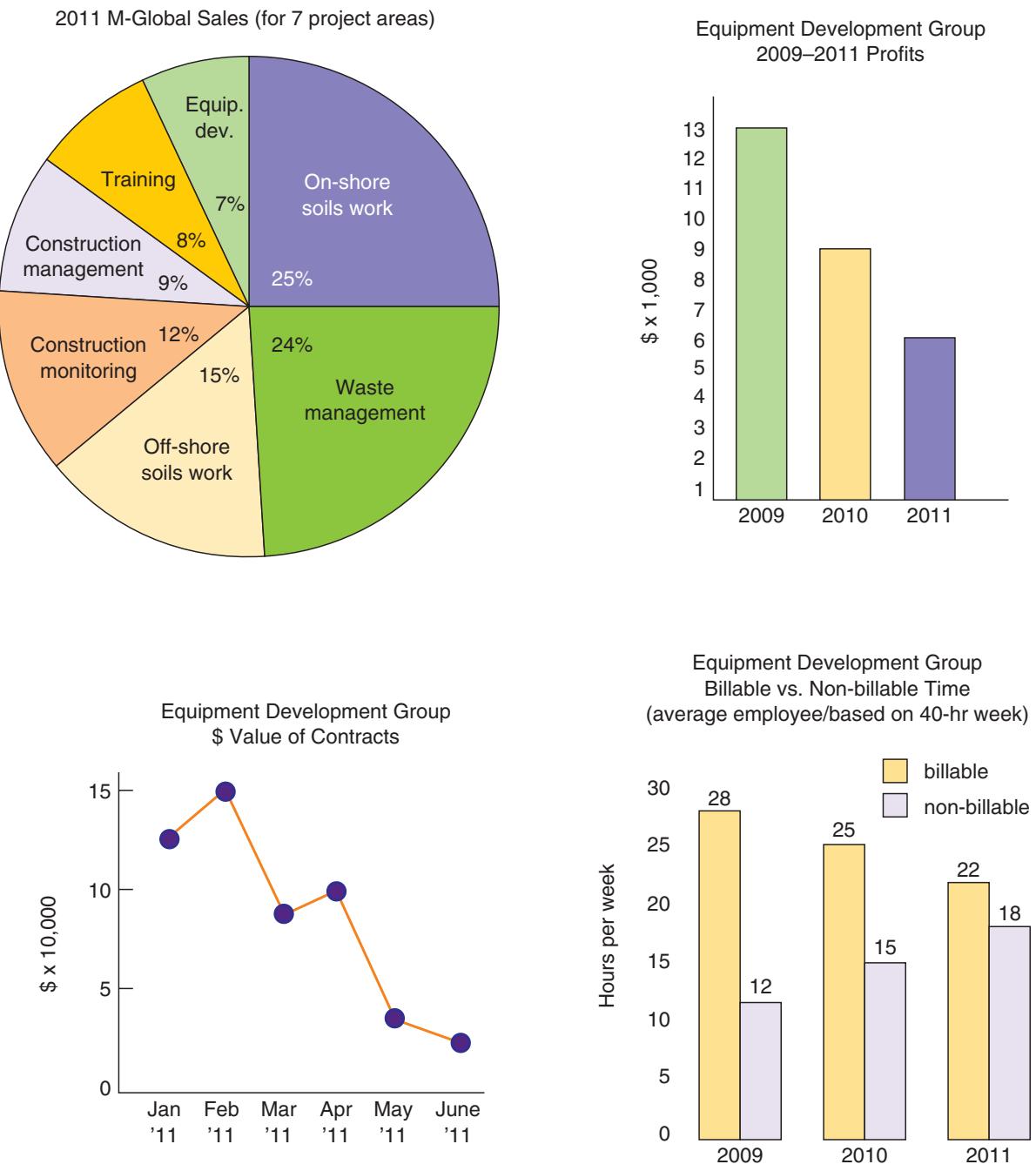
>> Reason 1: Graphics Simplify Ideas

Your readers usually know less about the subject than you. Graphics can help them cut through technical details and grasp basic ideas. Also, a simple illustration of a laboratory instrument, such as a Bunsen burner, can make the description of a lab procedure much easier to understand.

In a more complex example, Figure 13–1 uses a group of four different charts to convey the one main point—that M-Global’s Equipment Development Lab lags behind the company’s other profit centers. A quick look at the charts tells the story of the group’s difficulties much better than would several hundred words of text. Of course, the text itself must still focus the reader’s attention on the relevant information.

>> Reason 2: Graphics Reinforce Ideas

When a point needs emphasis, you can use an appropriate graphic element. For example, you might draw a map to show where computer terminals will be located within a building or use a pie chart to show how a budget will be spent. You might even include a drawing that indicates how to operate a scanner. Each of these solutions would reinforce points made in the accompanying text.



■ **Figure 13-1** ■ Graphics used to simplify ideas

>> Reason 3: Graphics Create Continuity

Many organizations use colors, fonts, and graphics uniformly to reinforce their professional image. These graphics may appear on everything from delivery trucks to Web sites. Print and digital documents include these elements as well, such as the M-Global documents used throughout this book. This consistency helps clients immediately recognize the company that produced a service, product, or document.

>> Reason 4: Graphics Create Interest

Graphics are *attention grabbers* and can be used to engage readers' interest. If your customers have three reports on their desks and must quickly decide which one to read first, the one with a distinctive look that complements the text will probably be chosen first. The attention-getting element may be something as simple as (1) a map outline of the state, county, or city where you will be doing a project; (2) a picture of the product or service you are providing; or (3) a symbol of the purpose of your writing project.

Figure 13–2 shows how an outside consultant used a graphic that included a globe to attract attention to his M-Global proposal. With its reference to the M-Global logo, the image helped (1) reflect the client's international scope; (2) focus on the human side of employee testing; and (3) associate the innovation of Infinite Vision, Inc., with M-Global. Also, by using the font style and color preference of the client, the writer allows the reader to "take ownership" of the proposal before ever reading the contents.

Improving Productivity at M-Global, Inc.

An Innovative Approach to Employee Testing



© Alexmax/Dreamstime.com

Prepared for James McDuff
President, M-Global, Inc.
by
James H. Stephens
Infinite Vision, Inc.

FEBRUARY 22, 2012

■ **Figure 13–2 ■**
Graphic used to
create interest

>> Reason 5: Graphics Are Universal

Some people wrongly associate the growing importance of graphics with today's reliance on images and graphic interfaces on Web pages, smart phones, and tablet computers. Although these media obviously rely on visual elements, graphics have been humankind's universal language since cave drawings. Writers of technical documents recognize the force of graphics in both print and digital documents.

>> General Guidelines for Graphics

A wide range of software tools is available to create and edit graphics. Your options range from chart tools in spreadsheets to complex Computer Assisted Design (CAD) tools. Spend time working with the tools that you have available to you. If you have access to only an office suite, learn to use the drawing and chart-making tools in the word processor and presentation slide programs. Data in spreadsheets can easily be formatted as bar charts, pie charts, and line graphs, as well as other kinds of charts and graphs. If you work with many graphics of a particular kind, invest in specialized software, for example, a photo-editing program. Remember that all graphics software has strengths and weaknesses. Don't be tempted to clutter up your graphics with a lot of color or detail just because your software tool allows you to. A few basic guidelines will help you create clean, understandable graphics. Keep the following fundamentals in mind as you move from one type of illustration to another.

>> Graphics Guideline 1: Determine the Purpose of the Graphic

Graphics, like text, should be used only if they serve a purpose. Ask yourself the following questions:

- What kind of information does your audience need to better understand the scope, problem, or solution?
- What type of graphic can be used to present the data in the most interesting and informative way?

>> Graphics Guideline 2: Evaluate the Accuracy and Validity of the Data

Unless the information you plan to include in your document is accurate, you run the risk of presenting information that could damage your credibility as well as the credibility of the document. Remember, one false or inappropriate statistic tends to cast doubt on the balance of the data. Do the following:

- Check the accuracy of information
- Make sure the source is reputable
- Ensure that data are not distorted by flawed scales or images

>> Graphics Guideline 3: Refer to All Graphics in the Text

With a few exceptions—such as cover illustrations used to grab attention—graphics should be accompanied by clear references within your text. Specifically, you should follow these rules:

- Include the graphic number in Arabic, not Roman, when you are using more than one graphic
- Include the title, and sometimes the page number, if either is needed for clarity or emphasis
- Incorporate the reference smoothly into text wording
- Highlight significant information being communicated by the graphic

Following are two ways to phrase and position a graphics reference. In Example 1, there is the additional emphasis on the graphic's title, whereas in Example 2, the title is left out. Also, note that you can draw more attention to the graphic by placing the reference near the start of the sentence in a separate clause, or you can relegate the reference to a parenthetical expression at the end or middle of the passage. Choose the option that best suits your purposes.

- **Example 1:** In the past five years, 56 businesses in the county have started in-house recycling programs. The result has been a dramatic shift in the amount of property the county has bought for new waste sites (see Figure 5 “Landfill Purchases, 1985–1990”).
- **Example 2:** As shown in Figure 5, the county has purchased much less land for landfills during the past five years. This dramatic reduction results from the fact that 56 businesses have started in-house recycling programs.

>> Graphics Guideline 4: Think About Where to Put Graphics

In most cases, locate a graphic close to the text in which it is mentioned. This immediate reinforcement of text by an illustration gives graphics their greatest strength. The discussion in the text should appear before the graphic. Variations of this option, as well as several other possibilities, include the following:

- **Same page as text reference:** A simple visual, such as an informal table, should be placed on the same page as the text reference if you think it too small for a separate page.
- **Page opposite text reference:** A complex graphic, such as a long table, that accompanies a specific page of text can go on the page opposite the text—that is, on the left-hand page of a two-page spread. This option is exercised *only* in documents that are printed on both sides of the paper throughout.
- **Page following first text reference:** Most graphics appear on the page after the first reference. If the graphic is referred to throughout the text, it can be repeated at later points. (*Note:* Readers prefer to have graphics positioned exactly where they need them, rather than having to refer to another part of the document.)

- **Attachments or appendixes:** Graphics can go at the end of the document in two cases: first, if the text contains so many references to the graphic that placement in a specific location, such as an appendix, would make it more accessible; and second, if the graphic contains less important supporting material that would only interrupt the text.

>> **Graphics Guideline 5: Position Graphics Vertically When Possible**

Readers prefer graphics they can view without having to turn the document sideways. However, if the table or figure cannot fit vertically on a standard 8 ½-by-11-inch page, either use a foldout or place the graphic horizontally on the page. In the latter case, position the illustration so that the top is on the left margin. (In other words, the page must be turned clockwise to be viewed.)

>> **Graphics Guideline 6: Avoid Clutter**

Let simplicity be your guide. Readers go to graphics for relief from or reinforcement of the text. They do not want to be bombarded by visual clutter. Omit information that is not relevant to your purpose while still making the illustration clear and self-contained. Also, use enough white space so that the readers' eyes are drawn to the graphic. The final section of this chapter discusses graphics clutter in more detail.

>> **Graphics Guideline 7: Provide Titles, Notes, Keys, and Source Data**

Graphics should be as self-contained and self-explanatory as possible. Moreover, they must include documentation of any borrowed information. Follow these basic rules for format and acknowledgment of sources:

- **Title:** Follow the graphic number with a short, precise title—either on the line beneath the number or on the same line. If the title is on the same line, use a colon or a graphic element such as bolding or a symbol to separate the title and figure number (e.g., “**Figure 3 • Salary Scales**”).
- **Tables:** The number and title go at the top. (As noted in Table Guideline 1 on page 487, one exception is informal tables, which have no table number or title.)
- **Figures:** The number and title usually go below the illustration. Center titles or place them flush with the left margin.
- **Notes for explanation:** When clarifying information is needed, place a note directly underneath the title or at the bottom of the graphic.
- **Keys or legends for simplicity:** If a graphic needs many labels, consider using a legend or key, which lists the labels and corresponding symbols on the graphic. For example, a pie chart might have the letters *A*, *B*, *C*, *D*, and *E* printed on the pie pieces and a legend at the top, bottom, or side of the figure explaining what the letters represent.
- **Source information at the bottom:** You have an ethical, and sometimes legal, obligation to cite the person, organization, or publication from which you borrowed information for the figure. Either (1) precede the description with the word *Source* and a colon, or (2) if you borrowed just part of a graphic, introduce the citation with “Adapted from.”

As well as citing the source, it is sometimes necessary to request permission to use copyrighted or proprietary information, depending on how you use it and how much you are using. (A prominent exception is most information provided by the federal government; most government publications are not copyrighted.) Consult a reference librarian or your organization's legal department for details about seeking permission.

>> Specific Guidelines for Nine Graphics

Illustrations come in many forms. Almost any nontextual part of your document can be placed under the umbrella term *graphic*. Among the many types, the following are often used in technical communication: (1) tables, (2) pie charts, (3) bar charts, (4) line graphs, (5) flowcharts, (6) organization charts, (7) technical drawings, (8) photographs, and (9) screen captures. This section of the chapter highlights their different purposes and gives guidelines for using each type.

Tables

Tables present readers with raw data, usually in the form of numbers but sometimes in the form of words. Tables are classified as either *informal* or *formal*:

- **Informal tables:** Limited data arranged in the form of either rows or columns
- **Formal tables:** Data arranged in a grid, always with both horizontal rows and vertical columns

The following five guidelines help you design and position tables within the text of your documents.

>> Table Guideline 1: Use Informal Tables as Extensions of Text

Informal tables are usually merged with the text on a page, rather than isolated on a separate page or attachment. As Figure 13–3 shows, an informal table usually has (1) no table number or title, and (2) few if any headings for rows or columns. Also, it is not included in the list of illustrations in a formal document.

>> Table Guideline 2: Use Formal Tables for Complex Data Separated From Text

Formal tables may appear on the page of text that includes the table reference, on the page following the first text reference, or in an attachment or appendix. Formal tables call attention to important information, and they can help organize numerical and conceptual information. However, formal tables should not be expected to provide all of

Graphics Guidelines

- Determine the purpose of the graphic
- Evaluate the accuracy and validity of the data
- Refer to all graphics in the text
- Think about where to put graphics
- Position graphics vertically when possible
- Avoid clutter
- Provide titles, notes, keys, and source data

■ Figure 13–3 ■

Informal table
in a report

Source: U.S. Federal Trade Commission. (2005, November). E-mail address harvesting and the effectiveness of anti-spam filters: A report by the Federal Trade Commission's Division of Marketing Practices, p. 2.

FTC staff then posted sets of three of these newly-created e-mail addresses—consisting of an Unfiltered Address, an address at Filtered ISP 1, and an address at Filtered ISP 2—on 50 Internet locations. The 50 Internet locations included websites controlled by the FTC⁵ and several popular message boards, blogs, chat rooms, and USENET groups which had high hit/visit rates, according to ranking websites such as www.message-boards.com and Google popularity searches.⁶ All of the 150 addresses were posted during a three day period in July 2005.

Graphic 1

Locations On Which E-mail Addresses
Were Posted

Type	Number
FTC Website Pages	12
Message Boards	12
Blogs	12
Chat Rooms	12
USENET Groups	2

the information about data. You should extract important data from the table and discuss them in the text.

>> Table Guideline 3: Follow Usual Conventions for Dividing and Explaining Data

Figure 13–4 shows a typical formal table. It satisfies the overriding goal of being clear and self-contained. To achieve that objective in your tables, use the following guidelines:

- 1. Titles and numberings:** Give a title to each formal table, and place the title and number above the table. Number each table if the document contains two or more tables.
- 2. Headings:** Create short, clear headings for all columns and rows.
- 3. Abbreviations:** Include in the headings any necessary abbreviations or symbols, such as *lb* or %. Spell out abbreviations and define terms in a key or footnote if the reader may need such assistance.
- 4. Numbers:** For ease of reading, round off numbers when possible. Also, align multi-digit numbers on the right edge, or at the decimal when shown.
- 5. Notes:** Place any necessary explanatory headnotes either between the title and the table (if the notes are short) or at the bottom of the table.

Table 26: Singh, et al. anticholinergic meta-analysis results

Outcome	No of RCTs	Inhaled anticholinergic n/N	Controls n/N	RR (95% CI)	p-value
As reported September 2008					
CV death	12	57/6156	31/6220	1.80 (1.17-2.77)	0.008
MI	11	68/5430	43/5168	1.53 (1.05-2.23)	0.03
Stroke	7	25/4548	18/4703	1.46 (0.81-2.62)	0.20
All cause mortality	17	149/7472	115/7311	1.26 (0.99-1.61)	0.06
As reported March 2009					
CV death	12	56/5668	28/5615	1.92 (1.23-3.00)	0.004
MI	13	68/5430	43/5123	1.52 (1.04-2.22)	0.03
Stroke	9	25/4548	18/4703	1.46 (0.81-2.62)	0.20
All cause mortality	17	146/6984	108/6661	1.29 (1.00-1.65)	0.05

RCT=randomized controlled trials, RR=risk ratio, CV=cardiovascular, MI=myocardial infarction

■ **Figure 13–4** ■ Example of formal table

Source: U.S. Food and Drug Administration. (2009). *Pulmonary-Allergy Drugs Advisory Committee Meeting, November 19, 2009, Clinical Briefing Document NDA# 21-395 Spiriva HandiHaler*, p. 81.

6. **Footnotes:** Place any necessary footnotes below the table.

7. **Sources:** Place any necessary source references beneath the footnotes.

8. **Caps:** Use uppercase and lowercase letters rather than all caps.

» **Table Guideline 4: Make Every Formal Table as Clear and Visually Appealing as Possible**

Avoid excessive use of heavy horizontal and vertical crossed lines that create a grid look; instead, consider using white lines on a light gray background or light gray lines on a white background to lead the eye across the page. Use color in the following ways to help readers locate information in the table:

- Use color to designate positive or negative totals, increases, or decreases or very important points.
- Use colored or dark gray borders to frame the information and call attention to the table.
- Use gray screens (no denser than 10 to 25 percent) to subordinate less important data that appear on the table.

Figure 13–4 omits lines between the columns to emphasize the relationship of data in the rows. Figure 13–5 shows examples of three tables that use different designs to present the same information. The first version includes no shading; the second version uses shading to emphasize the age groups that are being reported on; and the third version, which is the original version, uses shading to emphasize the statistically significant changes.

Table 1B. Percentage of Students Ages 9, 13, and 17, by Frequency of Reading for Fun: 1984, 1999, and 2004

Age 9	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	53%	28%	7%	3%	9%
1999	54%	26%	6%	4%	10%
2004	54%	26%	7%	5%	8%
Age 13	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	35%	35%	14%	7%	8%
1999	28%	36%	17%	10%	9%
2004	30%	34%	15%	9%	13%
Age 17	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	31%	33%	17%	10%	9%
1999	25%	28%	19%	12%	16%
2004	22%	30%	15%	14%	19%

Source: U.S. Department of Education, National Center for Education Statistics.

Table 1B. Percentage of Students Ages 9, 13, and 17, by Frequency of Reading for Fun: 1984, 1999, and 2004

Age 9	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	53%	28%	7%	3%	9%
1999	54%	26%	6%	4%	10%
2004	54%	26%	7%	5%	8%
Age 13	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	35%	35%	14%	7%	8%
1999	28%	36%	17%	10%	9%
2004	30%	34%	15%	9%	13%
Age 17	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	31%	33%	17%	10%	9%
1999	25%	28%	19%	12%	16%
2004	22%	30%	15%	14%	19%

Source: U.S. Department of Education, National Center for Education Statistics.

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Age 13	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	35%	35%	14%	7%	8%
1999	28%	36%	17%	10%	9%
2004	30%	34%	15%	9%	13%
Age 17	Almost every day	Once or twice a week	Once or twice a month	A few times a year	Never or hardly ever
1984	31%	33%	17%	10%	9%
1999	25%	28%	19%	12%	16%
2004	22%	30%	15%	14%	19%

Source: U.S. Department of Education, National Center for Education Statistics.

Figure 13-5 Use of shading and color highlights in three identical tablesAdapted from National Endowment for the Arts. (2007, November). *To read or not to read: A question of national consequence*. Washington, DC, p. 29.

>> Table Guideline 5: Use Plenty of White Space

Used around and within tables, white space guides the eye through a table much better than black lines. Avoid putting densely drawn black boxes around tables. Instead, leave one inch more of white space than you would normally leave around text, and let it act as a frame.

>> Table Guideline 6: Pay Special Attention to Cost Data

Most readers prefer to have complicated financial information placed in tabular form. Given the importance of such data, edit cost tables with great care. Devote extra attention to the following two issues:

- Placement of decimals in costs
- Correct totals of figures

Documents like proposals can be considered contracts in some courts of law, so there is no room for error in relating costs.

Pie Charts

Familiar to most readers, *pie charts* show approximate relationships between the parts and the whole. Their simple circles with clear labels can provide clarity within even the most complicated report. Yet the simple form keeps them from being useful when you must reveal detailed information or changes over time. Following are specific guidelines for constructing pie charts.

Table Guidelines

- Use informal tables as extensions of text
- Use formal tables for complex data separated from text
- Follow usual conventions for dividing and explaining data
- Make every formal table as clear and visually appealing as possible
- Use plenty of white space
- Pay special attention to cost data

>> Pie Chart Guideline 1: Use Pie Charts Especially for Percentages and Money

Pie charts catch the readers' eyes best when they represent items divisible by 100—like percentages and dollars (see the percentages shown in Figure 13–6). *In every case, make sure your percentages or cents add up to 100.*

>> Pie Chart Guideline 2: Use No More Than Six or Seven Divisions

To make pie charts work well, limit the number of pie pieces to no more than six or seven. In fact, the fewer segments the better. This approach lets the reader grasp major relationships without having to wade through the clutter of tiny divisions that are difficult to label and read.

>> Pie Chart Guideline 3: Place Pie Wedges in Clear, Meaningful Groups

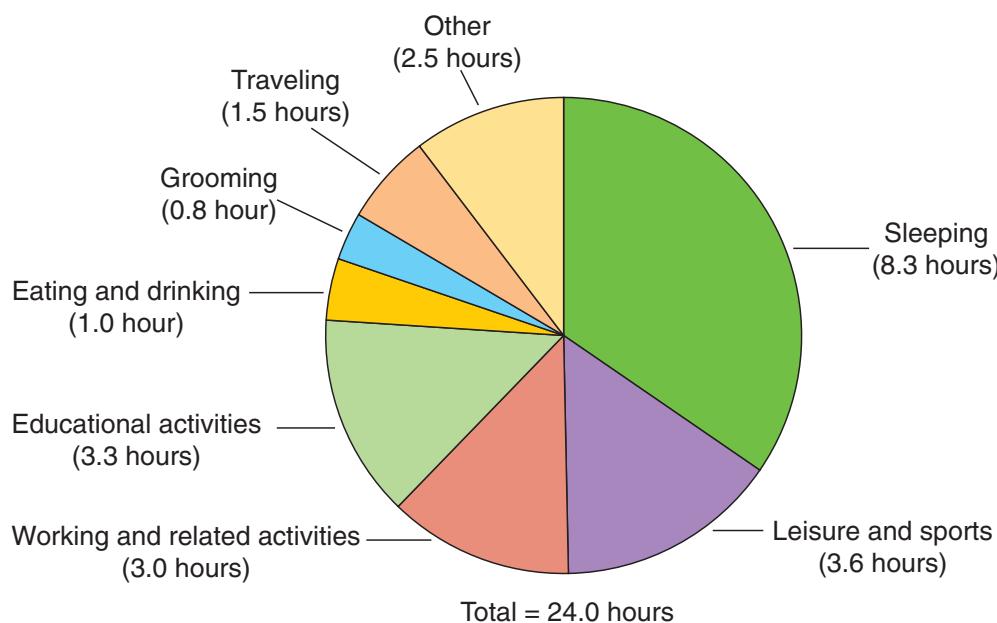
In general, pie charts should be oriented like a clock, with the first wedge starting at 12:00. Move from the largest to the smallest wedge to provide a convenient organizing

Figure 13–6

Example of a pie chart showing percentages

Source: U.S. Bureau of Labor Statistics. (2011). *American time use survey*. <http://www.bls.gov/tus/charts/students.htm>.

Time use on an average weekday for full-time university and college students



principle. However, you should also group wedges so that they make sense to your reader and reflect your discussion in the text. In Figure 13–6, for example, although the wedge, labeled “Other” represents a greater percentage than the previous wedges, it is placed in the “last” position on the chart. In this way, it does not break up the sequence the writer wants to establish of specific types of activities.

If you are using a spreadsheet program to create your pie chart, be careful in entering your data. Many of these programs simply arrange the wedges in the same order as in the spreadsheet; order your rows and columns of data so that the wedges in the resulting pie chart are arranged the way that you want them to be.

>> Pie Chart Guideline 4: Be Creative, but Stay Simple

Figure 13–7 shows a number of options for designing pie charts, including

1. Shading a wedge
2. Removing a wedge from the main pie
3. Using a pie chart within a pie chart for additional information

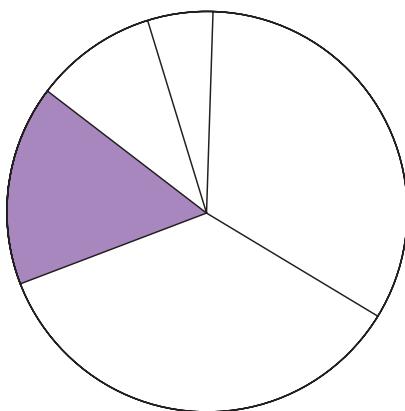
Be aware that some desktop publishing programs automatically format your pie charts using complex backgrounds and shading. However, these are often difficult to read and may distort the pieces of the pie. Remember to keep your pie charts simple and clean looking.

>> Pie Chart Guideline 5: Draw and Label Carefully

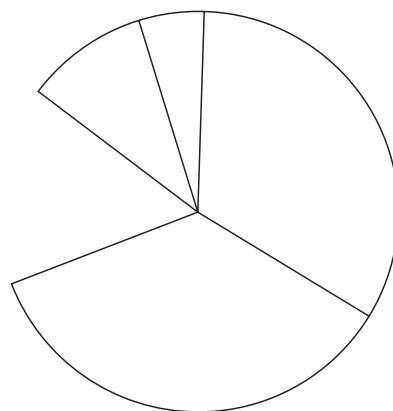
The most common pie chart errors are (1) wedge sizes that do not correspond correctly to percentages or money amounts and (2) pie sizes that are too small to accommodate

Figure 13-7
Techniques for emphasis in pie charts

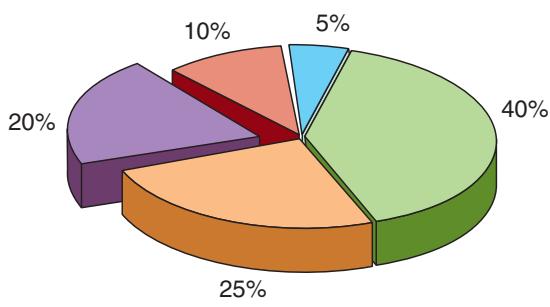
A: Shading one piece



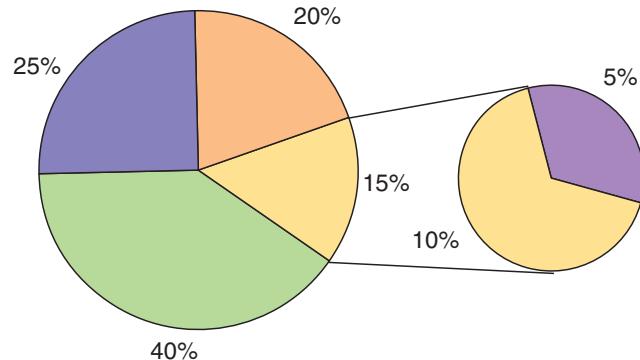
B: Removing one wedge



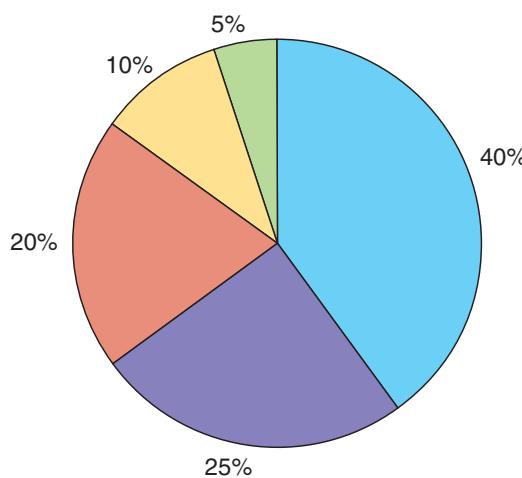
C: Exploded pie chart



D: Pie within pie



E: Simple pie chart



the information placed in them. Following are some suggestions for avoiding these mistakes:

- **Pie size:** Make sure the chart occupies enough of the page. On a standard 8½-by-11-inch sheet with only one pie chart, your circle should be from 3 to 6 inches in diameter—large enough not to be dwarfed by labels and small enough to leave sufficient white space in the margins.

Pie Chart Guidelines

- Use pie charts especially for percentages and money
- Use no more than six or seven divisions
- Place pie wedges in clear, meaningful groups
- Be creative, but stay simple
- Draw and label carefully

■ **Labels:** Place the wedge labels either inside the pie or outside, depending on the number of wedges, the number of wedge labels, and the length of the labels. Labels placed outside of the chart should clearly refer to the corresponding wedge. Choose the option that produces the cleanest-looking chart.

Remember, however, that a pie chart does not reveal fine distinctions very well; it is best used for showing larger differences.

Bar Charts

Like pie charts, bar charts are easily recognized because they are seen every day in newspapers and magazines. Unlike pie charts, however, bar charts can accommodate a good deal of data detail. Comparisons are provided by means of two or more bars running horizontally or vertically on the page. Use the following five guidelines to create effective bar charts.

>> Bar Chart Guideline 1: Use a Limited Number of Bars

Although bar charts can show more information than pie charts, both illustrations have their limits. Bar charts begin to break down when there are so many bars that information is not easily grasped. The maximum bar number can vary according to chart size, of course. Figure 13–8 shows two multibar charts. The impact of the charts is enhanced by the limited number of bars.

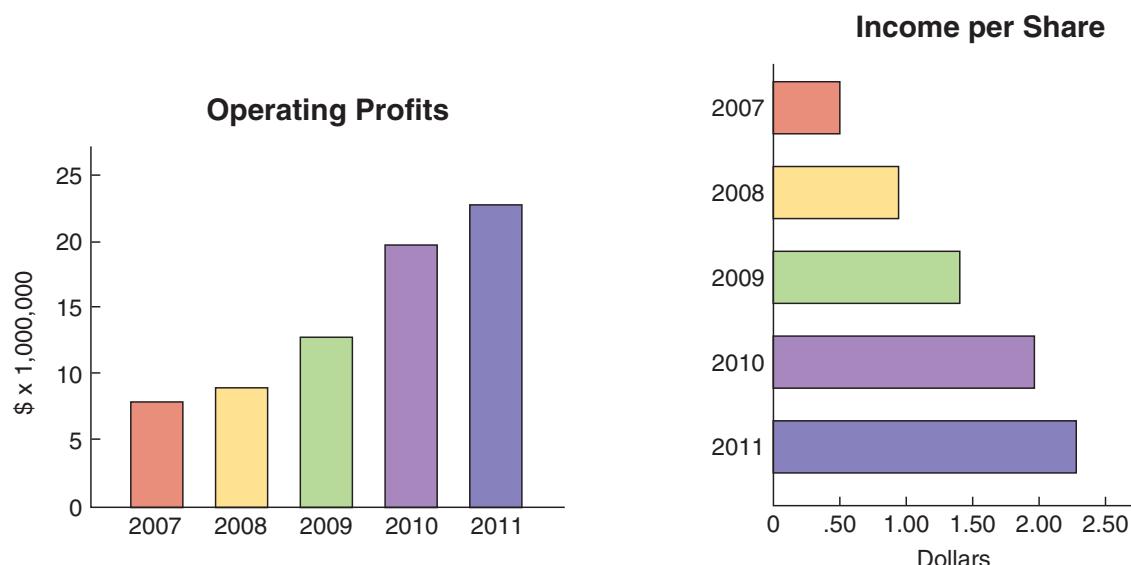
>> Bar Chart Guideline 2: Show Comparisons Clearly

Bar lengths should be varied enough to show comparisons quickly and clearly. Avoid using bars that are too close in length, because then readers must study the chart before understanding it. Such a chart lacks immediate visual impact.

Also, avoid the opposite tendency of using bar charts to show data that are very different in magnitude. To relate such differences, some writers resort to the dubious

■ **Figure 13–8 ■**

Bar charts



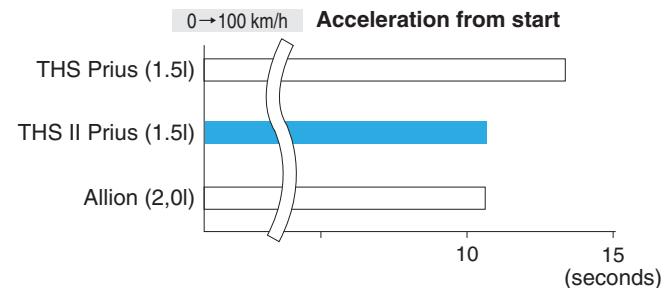


Figure 13-9 Break lines on bar charts—a technique that can lead to misunderstanding

Source: Toyota Motor Corporation. (2003, May). *Toyota hybrid system*. Tokyo, Japan, p. 18.

technique of inserting *break lines* (two parallel lines) on an axis to reflect breaks in scale (Figure 13–9). Although this approach at least reminds readers of the breaks, it can be deceptive. The reader must think about these differences before making sense out of the chart. In other words, the use of break lines runs counter to a main goal of graphics—creating an immediate and accurate visual impact.

>> Bar Chart Guideline 3: Keep Bar Widths Equal and Adjust Space Between Bars Carefully

Although bar length varies, bar width must remain constant. As for distance between the bars, following are four options (along with examples in Figure 13–10):

- **Option A: Use no space** when there are close comparisons or many bars, so that differences are easier to grasp.
- **Option B: Use equal space, but less than bar width** when bar height differences are great enough to be seen in spite of the distance between bars.
- **Option C: Group related bars** to emphasize related data.
- **Option D: Use variable space** when gaps between some bars are needed to reflect gaps in the data.

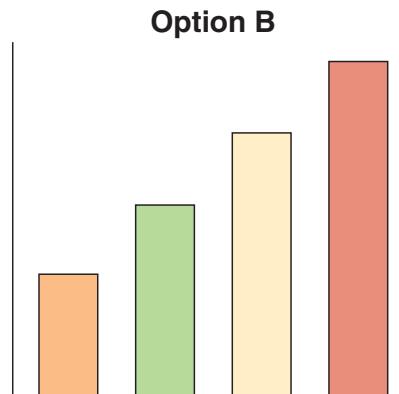
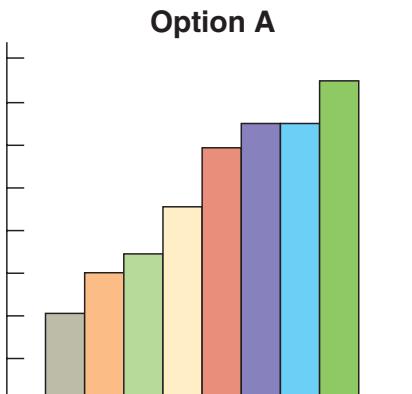
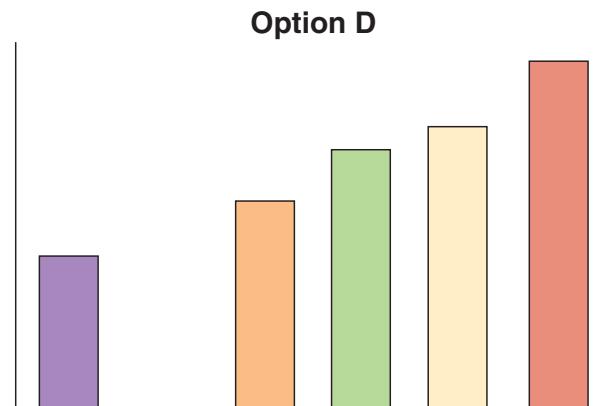
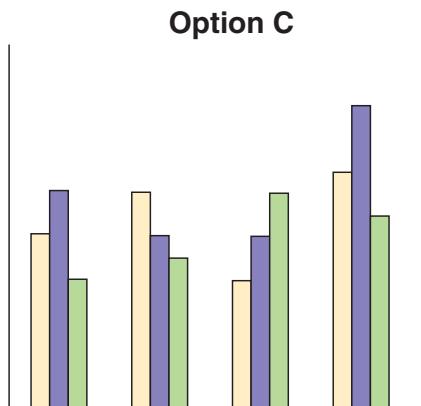


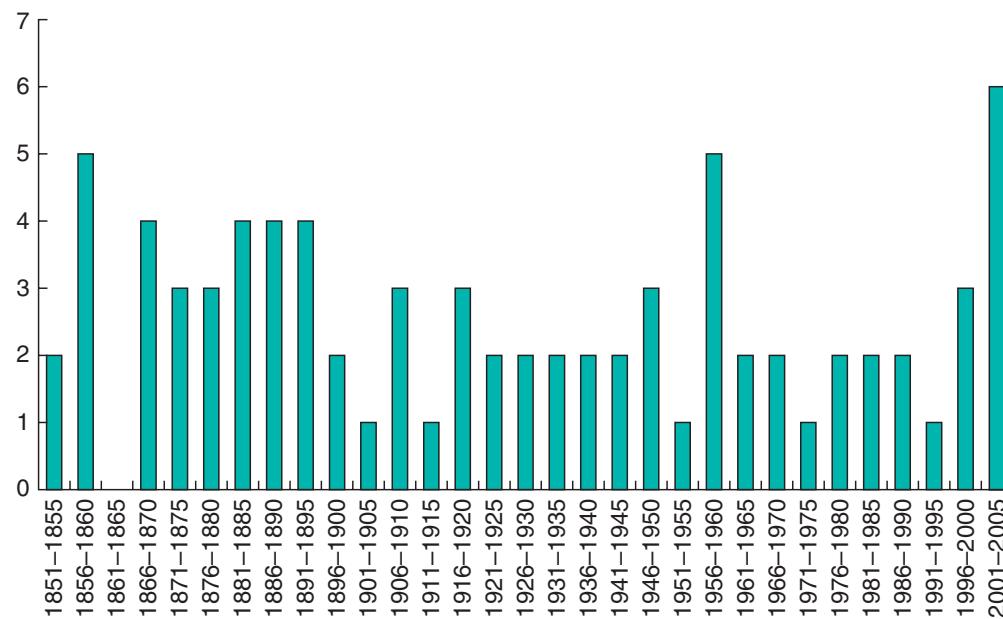
Figure 13-10 Bar chart variations



■ **Figure 13–11 ■**

Sequential bar chart showing trend

Source: J. R. Lanzante, T. C. Peterson, F. J. Wentz, & K. Y. Vinnikov. (2006). What do observations indicate about the change of temperatures in the atmosphere and at the surface since the advent of measuring temperatures vertically? In T. R. Karl, S. J. Hassol, C. D. Miller, & W. L. Murray (Eds.), *Temperature trends in the lower atmosphere: Steps for understanding and reconciling differences. A report by the Climate Change Science Program and the Subcommittee on Global Change Research*. Washington, DC, Figure 13–20, p. 71.



>> **Bar Chart Guideline 4: Carefully Arrange the Order of Bars**

The arrangement of bars is what reveals meaning to readers. Following are two common approaches:

■ **Sequential:** Used when the progress of the bars shows a trend—for example, Figure 13–11 shows the history of strong storms in a Gulf Coast location.

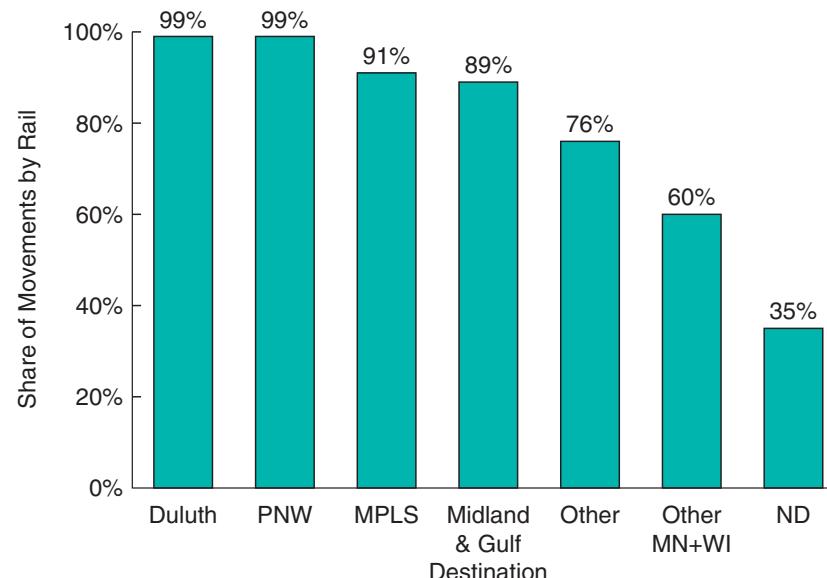
■ **Ascending or descending order:** Used when you want to make a point by the rising or falling of the bars—for example, Figure 13–12 uses descending order to show the destinations of commodities shipped by rail.

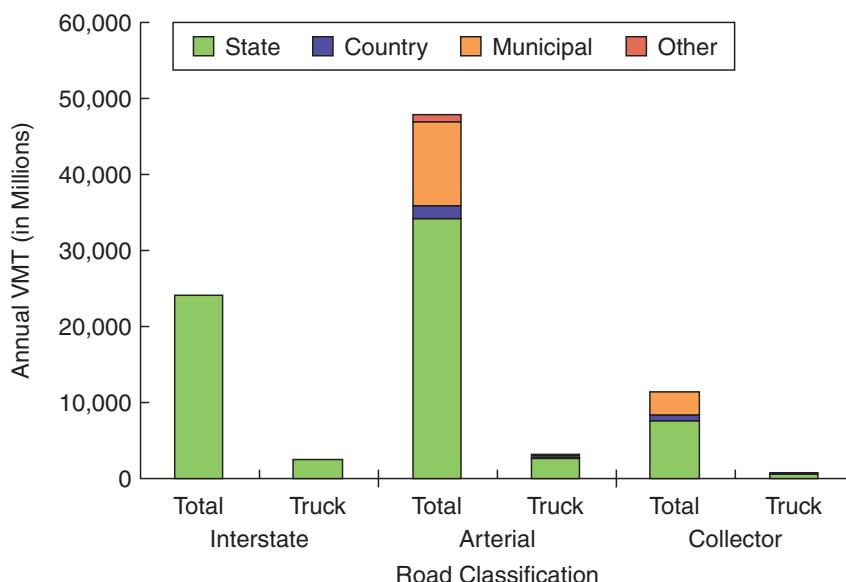
■ **Figure 13–12 ■**

Bar chart in descending order

Source: Upper Great Plains Transportation Institute. (2007). *North Dakota state rail plan* (Figure A.1, p. 66). Reprinted with permission from the Upper Great Plains Transportation Institute, North Dakota State University, Bismarck, North Dakota.

Rail Share of Grain & Oilseeds Originating in North Dakota by Destination⁴⁹



**Figure 13-13**

Segmented bar chart

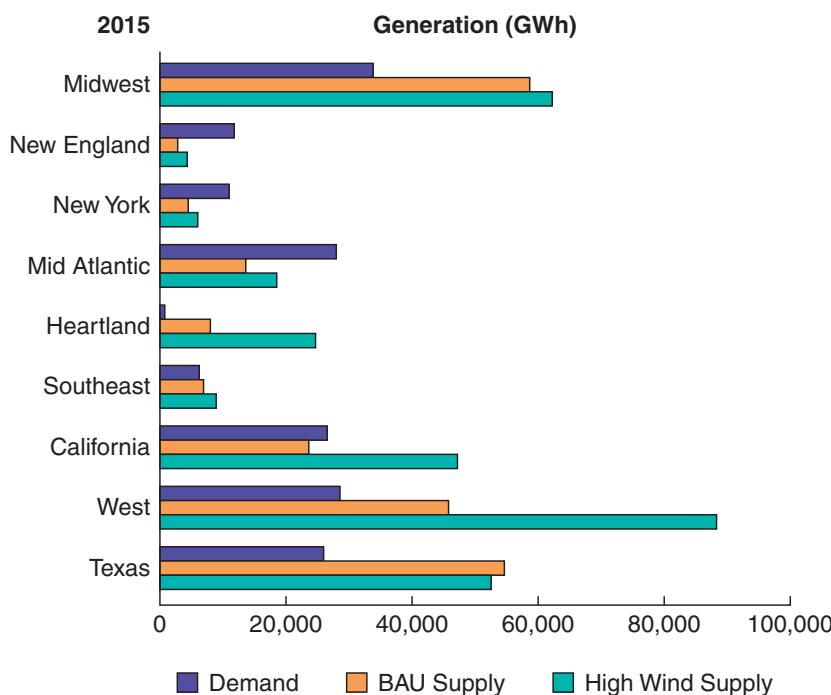
Source: J. R. Christy, D. J. Seidel, & S. C. Sherwood. (2006). What kinds of atmospheric temperature variations can the current observing systems detect and what are their strengths and limitations, both spatially and temporally? In T. R. Karl, S. J. Hassol, C. D. Miller, & W. L. Murray (Eds.), *Temperature trends in the lower atmosphere: Steps for understanding and reconciling differences. A report by the Climate Change Science Program and the Subcommittee on Global Change Research*. Washington, DC, Figure 2-9, p. 49.

>> Bar Chart Guideline 5: Be Creative

Figure 13–13 and Figure 13–14 show two bar chart variations that help display multiple trends. The *segmented bars* in Figure 13–13 allow readers to compare types of transportation and routes used for shipping goods. The *grouped bars* in Figure 13–14 compare the demand for electricity with two supply sources: (1) the energy potential of BAU (business as usual) and (2) wind energy in major states and regions.

Bar Chart Guidelines

- Use a limited number of bars
- Show comparisons clearly
- Keep bar widths equal and adjust space between bars carefully
- Carefully arrange the order of bars
- Be creative

**Figure 13-14**

Grouped bar chart

Source: L. Bird et al. (2010). An examination of the regional supply and demand balance for renewable electricity in the United States through 2015 projecting from 2009 through 2015. Golden, CO: National Renewable Energy Laboratory, Figure ES-1, p. 10.

Line Graphs

Line graphs are a common graphic. Almost every newspaper contains a few line graphs covering topics such as stock trends, car prices, or weather. More than other graphics, line graphs telegraph complex trends immediately.

They work by using vertical and horizontal axes to reflect quantities of two different variables. The vertical (or *y*) axis usually plots the dependent variable; the horizontal (or *x*) axis usually plots the independent variable. (The dependent variable is affected by changes in the independent variable.) Lines then connect points that have been plotted on the chart. When drawing line graphs, use the following five main guidelines.

>> Line Graph Guideline 1: Use Line Graphs for Trends

Readers are affected by the direction and angle of the chart's line(s), so take advantage of this persuasive potential. In Figure 13–15, for example, the writer wants to show the increase in Amtrak ridership in North Dakota. Including a line graph in the study gives immediate emphasis to the general upward trend in train ridership.

>> Line Graph Guideline 2: Locate Line Graphs With Care

Given their strong impact, line graphs can be especially useful as attention grabbers. Consider placing them (1) on cover pages (to engage reader interest in the document), (2) at the beginnings of sections that describe trends, and (3) in conclusions (to reinforce a major point of your document).

>> Line Graph Guideline 3: Strive for Accuracy and Clarity

Like bar charts, line graphs can be misused or just poorly constructed. Be sure that the line or lines on the graph truly reflect the data from which you have drawn. Also, select a scale that does not mislead readers with visual gimmicks. Following are some specific suggestions to keep your line graphs accurate and clear:

- Start all scales from zero to eliminate the possible confusion of breaks in amounts (see Bar Chart Guideline 2).

■ **Figure 13–15** ■ Basic line graph

Source: Upper Great Plains Transportation Institute. (2007). *North Dakota state rail plan*, p. 46. Reprinted with permission from the Upper Great Plains Transportation Institute, North Dakota State University, Bismarck, North Dakota.

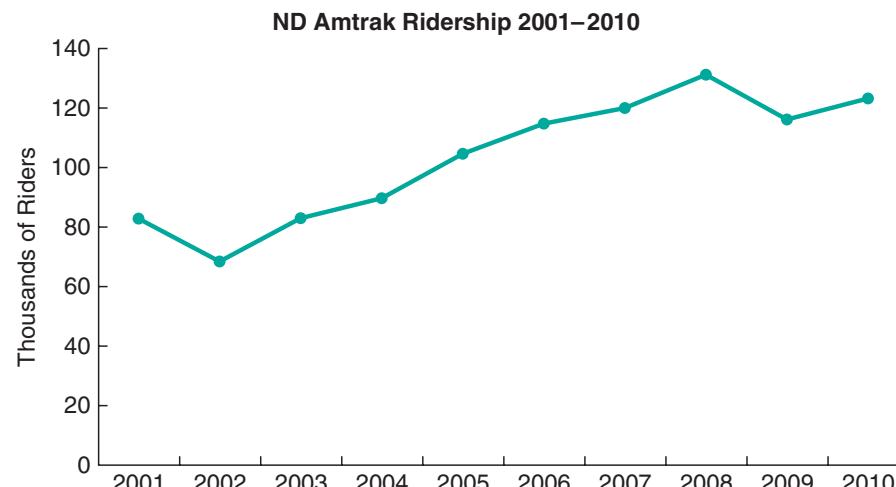
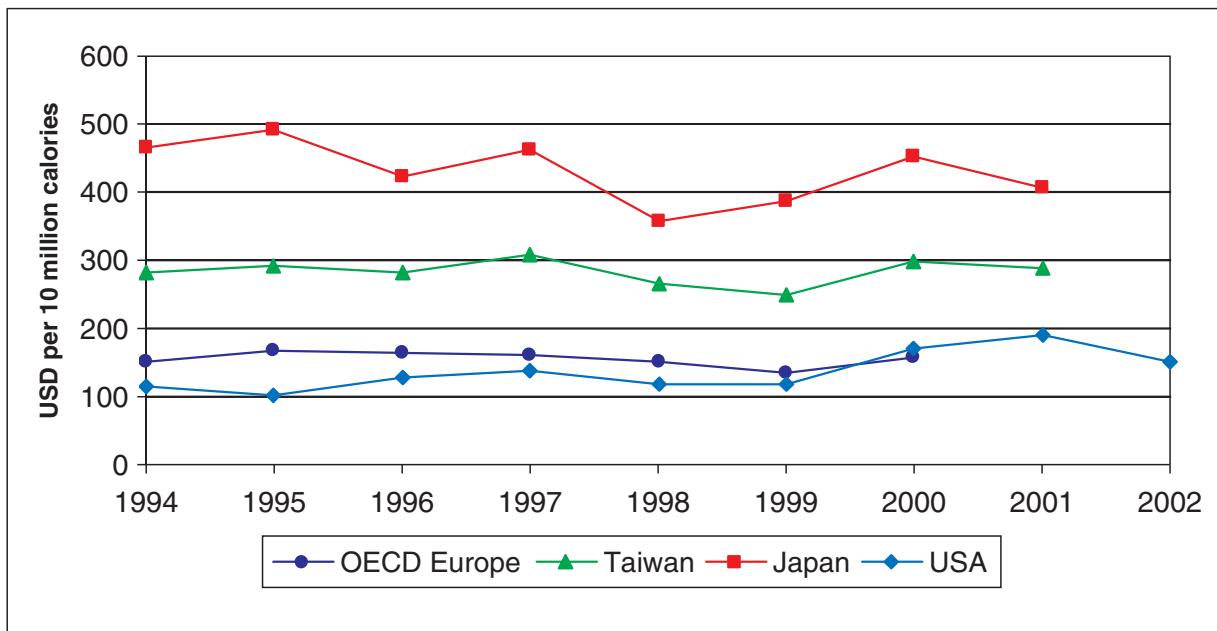


Figure A9-3: Industrial Sector Gas Prices in the United States, OECD Europe, Japan, and Taiwan, 1994-2002, in 2003 Dollars



■ **Figure 13-16** ■ Line graph using multiple lines

Source: *The economic future of nuclear power: A study conducted at the University of Chicago*. (2004, August), pp. A9–A13.

- Select a vertical-to-horizontal ratio for axis lengths that is pleasing to the eye (three vertical to four horizontal is common).
- Make chart lines as thick as, or thicker than, the axis lines.

>> Line Graph Guideline 4: Do Not Place Numbers on the Graph Itself

Line graphs derive their main effect from the simplicity of lines that show trends. Avoid cluttering the chart with a lot of numbers that only interfere with clarity of the information.

>> Line Graph Guideline 5: Use Multiple Lines With Care

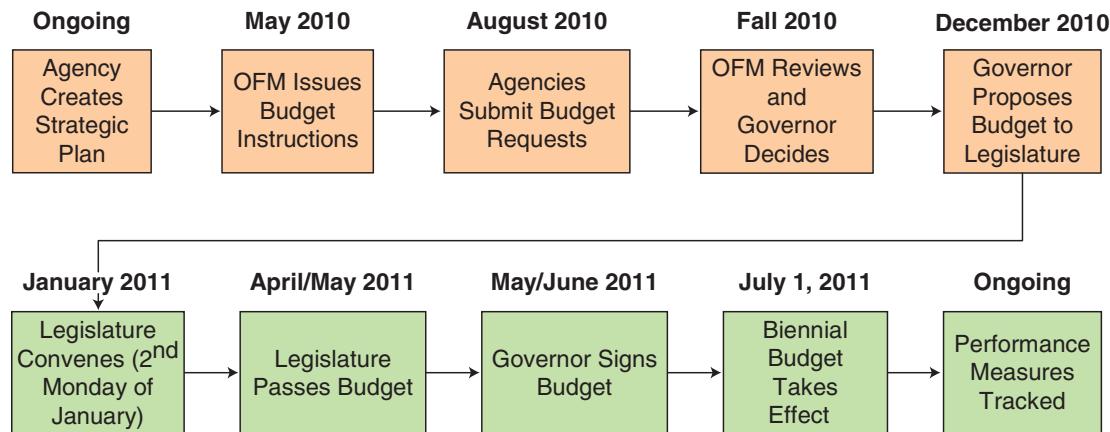
Like bar charts, line graphs can show multiple trends. Simply add another line or two. To help readers quickly distinguish between lines, assign a different color to each line. If your document may be printed in black and white, assign a differently shaped data point to each line. If you place too many lines on one chart, however, you run the risk of confusing the reader with too many data. Use no more than four or five lines on a single chart (Figure 13–16).

Line Graph Guidelines

- Use line graphs for trends
- Locate line graphs with care
- Strive for accuracy and clarity
- Do not place numbers on the graph itself
- Use multiple lines with care

Figure 13–17**Basic flowchart**

Adapted from Office of Financial Management, State of Washington. (2011, March). *Washington State budget process*, p. 3.



Flowcharts

Flowcharts tell a story about a process, usually by stringing together a series of boxes and other shapes that represent separate activities (Figure 13–17).

Some flowcharts use standardized symbols to represent steps in the decision-making process (Figure 13–18). Although these symbols were originally used for programming, they are now used to represent a wide range of processes.

Because they have a reputation for being hard to read, you must take extra care in designing flowcharts. The following five guidelines will help.

>> Flowchart Guideline 1: Present Only Overviews

Readers usually want flowcharts to give them only a capsule version of the process, not all the details. Reserve your list of particulars for the text or the appendixes, where readers expect it.

>> Flowchart Guideline 2: Limit the Number of Shapes

Flowcharts rely on rectangles and other shapes to relate a process—in effect, to tell a story. Different shapes represent different types of activities. Some flowcharts,

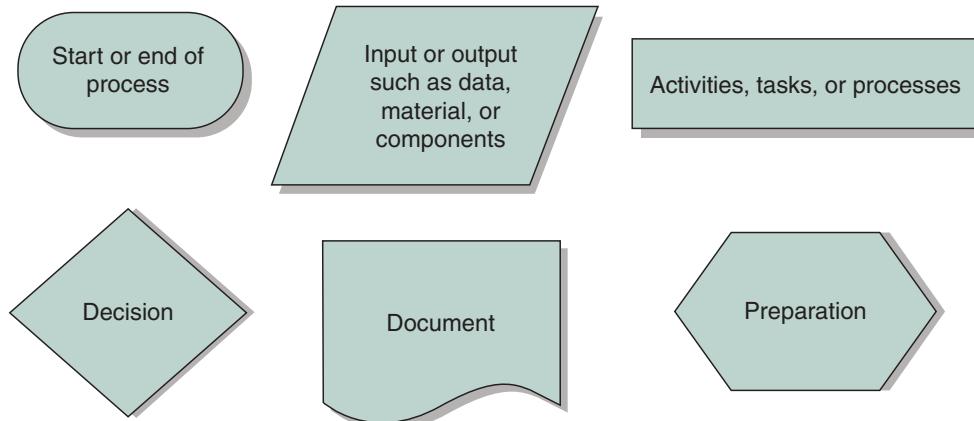
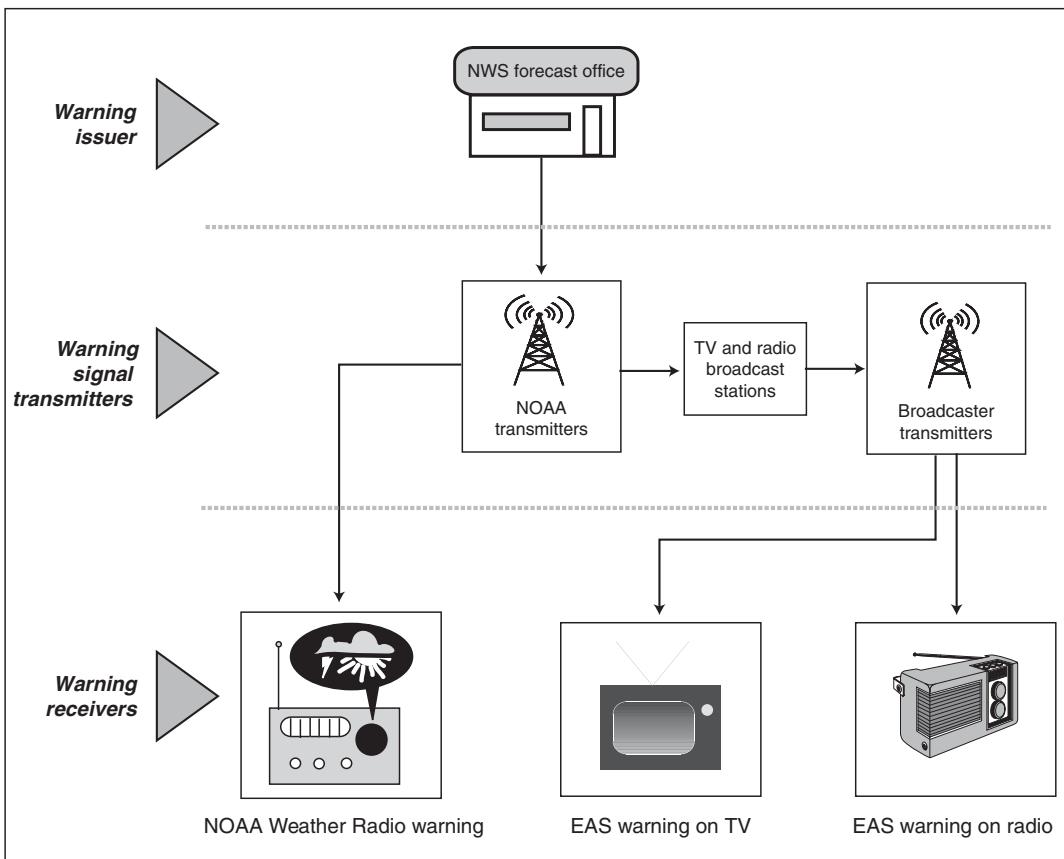
**Figure 13–18** ■ Selection of standard flowchart symbols

Figure 8: Tsunami Warning Signal Transmission for EAS and NOAA Weather Radio



Source: GAO analysis and Art Explosion.

■ Figure 13–19 ■ Flowchart using icons and images

Source: U.S. Government Accounting Office. (2006, June). *U.S. tsunami preparedness: Federal and state partners collaborate to help communities reduce potential impacts, but significant challenges remain*, p. 27.

like the one in Figure 13–19, use icons and images to present information. This variety helps in describing a complex process, but it can also produce confusion. For the sake of clarity and simplicity, limit the number of different shapes in your flowcharts.

>> **Flowchart Guideline 3: Provide a Legend When Necessary**

Simple flowcharts often need no legend. The few shapes on the chart may already be labeled by their specific steps. When charts get more complex, however, include a legend that identifies the meaning of each shape used.

>> **Flowchart Guideline 4: Run the Sequence From Top to Bottom or From Left to Right**

Long flowcharts may cover the page with several columns or rows; however, they should always show some degree of uniformity by assuming either a basically vertical or a basically horizontal direction.

Flowchart Guidelines

- Present only overviews
- Limit the number of shapes
- Provide a legend when necessary
- Run the sequence from top to bottom or from left to right
- Label all shapes clearly

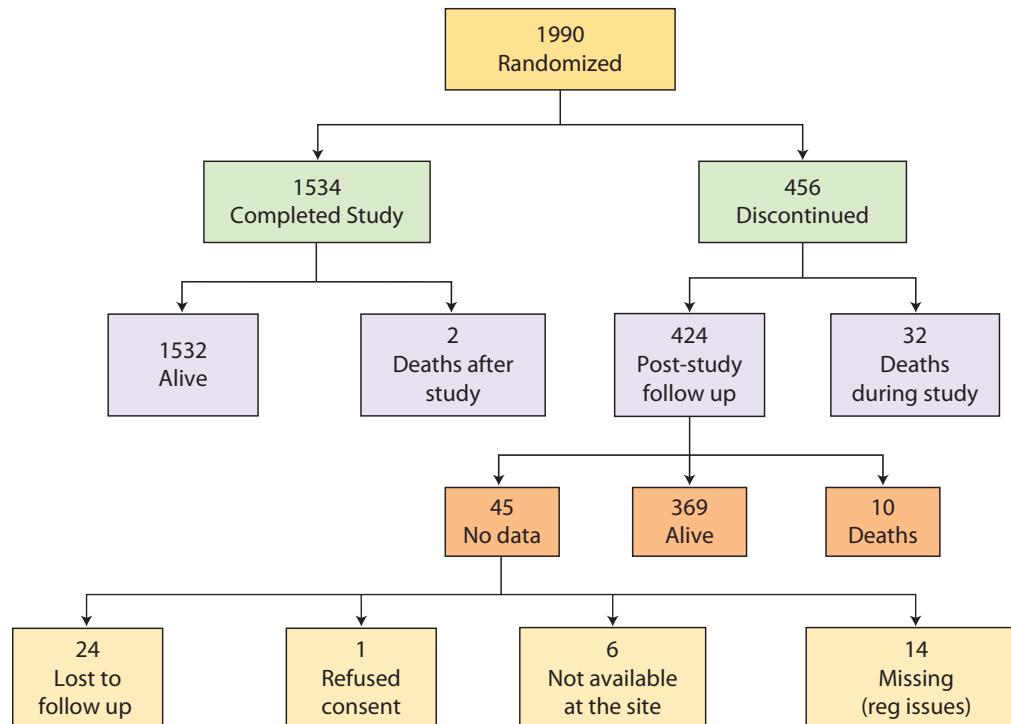
>> Flowchart Guideline 5: Label All Shapes Clearly

Besides a legend that defines meanings of different shapes, the chart usually includes a label for each individual shape or step. Follow one of these approaches:

- Place the label inside the shape.
- Place the label immediately outside the shape.
- Put a number in each shape and place a legend for all numbers in another location (preferably on the same page).

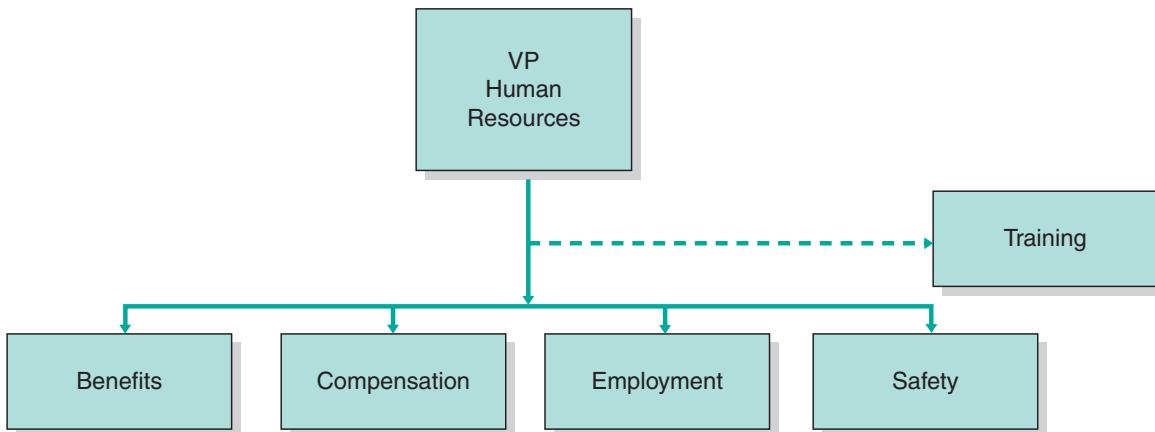
Organization Charts

Organization charts reveal the structure of a company or other organization—the people, positions, or work units—or they can show the relationships of people, as in a genealogy chart (family tree) or distributions of a population (Figure 13–20). The challenge in producing this graphic is to make sure that the arrangement of information accurately reflects the relationships of the people, departments, or other units of the organization or population.



■ **Figure 13–20** ■ Organization chart showing distribution of a population

Source: U.S. Food and Drug Administration. (2009, November 19). Clinical briefing document NDA# 21-395 Spiriva HandiHaler, Figure 15, p. 165.



■ **Figure 13–21** ■ Basic organization chart, M-Global Human Resources Division

>> Organization Chart Guideline 1: Use the Linear Boxes Approach to Emphasize High-Level Positions

This traditional format uses rectangles connected by lines to represent some or all of the positions in an organization (Figure 13–21). Because high-level positions usually appear at the top of the chart, where the attention of most readers is focused, this design tends to emphasize upper management.

>> Organization Chart Guideline 2: Connect Boxes With Solid or Dotted Lines

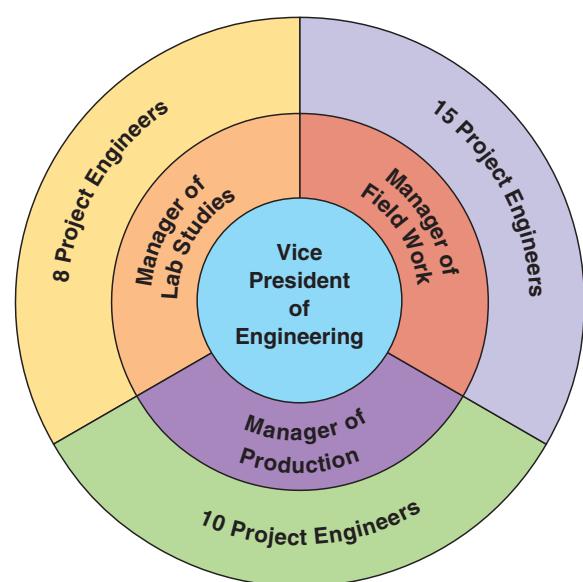
Solid lines show direct reporting relationships; dotted lines show indirect or staff relationships (see Figure 13–21).

>> Organization Chart Guideline 3: Use a Circular Design to Emphasize Mid- and Low-Level Positions

An arrangement of concentric circles gives more visibility to workers outside upper management. These are often the technical workers most deeply involved in the details of a project. For example, Figure 13–22 draws attention to the project engineers perched on the chart’s outer ring.

>> Organization Chart Guideline 4: Use Varied Shapes Carefully

Like flowcharts, organization charts can use different shapes to indicate different levels or types of jobs. However, beware of introducing more complexity than you need. Use more than one shape only if you are convinced this approach is needed to convey meaning to the reader.



■ **Figure 13–22** ■ Concentric organization chart

Figure 13–23 ■

Creative organization charts to show work distribution systems

Source: J. T. Hackos. (2008, January). Information development in a flat world. *Intercom*, p. 25.

Figure 2. Centralized organization with a satellite set of departments.

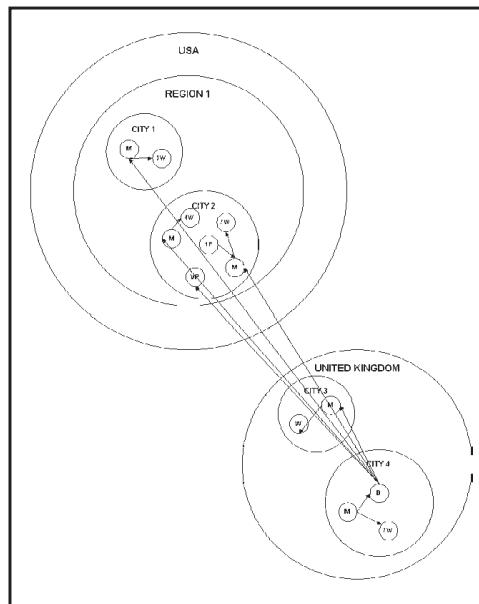
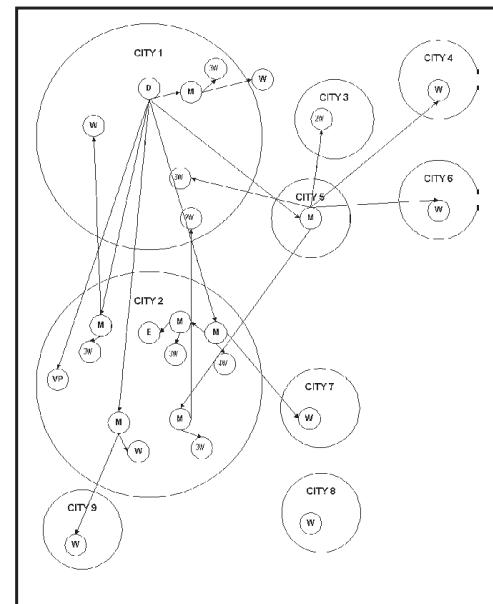


Figure 3. Two core organizations with several lone writers.



Organization Chart Guidelines

- Use linear boxes to emphasize high-level positions
- Connect boxes with solid or dotted lines
- Use a circular design to emphasize mid- and low-level positions
- Use varied shapes carefully
- Be creative

>> Organization Chart Guideline 5: Be Creative

When standard forms will not work, create new ones. For example, the organization chart in Figure 13–23 uses circles and lines to illustrate responsibilities and reporting structures in one organization.

Technical Drawings

Technical drawings are important tools of companies that produce or use technical products. These drawings can accompany documents such as instructions, reports, sales orders, proposals, brochures, and posters. They are preferred over photographs when specific views are more important than photographic detail. Whereas all drawings used to be produced mainly by hand, now they are usually created by computer-assisted design systems. Use the following guidelines for producing and using technical drawings that complement your text.

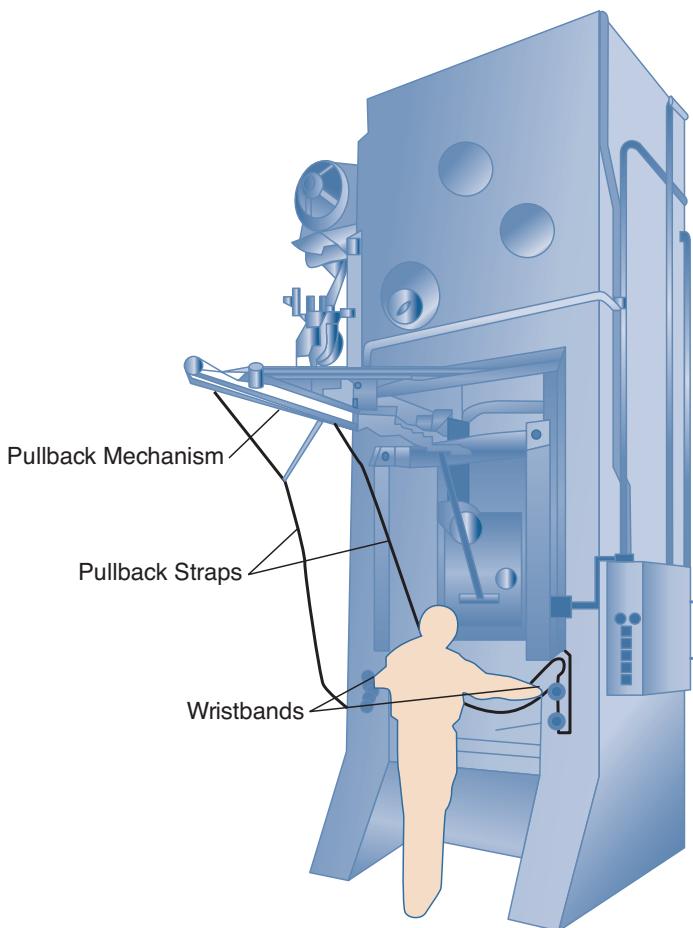
orders, proposals, brochures, and posters. They are preferred over photographs when specific views are more important than photographic detail. Whereas all drawings used to be produced mainly by hand, now they are usually created by computer-assisted design systems. Use the following guidelines for producing and using technical drawings that complement your text.

>> Drawing Guideline 1: Choose the Right Amount of Detail

Keep drawings as simple as possible. Use only the level of detail that serves the purpose of your document and satisfies your readers' needs. For example, Figure 13–24 shows the machine operator only as an outline, to emphasize the parts of the machine being discussed in the text.

>> Drawing Guideline 2: Label Parts Well

A common complaint about drawings is that parts included in the illustration are not carefully or clearly labeled. Place labels on every part you want your reader to see.



■ **Figure 13–24 ■**
Technical drawing
with callouts

Source: U.S. Occupational Safety and Health Administration. (2007). *Safeguarding equipment and protecting employees from amputations*, Figure 13, p. 13.

(Conversely, you can also choose not to label those parts that are irrelevant to your purpose.)

When you label parts, use a typeface large enough for easy reading. Also, arrange labels so that (1) they are as easy as possible for your reader to locate and (2) they do not detract from the importance of the drawing itself. The simple labeling in Figure 13–24 fulfills these objectives.

>> Drawing Guideline 3: Choose the Most Appropriate View

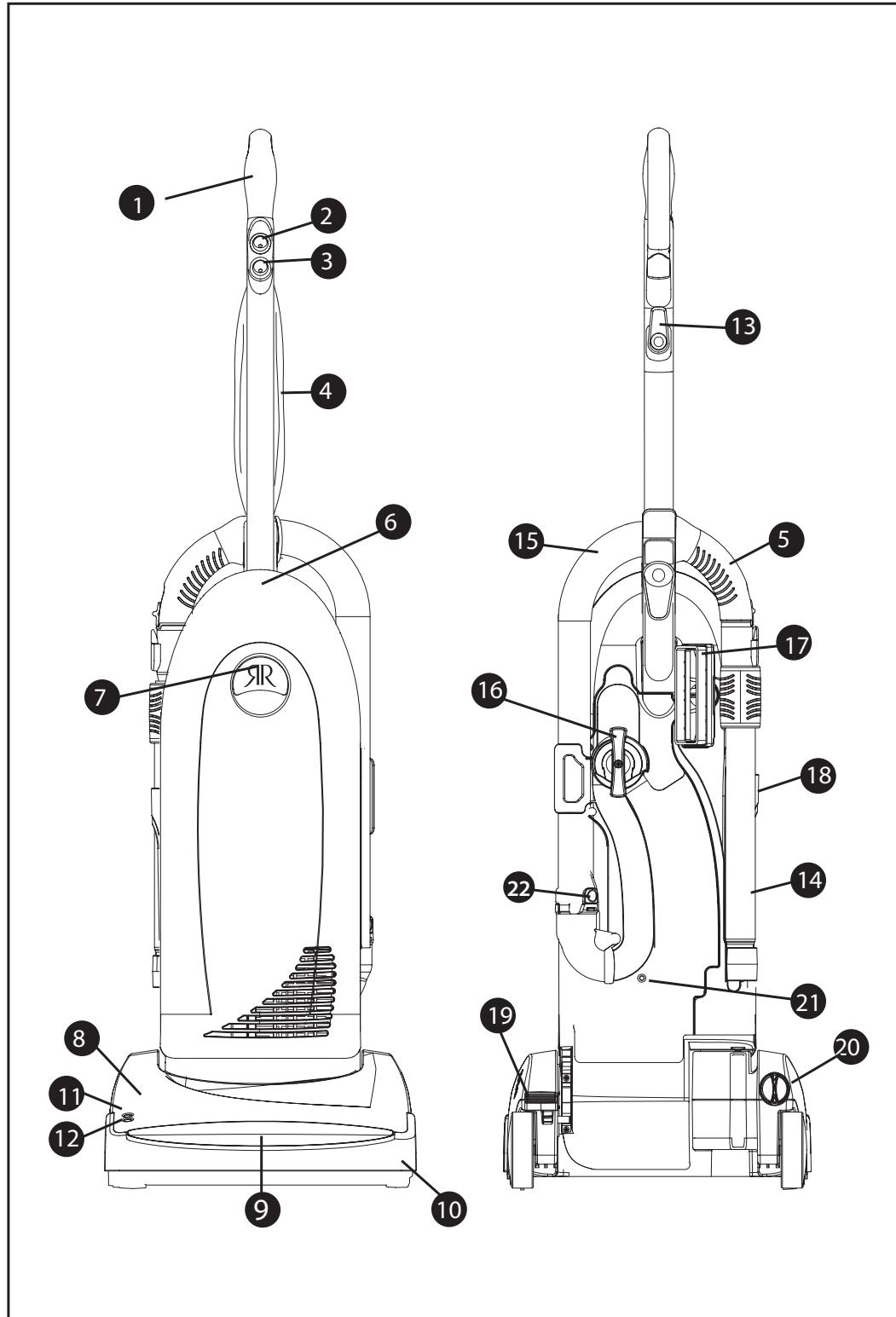
As noted previously, illustrations—unlike photographs—permit you to choose the level of detail needed. In addition, drawings offer you a number of options for perspective or view:

- **Exterior view** shows surface features with either a two- or three-dimensional appearance—see Figure 13–25.
- **Cross-sectional view** shows a “slice” of the object so that interiors can be viewed—Figure 13–26.
- **Cutaway view** is similar to a cross-sectional view, but only part of the exterior is removed to show the inner workings of the object.

■ **Figure 13–25 ■**
Line drawing of
exterior view

Source: Courtesy of Tacony
Corporation, Fenton, MO.

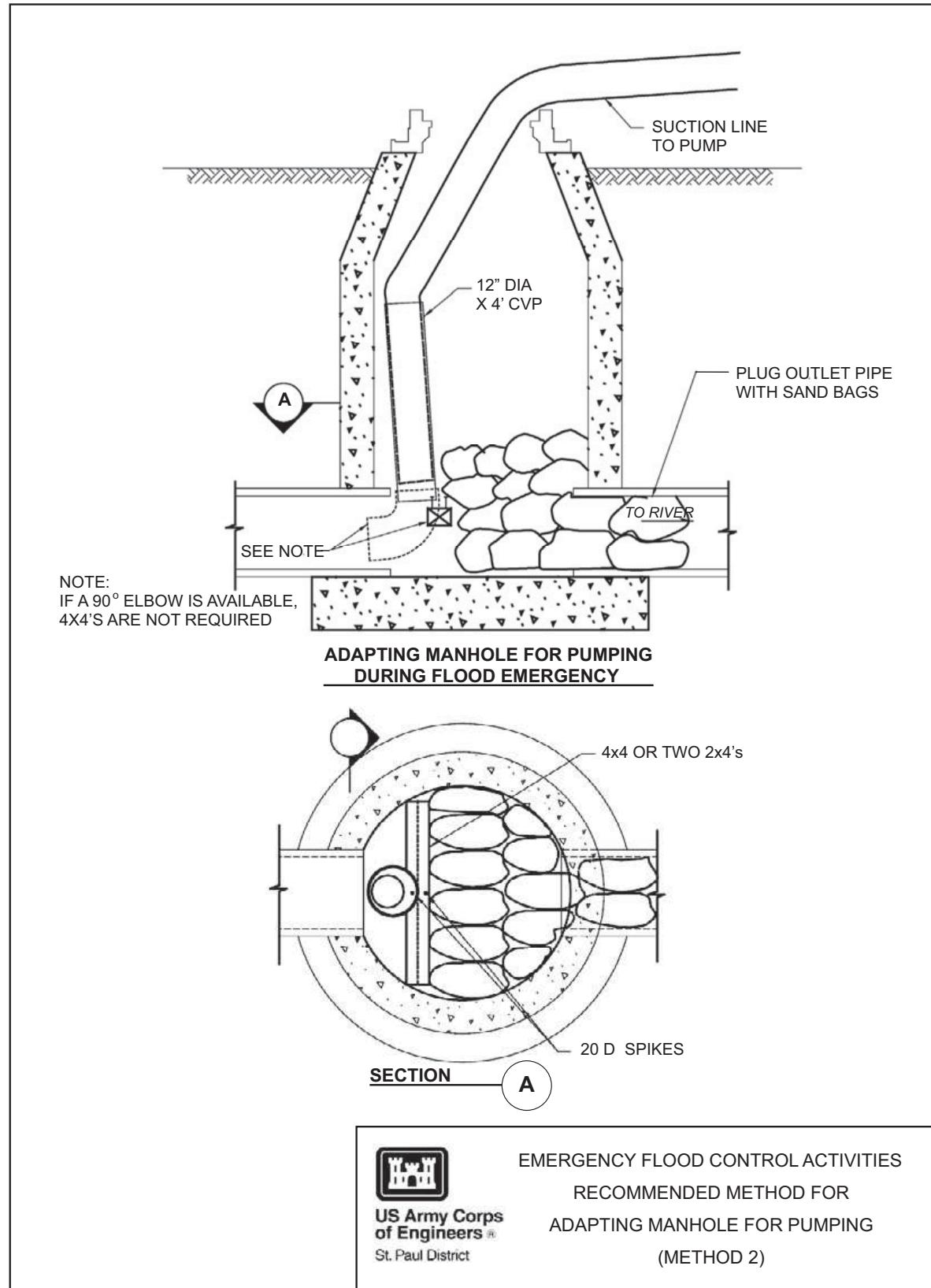
Description of the vacuum



Description of the vacuum

■ **Figure 13-25 ■**
Continued

- 1 Ergonomic handle
- 2 Main on / off power switch
- 3 Carpet / bare floor switch
- 4 Power cord
- 5 Fast Task™ tools (for models BRLP & BRLD)
- 6 Carrying handle (located behind bag compartment lid)
- 7 Bag compartment latch (to replace vacuum bag)
- 8 Vacuum nozzle
- 9 Xenon headlight
- 10 Furniture guard
- 11 Brushroll jam indicator
- 12 Full bag / clog indicator
- 13 Quick release cord hook
- 14 Telescopic wand (for models BRLP & BRLD)
- 15 5-to-1 stretch hose (for models BRLP & BRLD)
- 16 Tool activation dial (for models BRLP & BRLD)
- 17 Combination dusting / upholstery brush (for models BRLP & BRLD))
- 18 Crevice tool (for models BRLP & BRLD)
- 19 Handle release pedal
- 20 Carpet height adjustment dial
- 21 Thermal reset button
- 22 Hose disconnect (for models BRLP & BRLD)

**Figure 13-26** ■ Cross-sectional views from side and topSource: U.S. Army Corps of Engineers, St. Paul District. (2009). *Flood-fight handbook: Preparing for a flood*, p. 49.

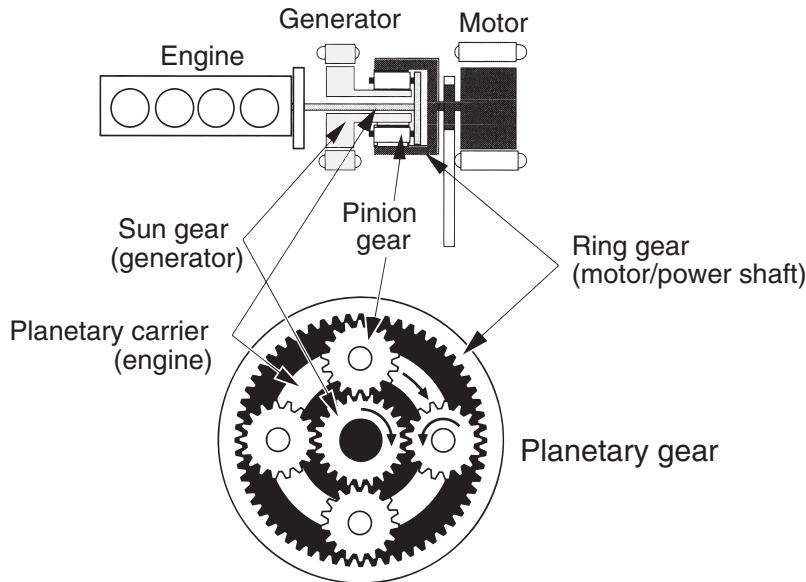


Figure 13-27
Exploded view of hybrid engine

Source: Toyota Motor Corporation. (2003, May). *Toyota hybrid system*, p. 10.

■ **Exploded view** shows relationship of parts to each other by “exploding” the mechanism—see Figure 13–27.

>> Drawing Guideline 4: Use Legends When There Are Many Parts

In complex drawings, avoid cluttering the illustration with many labels. Figure 13–25, for example, places all labels in one easy-to-find spot, rather than placing them on the drawing.

Drawing Guidelines

- Choose the right amount of detail
- Label parts well
- Choose the most appropriate view
- Use legends when there are many parts

Photographs

Photographs can be used to add visual interest to documents, but they also serve an important function in technical documents. Photographs provide an accurate record of an object or location. They are useful in illustrating procedures or helping readers identify objects, and they are essential in documenting time-sensitive information such as conditions after an accident. For example, the photograph in Figure 13–28 documents tornado damage to a tilt-up construction building. Digital photography has made it easier to insert photographs into documents, and there is a wide range of digital cameras and photo-editing software. Use the following guidelines to take advantage of these tools and create photographs that provide your reader with useful information.

>> Photograph Guideline 1: Choose an Appropriate Angle to Provide an Overview

When providing an overview of an object such as a piece of equipment, use a photograph that shows its distinctive features. For example, a photograph taken from overhead, like Figure 13–28, is useful for showing the layout of physical space, such as in a building site or the site of an accident.

■ Figure 13–28 ■

Photograph with overhead view with labels and callouts

Source: Experts challenge Home Depot building design, codes after Joplin tornado. (2011, June 26). *Kansas City Star*, <http://media.kansascity.com/static/images/HomeDepot.jpg>.

**>> Photograph Guideline 2: Focus Your Readers' Attention on Details**

To emphasize one section of a photograph, crop the picture or use photo-editing software to blur or lighten the background of an image. In Figure 13–29, notice how the photograph on the left emphasizes the correct way to position the body when filling sandbags, while the cropped photograph on the right focuses the reader on the tool used to fill sandbags.

**■ Figure 13–29 ■ Use of perspective and cropping in photographs**

Source: U.S. Occupational Safety and Health Administration. *Ergonomics of sandbagging*, pp. 1, 3.



■ **Figure 13–30 ■**

Photograph using vehicle to provide scale

Source: Success on solid ground: Reliable performance and innovation in onshore wind power. (2010). Erlangen, Germany: Siemens AG Energy Sector, p. 4.

>> Photograph Guideline 3: Present Images From the Readers' Perspective

Photographs can be useful in instructions, or to help a reader locate parts or identify an object. Photographs used for these purposes should reflect the angle and distance from which a reader will view the subject.

>> Photograph Guideline 4: Indicate Scale When Necessary

When showing an unfamiliar object in a photograph, include a familiar object, a ruler, or even people to indicate the size of the object. In the photograph in Figure 13–30, the vehicle provides scale to help readers see the size of the wind turbines.

>> Photograph Guideline 5: Label Parts for Clarity

Just as with technical drawings, it may be useful to label parts of an object in a photograph with a legend or with callouts. Since photographs usually include more details than line drawings, it is important to make sure that readers can identify key parts. The callouts and labels in Figure 13–28 help readers focus on key parts of the photograph.

>> Photograph Guideline 6: Follow Legal and Ethical Guidelines When Using Photographs

If you are using photographs that have been published in another source, you may have to ask permission or even pay a royalty fee. If you are taking photographs of people, you may need to ask them to sign a model release. When editing photographs, do not alter them in a way that misrepresents the original content of the image.

Screen Captures

Screen captures like the one in Figure 13–31 are essential in documents that teach readers how to use software or that discuss Web sites. You already have a way to capture

Photograph Guidelines

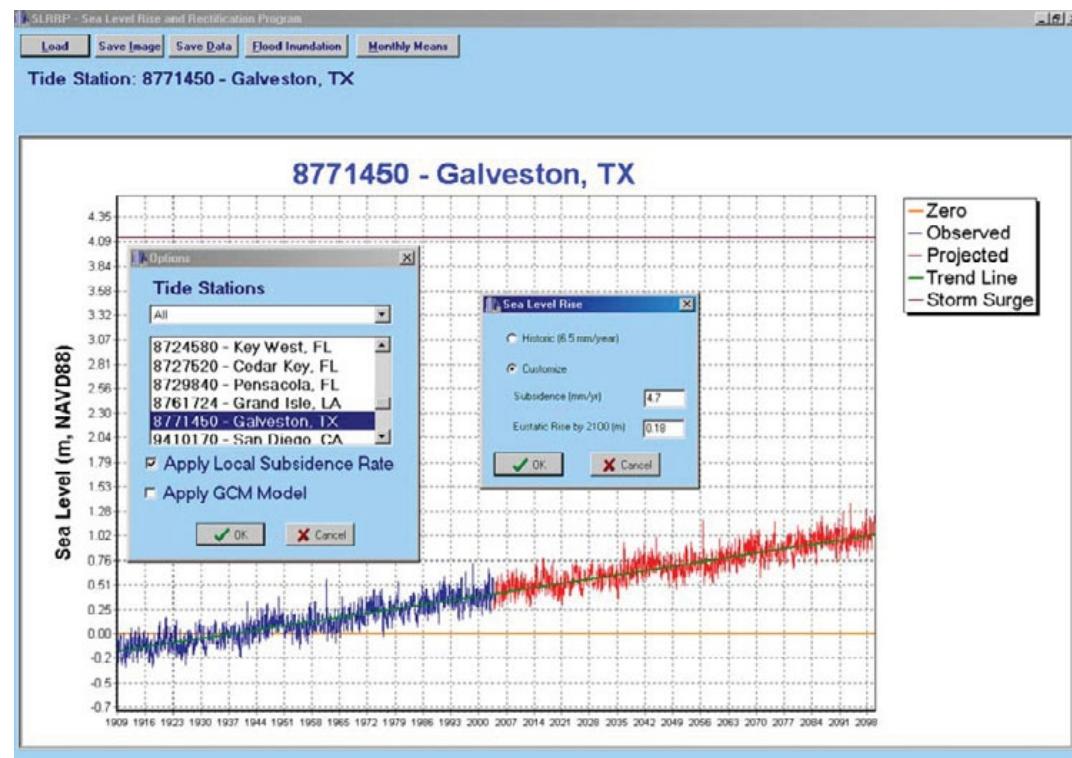
- Choose an appropriate angle to provide an overview
- Focus your readers' attention on details
- Present images from the readers' perspective
- Indicate scale when necessary
- Label parts for clarity
- Follow legal and ethical guidelines when using photographs

■ **Figure 13–31 ■**

Screen capture

Source: U.S. Climate Change Science Program. (2008).

Appendix F: Projecting future sea level rise with the SLRRP model. *Impacts of climate change and variability on transportation systems and infrastructure: Gulf Coast study, Phase I*, Figure F.1, p. 3.



a computer screen on your keyboard—the Print Screen key (often abbreviated to Prt Sc or something similar). The Print Screen key will capture the image on your computer screen and save it to the clipboard. You can then paste the screen capture into your document and edit it using your word-processing program’s image editor. There is also inexpensive screen capture software that allows you to capture only an isolated part of your screen in a *region capture*, to capture an active window, or even to scroll and capture an entire Web page. If you do many screen captures, this software is a good investment. The following guidelines will help you use screen captures effectively.

>> Screen Capture Guideline 1: Include Only What Your Reader Needs to See

If you are using the Print Screen key, you will capture an image of the entire screen. If you want to focus your readers’ attention on one element of the screen (a *region*), such as a pull-down menu, consider cropping the image to focus on the part the reader needs to see.

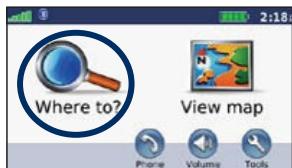
>> Screen Capture Guideline 2: Place Region Screen Captures in Context

Readers want to recognize where they will see the screens that are presented in a document. In Figure 13–32, the writer has included a series of screen captures to walk the reader through each screen as it appears. The screen captures in Figure 13–32 use ovals to focus attention on the key regions of the screens. When presenting a small part, or *region*, of a screen, such as a button or an icon, help the reader locate it on the larger screen.

GETTING STARTED

Finding Your Destination

The Where to menu provides several different categories for you to use when searching for addresses, cities, and other locations. The detailed map loaded in your nüvi contains millions of points of interest, such as restaurants, hotels, and auto services.



1 Touch **Where to?**



2 Select a category.



3 Select a sub-category.



4 Select a destination.



5 Touch **Go!**



6 Enjoy the route!

TIP: Touch and to see more choices.

■ **Figure 13-32** ■ Screen captures with highlighted sections

Source: Copyright 2011 Garmin Ltd or its subsidiaries. All Rights Reserved.

You can do this by superimposing a larger image of the region over an image of the entire screen, or you can highlight the region in some way.

>> Screen Capture Guideline 3: Match the Screen Capture to the Text

When you take your screen capture, make sure that the cursor position and any highlighted portions of the screen match the discussion in your text. If you indicate that a reader should click on one element on a screen, but the cursor in the image is pointing to a different element, the reader will be confused.

>> Screen Capture Guideline 4: Indicate Key Elements on the Screen

Callouts and labels can help readers locate information and interface elements (such as icons on a menu). Make sure that they are clear, and that the terminology used in the text is the same as that in the screen capture.

Screen Capture Guidelines

- Include only what your reader needs to see
- Place region screen captures in context
- Match the screen capture to the text
- Indicate key elements on the screen

>> Misuse of Graphics

Technology has revolutionized the world of graphics by placing sophisticated tools in the hands of many writers. Yet this largely positive event has its dark side; many graphics—in spite of their slickness—distort data and misinform the reader. The previous sections of this chapter establish principles and guidelines to help writers avoid such distortion and misinformation. This final section shows what can happen to graphics when sound design principles are not applied.

Problems With Graphics

Through clutter or distortion, graphics can oversimplify data, be confusing, or be misleading. Writers can miss problems with graphics as easily as they can miss problems in spelling or punctuation, when they are facing deadlines or they have become so familiar with their documents that they don't see the errors. To avoid misleading or confusing graphics, it is important to proofread and edit them carefully. If you are using charts or tables, it may be useful to ask someone else to look at them carefully to see if they interpret the graphics in the way that you intended.

Edward R. Tufte analyzes graphics errors in detail in his excellent work *The Visual Display of Quantitative Information*. In setting forth his main principles, Tufte notes that “graphical excellence is the well designed presentation of interesting data—a matter of *substance of statistics, and of design.*” He further contends that graphics must “give to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.”¹

One of Tufte’s main criticisms is that representations on charts are often disproportional to the actual differences in the data represented. The next subsection shows some specific ways that this error has worked its way into contemporary graphics.

Examples of Distorted Graphics

There are probably as many ways to distort graphics as there are graphics types. This section gets at the problem of misrepresentation by showing several examples and describing the errors involved. None of the examples commits major errors, yet each one fails to represent the data accurately.

>> Example 1: Confusing Bar Charts

Figure 13–33 attempts to show how costs have increased. The problem is that the “bars” do not accurately represent the increased cost, and the distortions in the images are distracting.

Another problem with bar charts is that they become busy or confusing, especially when the options for creating charts in spreadsheet programs are not used carefully.

¹E. R. Tufte. (1983). *The visual display of quantitative information*. Cheshire, CT: Graphics Press, p. 51.

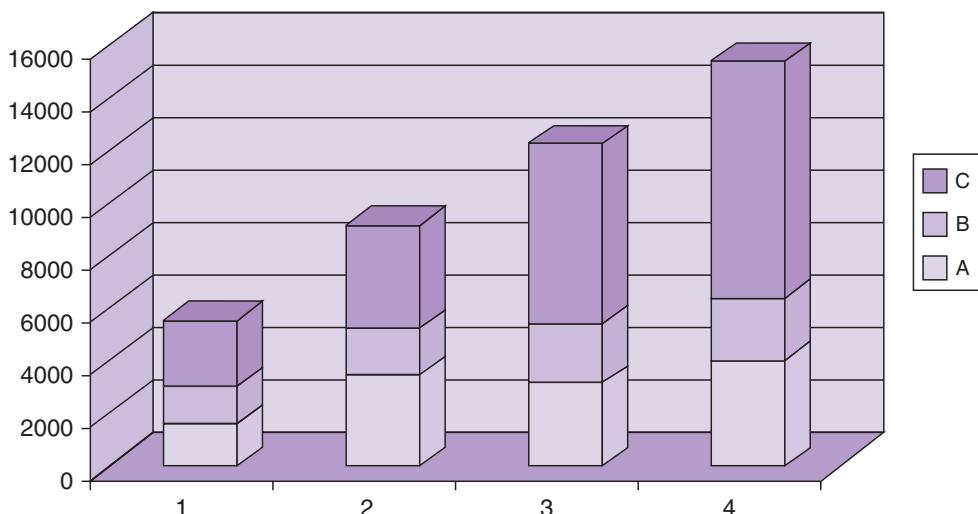


■ **Figure 13-33 ■**
Faulty comparisons
on modified bar
chart

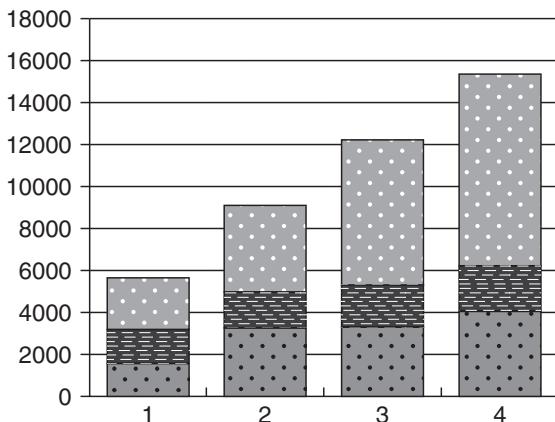
Figure 13–34 uses several stacked bars, which make it hard to compare the data clearly. It also uses colors that are similar, and that would not reproduce well on a black-and-white copier. Figure 13–35 tries to avoid the problem caused by reproduction on a copier by using patterns instead of colors, but the patterns are so busy and similar that it is difficult to distinguish among them. Figure 13–36 uses a three-dimensional chart in such a way that it is difficult to understand the data. Some of the bars are hidden behind others, so it is difficult to read the data that they represent.

>> Example 2: Chartjunk That Confuses the Reader

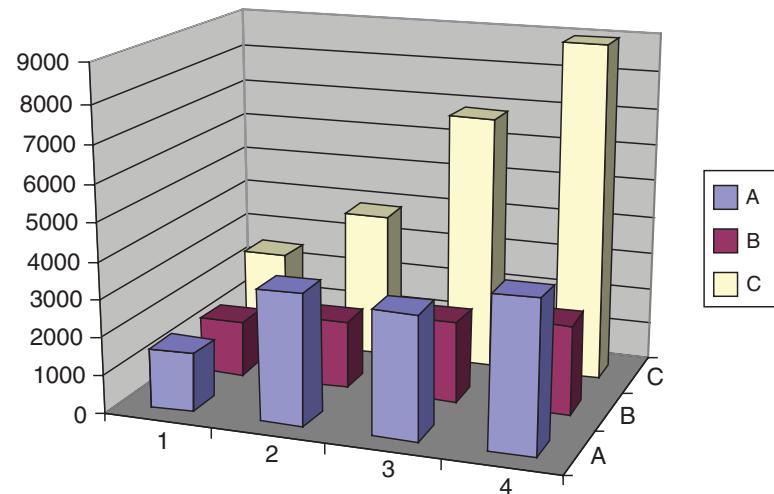
Figure 13–37 concludes a report from a county government to its citizens. Whereas the dollar backdrop is meant to reinforce the topic—that is, the use to which tax funds



■ **Figure 13-34 ■** Confusing bar chart



■ **Figure 13-35** ■ Confusing bar chart



■ **Figure 13-36** ■ Confusing bar chart

are put—in fact, it impedes communication. Readers cannot quickly see comparisons. Instead, they must read the entire list surrounding the illustration, mentally rearranging the items into some order.

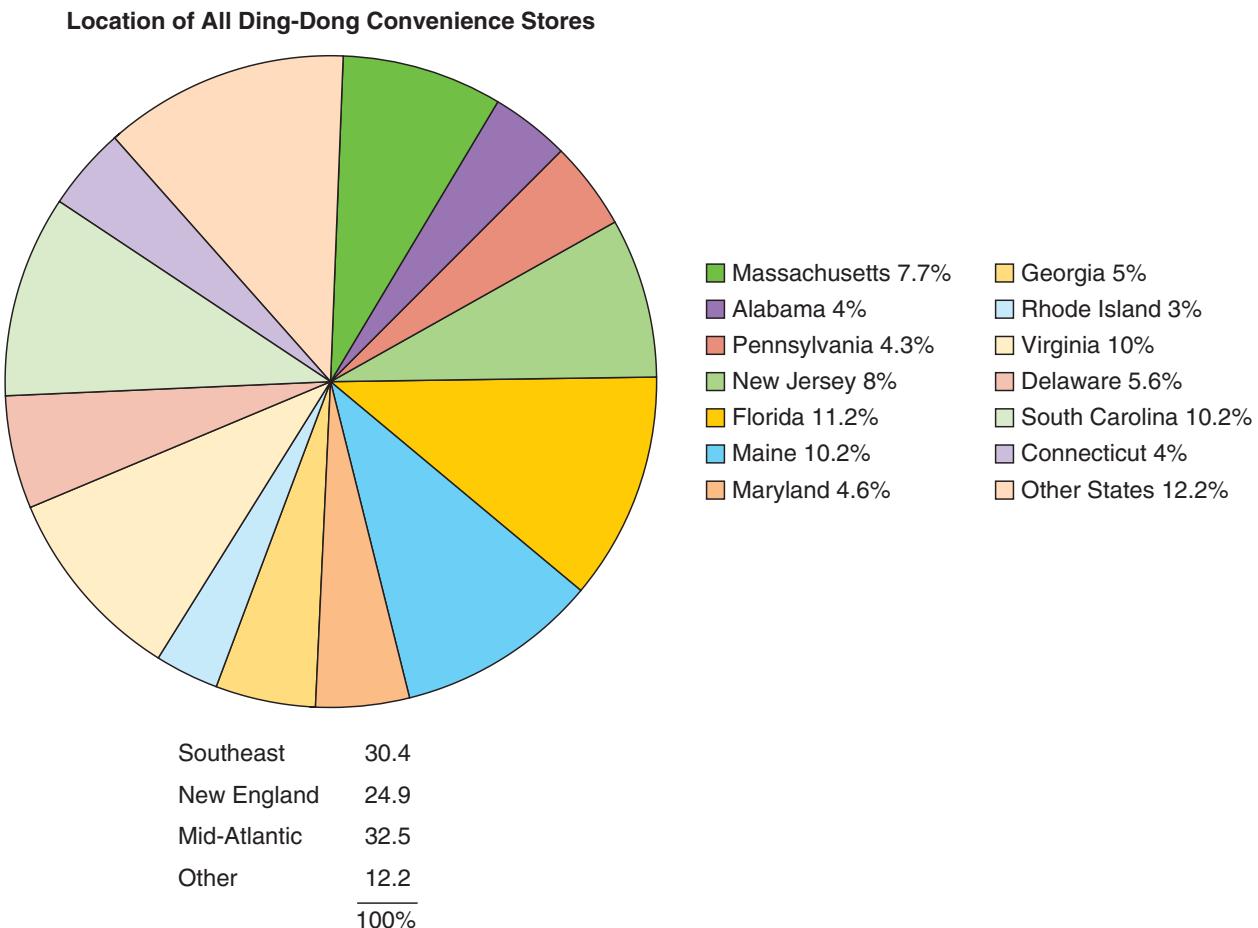
At the very least, the expenditures should have been placed in sequence, from least to greatest percentage or vice versa. Even with this order, however, one could argue that the dollar bill is a piece of what Edward Tufte calls *chartjunk*, which interferes with the effective display of data.

>> Example 3: Confusing Pie Charts

The pie chart in Figure 13-38 (1) omits percentages that should be attached to each of the budgetary expenditures; (2) fails to move in a largest-to-smallest clockwise sequence; (3) includes too many divisions, many of which are about the same size and thus difficult to distinguish; and (4) lacks color to distinguish the sections.



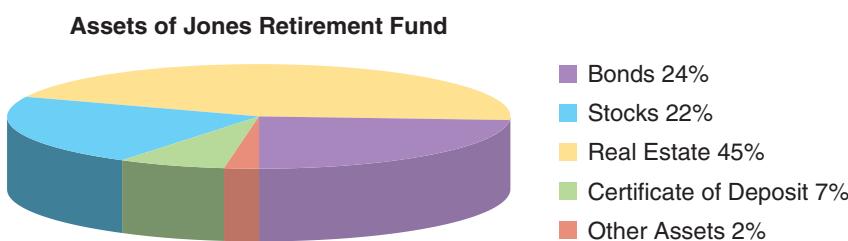
■ **Figure 13-37** ■ Chartjunk that confuses the reader



■ **Figure 13–38** ■ Confusing pie chart

Moreover, the reader cannot easily see how the pie slices should be grouped under the four headings listed beneath the chart. A grouped bar chart would better serve the purpose, with “Southeast,” “New England,” “Mid-Atlantic,” and “Other” providing the groupings.

Figure 13–39 uses a 3-D view at an angle that disguises the size of the pie slices. This distortion can make it difficult for the reader to distinguish among sections that are similar in size. The pie chart should use two dimensions, should have percentages on the circle, and should move in large-to-small sequence from the 12:00 position.



■ **Figure 13–39** ■ Confusing pie chart

>>> Chapter Summary

- *Graphics* is a generic term for all nontextual elements of documents. They are sometimes referred to as illustrations or visual aids.
- Graphics can help clarify and reinforce information in the text of documents.
- Tables are graphics that organize information in rows and columns.
- Figures are all the graphics other than tables, and they include charts, graphs, technical drawings, photographs, and screen captures.
- Pie charts represent percentages and money.
- Bar charts compare quantities.
- Line graphs use an *x* axis and a *y* axis to show trends.
- Flowcharts represent overviews of processes. They may use standard flowchart symbols, icons, or images.
- Organization charts represent hierarchies and show relationships between people or within organizations.
- Technical drawings present a clear image of objects by removing unnecessary detail.
- Photographs document the exact appearance of their subject.
- Screen captures present images from computers or other digital devices.
- For legal and ethical reasons, graphics should accurately represent the data or objects they represent.

>>> Learning Portfolio

Communication Challenge Massaging M-Global's Annual Report

Just about everyone considered M-Global's 2010 annual report a boring piece of work. It contained pages of text with only a few tables for visual relief. Wanting to spice up the next annual report, the Publications Development group decided to create a more appealing design and graphics. This case study highlights the graphics challenge. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Your Part of the Project

You and Rick Ford, a new employee in The Pub, have been assigned the account. The two of you are to take text and data provided by M-Global's PR department and create a graphically interesting format for readers of the annual report—who are mostly stockholders, M-Global employees, or clients. You and Rick have been asked to make data as appealing as possible, especially in light of criticism the company received for its previous annual report. You are creating graphics for four pieces of information that M-Global wants emphasized in the report:

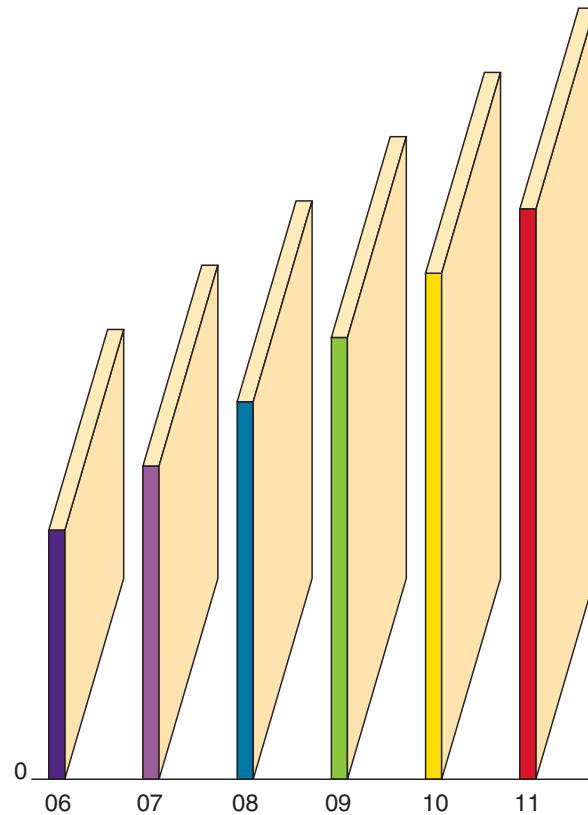
1. **International sales:** M-Global has become a more international firm. You have been asked to create some graphics that reflect this shift. In 2008, the international offices accounted for 35 percent of the total \$96 million in sales. Of that 35 percent, the Tokyo office was highest with \$12 million in sales, Munich was next with \$10 million, and the other four international offices shared the rest.
2. **Total sales:** Over the past 10 years, total sales have gone up steadily. Figures for 2001 through 2011 are, in millions: \$65, \$70, \$73, \$74, \$80, \$83.5, \$87, \$90, \$90.5, \$96.
3. **Number of employees:** Except for one year, when there was a minor layoff to reduce costs, the number of employees has risen over the past five years, as follows: 1,800 (in 2004), 1,950 (in 2008), 1,925 (in 2009), 2,200 (in 2010), 2,500 (in 2011).
4. **Corporate overhead:** Of the six service areas covered by the corporate office in Baltimore (see Model 1-1 on pages 25–34 in Chapter 1), the corporate budget spends 40 percent on human resources, 20 percent on research, 15 percent on computer operations,

10 percent on training, 10 percent on project management, and 5 percent on marketing. The company wants to emphasize that the employee-related portion of overhead has grown since last year—for example, training went from 5 percent to 10 percent, and human resources went from 35 percent to 40 percent.

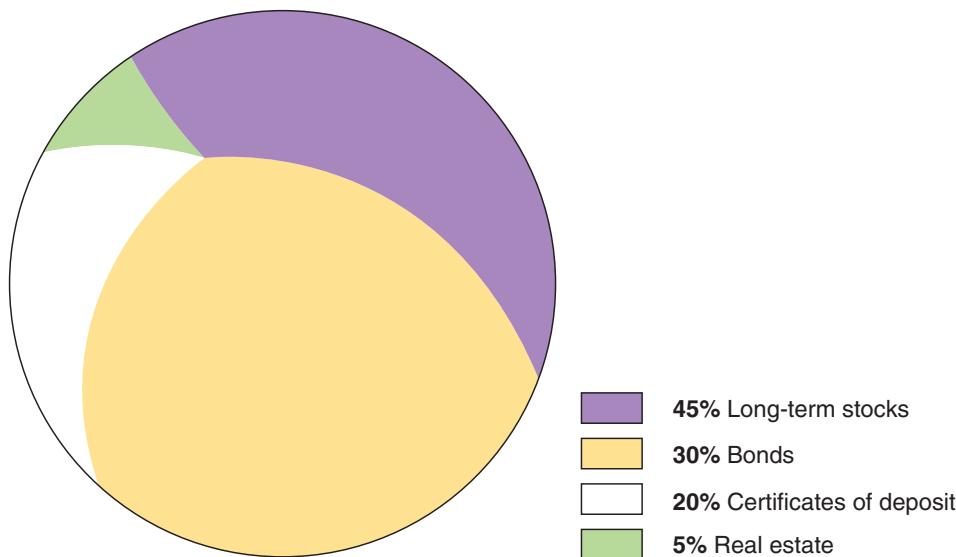
Rick's Part of the Project

Rick Ford has been given a similar assignment—that is, to create interesting graphic representations of data about the company. He has produced three graphics in his initial work on the report:

1. **Bar chart:** Rick drew a bar chart to reflect the growth of the international offices in the past five years.

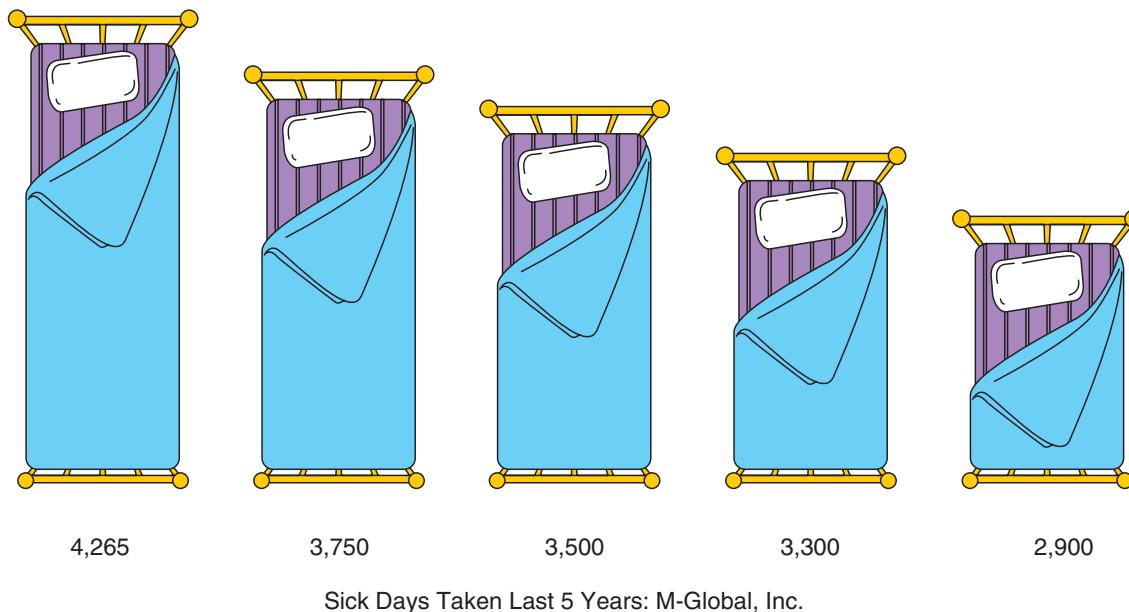


2. **Pie chart:** To show the investment portfolio of M-Global's retirement plan, Rick produced a pie chart.



- 3. Bar chart without bars:** In the past five years, M-Global has made a concerted effort to emphasize preventive medical care and wellness programs

among its employees. A variation on a bar chart was meant to show this progress in a more visually appealing manner than a conventional bar chart.



Questions and Comments for Discussion

- Separate into groups and discuss the kinds of graphics that would be most effective, appropriate, and clear for the four assignments given to you. Report the results of your discussion to the entire class.
- Are there any ethical implications that you should consider in producing your graphics? If so, what are they?
- Discuss any ethical or clarity issues suggested by the graphics produced by Rick Ford. Should these graphics be included in M-Global's annual report? If so, why? If not, why not, and what would you change? If they will

be useful, refer to the ethical guidelines discussed on pages 14–17 in Chapter 1.

Write About It

Assume that Rick sent you an e-mail with his graphics attached. Rick is a new employee at M-Global, so he has asked you to comment on the graphics and make suggestions for improving them. Write the e-mail message that you would send to him. Remember that you will be working with him on a daily basis, and that the two of you are working on this project together. Then create your own graphics, using the guidelines listed in this chapter, to send to Rick as examples. Turn in the text of your e-mail message and your graphics.

Collaboration at Work Critiquing an Annual Report

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

While planning and writing, you make two main decisions about the use of graphics—first, when they should be used; and second, what types to select. This chapter helps you make such decisions. Yet you already possess the quality that is most useful in your study of graphics: common sense. Whether consciously or subconsciously, most of us tend to seek answers to basic questions like the following when we read a document:

1. Is there an appropriate mix of text and graphics?
2. Are the graphics really useful or are they just visual “fluff”?

3. Can information in the graphic be understood right away?
4. Was the correct type of graphic selected for the context?
5. Do any of the graphics include errors, such as in proportion?

Your answers to these questions often determine whether you continue reading a document—or at least whether you enjoy the experience.

Team Assignment

Choose one document that includes a variety of graphics—newspaper, magazine, report, textbook, catalog, Web site, and so on. Using the questions previously listed, work with your team to evaluate the use of graphics in all or part of the document. Whether you think a graphic is successful or not, give specific reasons to support your analysis.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, answering the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?

1. Analysis: Graphics and Instructions

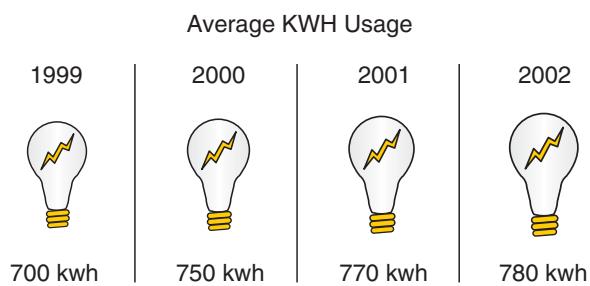
Find a set of instructions that uses graphics to explain a mechanism or an appliance. Submit a written critique that (1) identifies the types of graphics used in the instructions and (2) evaluates the effectiveness of three of the graphics, using the guidelines in this chapter

2. Analysis: Screen Captures

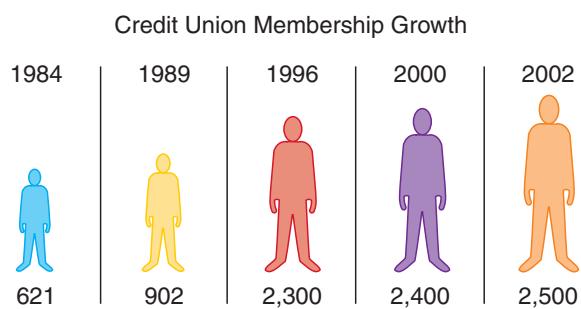
Access the Help files of software on your computer to find one that includes screen captures. Submit a written critique that evaluates the screen captures for their usefulness and clarity in explaining the software. If you don't have access to a computer, use the screen captures in Model 12–5 on pages 460–471.

3. Analysis: M-Global Context: Graphics in a Proposal

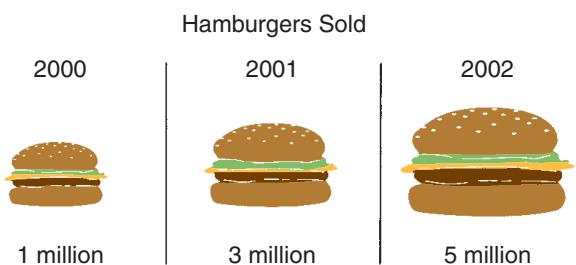
Evaluate the graphics used in Model 12–3 on pages 431–451, using the guidelines in this chapter. Consider how the graphics present information. Are the graphics appropriate to the type of information being presented? Do the text and graphics complement each other? Are the graphics appropriate for the purchasing manager at M-Global (someone who may never have been on a boat, and whose background may be in business, not engineering)? What image do the graphics project for Hydrotech Diving and Salvage? Are there changes that you would recommend? Submit your responses as a written critique of three to five pages in length.



■ **Figure 13-40**



■ **Figure 13-41**



■ **Figure 13-42**

4. Misuse of Graphics

Analyze the graphics in Figures 13-40, 13-41, and 13-42. Describe any deficiencies and offer suggestions for improvement.

5. Practice: Pie Charts, Bar Charts, and Line Graphs

Figure 13-43 shows employment by industry from 2000 through 2009, while also breaking down the 2009 data into four categories by race. Use those data to complete the following charts:

- A pie chart that shows the total employed, grouped by race in 2009.
- A bar chart that shows the trend in total employment during 2000, 2005, 2008, and 2009.

- A segmented bar chart that compares employment in the production of durable goods to employment in the production of nondurable goods within the manufacturing sector for 2000, 2005, 2008, and 2009.
- A single-line graph showing employment in agriculture and related industries for 2000 through 2009. Indicate the gaps in data.
- A multiple-line graph that contrasts employment in retail trade, professional and business services, and leisure and hospitality for 2000 through 2009. Indicate the gaps in data.

6. Practice: Flowcharts

Identify the main activities involved in enrolling in classes on your campus. Then draw two flowcharts that outline the main activities involved in this process. In the first chart, use the standard flowchart symbols shown in Figure 13-19 on page 501. In the second flowchart, use images and symbols creatively to explain the process.

7. Practice: Organization Chart

Select an organization with which you are familiar or one about which you can find information. Then construct an organization chart that helps an outsider understand the management structure of all or part of the organization.

8. Practice: Technical Drawing

Drawing freehand, using the draw function in your word processor, or using a computer illustration or design program available to you, produce a simple technical drawing of an object with which you are familiar through work, school, or home use.

9. Practice: Table

Using the bar charts in Figure 13-44, create a table that shows home ownership by region and total home ownership for the United States for each quarter of 2010.

10. Ethics Assignment

Develop a list of practical guidelines that helps writers like you avoid ethical errors in creating and using graphics on the job. To create this list, complete the following steps:

1. Review parts of this chapter that deal with ethical issues, especially the “Misuse of Graphics” and “Communication Challenge” sections.
2. Interview someone who creates or uses graphics frequently, such as a member of the public relations or admissions departments at the college or university that you attend.

Table 619. Employment by Industry: 2000 to 2009

[In thousands (136,891 represents 136,891,000), except percent. See headnote, Table 605]

Industry	2000	2005 ¹	2008 ¹	2009 ¹	2009, percent ¹			
					Female	Black ²	Asian ²	Hispanic ³
Total employed	136,891	141,730	145,362	139,877	47.3	10.7	4.7	14.0
Agriculture and related industries	2,464	2,197	2,168	2,103	23.6	3.1	1.1	20.3
Mining	475	624	819	707	13.3	4.4	1.3	15.4
Construction	9,931	11,197	10,974	9,702	9.5	5.2	1.6	23.5
Manufacturing	19,644	16,253	15,904	14,202	28.7	8.8	5.5	15.3
Durable goods	12,519	10,333	10,273	8,927	24.7	7.5	5.8	12.9
Nondurable goods	7,125	5,919	5,631	5,275	35.4	11.1	5.0	19.5
Wholesale trade	4,216	4,579	4,052	3,808	29.1	7.3	4.2	14.7
Retail trade	15,763	16,825	16,533	15,877	49.2	10.3	4.9	13.8
Transportation and utilities	7,380	7,360	7,727	7,245	22.9	15.7	3.9	13.9
Transportation and warehousing	6,096	6,184	6,501	6,012	23.7	17.0	4.2	14.8
Utilities	1,284	1,176	1,225	1,233	19.3	9.7	2.1	9.7
Information	4,059	3,402	3,481	3,239	42.0	11.1	5.4	9.5
Financial activities	9,374	10,203	10,228	9,622	54.0	9.2	4.7	10.2
Finance and insurance	6,641	7,035	7,279	6,826	57.5	9.4	5.1	9.3
Real estate and rental and leasing	2,734	3,168	2,949	2,796	45.5	8.7	3.6	12.3
Professional and business services	13,649	14,294	15,540	15,008	41.7	8.9	5.7	13.9
Professional and technical services	8,266	8,584	9,362	9,159	43.8	5.9	8.0	7.2
Management, administrative, and waste services	5,383	5,709	6,178	5,849	38.6	13.6	2.2	24.4
Education and health services	26,188	29,174	31,402	31,819	75.2	14.0	4.8	10.0
Educational services	11,255	12,264	13,169	13,188	69.4	10.4	3.7	9.1
Health care and social assistance	14,933	16,910	18,233	18,632	79.3	16.6	5.5	10.6
Hospitals	5,202	5,719	6,241	6,265	77.0	15.9	6.9	8.8
Health services, except hospitals	7,009	8,332	8,865	9,213	78.9	15.9	5.1	10.8
Social assistance	2,722	2,860	3,127	3,154	85.0	19.8	3.7	13.5
Leisure and hospitality	11,186	12,071	12,767	12,736	51.5	10.4	6.3	19.1
Arts, entertainment, and recreation	2,539	2,765	2,972	3,018	46.3	8.7	5.1	10.7
Accommodation and food services	8,647	9,306	9,795	9,717	53.1	11.0	6.7	21.7
Other services	6,450	7,020	7,005	6,935	52.1	9.7	5.7	17.5
Other services, except private households	5,731	6,208	6,200	6,152	47.2	10.0	6.0	14.9
Private households	718	812	805	783	90.6	7.1	3.5	37.8
Government workers	6,113	6,530	6,763	6,8751	45.5	15.6	3.7	10.1

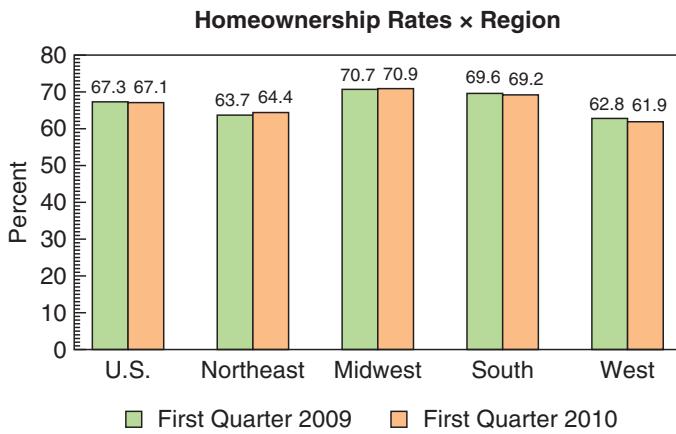
¹ See footnote 2, Table 584. ² Persons in this race group only. See footnote 4, Table 585. ³ Persons of Hispanic or Latino origin may be any race.

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Online," January 2010, <<http://www.bls.gov/opub/ee/home.htm>> and <<http://www.bls.gov/cps/home.htm>>.

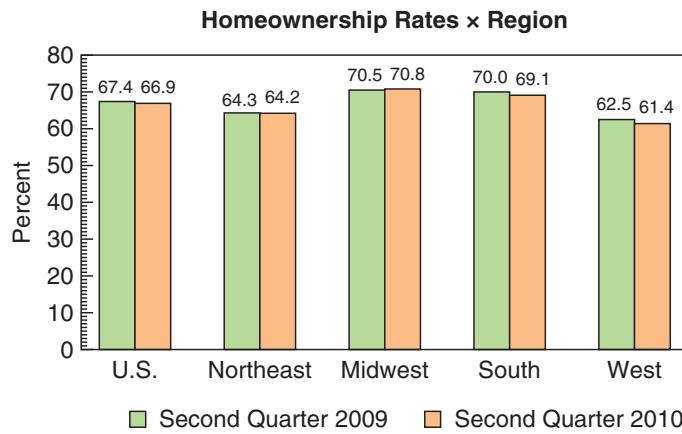
■ Figure 13–43 ■ Reference for Assignment 5

Source: U.S. Census Bureau. (2011). *The 2011 statistical abstract*, <http://www.census.gov/compendia/statab/2011/tables/11s0619.pdf>.

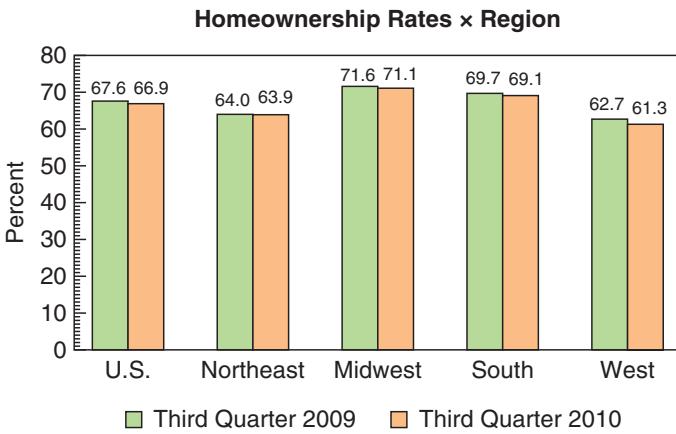
First Quarter 2010: Graph of Homeownership Rates



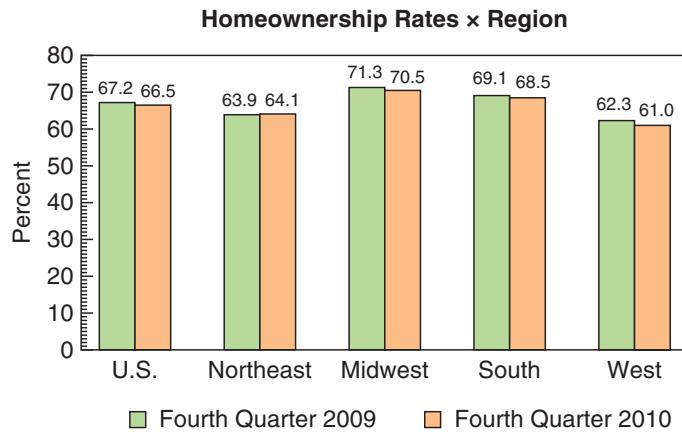
Second Quarter 2010: Graph of Homeownership Rates



Third Quarter 2010: Graph of Homeownership Rates



Fourth Quarter 2010: Graph of Homeownership Rates



■ Figure 13–44 ■ Reference for Assignment 9

Source: U.S. Census Bureau. (2011). *Housing vacancies and home ownership*, <http://www.census.gov/hhes/www/housing/hvs/prevqtrs.html>

3. Review a variety of graphics in diverse media such as popular magazines, textbooks, and the Internet.

Remember to focus on concrete guidelines that could be used during the process of producing a document.



11. International Communication Assignment

Examine and report on the graphics preferences of a country other than the United States. For example, you could choose one of the countries in which M-Global has an international office—Venezuela, England, Germany, Kenya, Saudi Arabia, Russia, or Japan. Sources of information might include one or more of the following:

1. Books on international communication
2. Internet sites on global cultures

3. Student or work colleagues from the culture being studied

You may be fortunate enough to gain access to documents either written in the culture being studied or written by culturally knowledgeable people for use in the culture. If so, you often can draw useful conclusions from reading such primary sources.



12. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Choose a campus, local, regional, national, or international issue about which you have fairly strong views and about which you can locate supporting data. Produce and submit one or two graphics that reinforce your views clearly and well, along with a brief narrative summary of your view.



Chapter | 14 | Web Pages and Writing for the Web



>>> Chapter Objectives

In this chapter, students will

- Learn how technical communicators contribute to their organization's Web sites
- Learn the importance of planning to determine the audiences, purposes, and issues
- Be introduced to guidelines for creating Web sites that are accessible to all users
- Read an overview of the scripting languages and software authoring tools used by Web site administrators
- Be introduced to common Web site structures
- Learn to develop content by writing content chunks, adapting existing content, and converting documents to Web-viewable formats
- Learn the importance of developing a graphic identity and creating effective interface designs and layouts
- Understand how usability testing ensures that a Web site is readable and accessible by the broadest user base
- Be introduced to resources for publishing a Web site, such as internal Web servers, Internet service providers (ISPs), or Web site hosting services
- Analyze model Web pages from student and professional Web sites

Every morning, Stephanie Franklin, M-Global's Web site administrator, checks her e-mail for questions, problems, and suggestions related to the company's Web site. Today, she received a message from Janet Remington, her supervisor in Publications Development (The Pub). Recently, The Pub has been creating internal documents as e-books, formatted for a variety of e-readers and smart phones, and now Janet is ready to make this service available to M-Global customers. She asks Stephanie to decide how best to include the new information on the company's Web site. To prepare the information, Stephanie will have to identify the pages on the Web site that will include the change, and she will need to work with documentation specialists who are creating the e-books and with account representatives who are familiar with M-Global's customers. For Stephanie, as for most Web site administrators, maintaining the organization's Web site is an ongoing process of creating and revising the Web site's content, design, and structure.

Web sites have become an important form of online publication on the Internet for companies, institutions, and individuals. You are probably familiar with Web sites that organizations use to communicate externally with a global audience, but organizations also communicate internally through intranets, or internal company networks. Your college or university probably

includes Web sites in its array of communications with its audience, and it may maintain an internal network for announcements, enrollment information, access to student records, and other internal functions.

Creating material for Web sites follows some key principles that apply to all technical communication: Create content that users want, and make it easy for them to find the information that they need. However, some aspects of Web pages—such as navigation, visual elements, and interactivity—differ from printed pages and documents. Web sites often have unique structures that define the arrangement and forms of navigation used to browse and search. They rely more on visual content and are interactive, providing feedback to users. They may allow users to post comments, buy products, search databases, and perform other useful functions. Because of these characteristics, the nature of developing technical content for the Web is different from its print-based counterparts.

This chapter provides you with an overview of developing Web sites and Web content. This five-phase process includes planning, structure, content development, design, and usability testing. The first section helps you examine your role in Web site development and provides an overview of the five-step process. The subsequent sections describe each of the five phases. Finally, this chapter provides you with basic knowledge to publish your own finished site.

>>> Your Role in Developing Web Sites and Content

Depending on the team you are working with and your organization's structure, your role in developing Web sites may range from being a subject-matter expert who provides content to a development team to creating template-driven documents and completing site development. Much of your role will be determined by the development resources available, the scope of the project, and your own individual expertise. Some common roles on a Web development team include project manager, programmer, graphic artist, writer/editor, content provider, and usability tester (Figure 14–1).

Figure 14-1

Typical Web development team roles

Role	Function
Project manager	Serves as the team leader, who establishes and manages the timeline, finances, and resources. May serve as the client's primary point of contact.
Programmer	Oversees the scripting, programming, publishing, and other technical issues.
Graphic artist	Acquires and/or develops graphic content.
Writer/editor	Writes and edits content for the Web project and any formal reports required.
Content provider	Provides content to the writer/editor and team to be included in the site. May serve as a reviewer of the project.
Usability tester	Tests the site for usability and accessibility guidelines.

Each role may be defined slightly differently by your team or organization; however, these typical roles are found on most teams. You may have multiple persons serving in one role, or you may have one person performing multiple roles. Other roles may be necessary depending on your project's scope and the available resources. In the preliminary planning of your project, defining roles and responsibilities will be important. (See Chapter 3 for more on writing in teams.) Regardless of your role, you should understand the basic development process and elements of a Web site to familiarize yourself with the scope of a Web project.

Keep in mind that the process of Web development is an *iterative* one—that is, a change in one phase may require you to go back to a previous phase to make adjustments to your work. For example, after you have a site structure, you may need to modify the organization of the site structure to repair a navigation problem introduced in a previous phase or to accommodate new pages on the Web site. Formal and informal reviews throughout the process may require you to revisit other decisions. An iterative process allows errors to be corrected as they are discovered and greater flexibility in project development. Remember that users access Web sites for current information, so a Web site is never “finished,” even when it has been published. This iterative process should continue as long as the Web site is available to users.

The remainder of this chapter outlines the five major phases of the Web development process, which are summarized in Figure 14-2.

Planning	Conceptualizing the site, including analyzing the audience and defining the purpose, scope, and context.
Structure	Developing a site structure and navigation systems.
Content development	Analyzing, writing, editing, and adapting content.
Design	Designing graphic content and interface layouts.
Usability	Testing the project using usability and accessibility checks and guidelines.

Figure 14-2

The five-step process of Web site development



Yuri Arcurs/Shutterstock

>>> Planning

The first phase of Web development is the *planning* phase, during which you will make initial decisions about the scope and content of the site. For example, you define the site's purpose, analyze your audience, outline the scope of the site with clear goals, identify constraints that must be considered, and identify methods to incorporate user-centered design into the development process.

First, you must identify the site's purpose and project scope before undertaking its development. Web sites have a variety of purposes, most of which fit into one of six categories: search portals, sales, informational, educational, entertainment, or personal. Figure 14–3 summarizes these common Web site purposes.

Figure 14–4, the Web Planning Form, is a modified version of the Planning Form from Chapter 2. Use this form to help plan your site, and begin by asking and answering these two questions:

- Why am I developing this site?
- Why are my users accessing this site?

Common Purpose	Description	Example
Search Portals	Searchable databases or indexes of Web sites and Web content that provide links to other sites	Google, http://www.google.com
Sales or E-commerce	Sites devoted to selling products and services over the Internet	Amazon, http://www.amazon.com
Informational	Sites that provide information on specific subjects, such as news, government, or other general information	Internal Revenue Service, http://www.irs.gov
Educational	Web sites that provide training, courses, tutorials, or supplementary instructional materials	howtoons, http://www.instructables.com/group/howtoons
Entertainment	Sites that provide games or online entertainment	Comics.Com, http://www.comics.com
Personal	Personal Web pages that allow users to share information on the Web with family and friends	Any personal home page

■ **Figure 14–3** ■ Common Web site purposes

WEB PLANNING FORM

Name: _____ Assignment _____

I. Purpose: Answer each question in one or two sentences.

- A. Why are you developing this site?
- B. Why are your users accessing this site?

II. Audience

- A. User Matrix: Fill in names and positions of people who may read the document

	Decision Makers	Advisers	Receivers
Managers			
Experts			
Operators			
General Readers			

- B. Information on Individual Users: Answer these questions about the selected members of your audience.

Attach additional sheets as is necessary.

1. What is this user's technical or educational background?
2. What main question does this person need answered?
3. What main action do you want this person to take?
4. What features of this person's personality might affect his or her use of the site?

III. Web Site

1. What content do you want to include on the Web site?
2. What graphic choices will present a professional image for me and the organization I represent?
3. What site structure is appropriate to the subject and purpose of the Web site? (Attach a site structure sketch.)
4. What navigation tools are appropriate to the subject and purpose of the Web site?

Next, you must define your audience. Use the Web Planning Form (Figure 14–4) to identify the types of users you expect at your site. Users will have different technical levels (managers, experts, operators, and general readers) as well as different decision-making levels (decision makers, advisers, and receivers). (See Chapter 2, pages 43–46, for more information.)

As part of the audience analysis, you should identify all legal, ethical, cultural, social, usability, accessibility, or technical constraints, as well as any obstacles your users face that pertain to the site. For example, a financial consulting firm's site would be legally constrained to provide accurate information about services and prices. A manufacturer that sold heavy equipment would be constrained by ethical concerns to provide adequate safety information for installation or operation of the equipment. If either site had international customers, the site's designer should be conscious of cultural issues that require the site to be developed in different languages or with alternate content. A site's planner might also face competitive issues, such as not disclosing internal proprietary data on a public site.

Usability and accessibility are especially important, because you must provide equal access to all of your users, including those with limited access or disabilities. For instance, many sites provide text equivalents of graphic content that may not be viewable on the site by all its users. You must also consider the technological limitations of some computer systems that may be used to access your site. These limitations may require you to consider system settings and features such as screen resolution, software plug-ins, Internet connection speed, and security settings required for users to view and access specific site content. Make a list of all important contextual issues to use as a guide when you are developing content, graphics, and other aspects of your Web site.

The information you gather during planning helps you design a Web site tailored to your users' unique needs and specifications. Focusing design on the human user throughout the planning and development process is known as *user-centered design*. The goal of user-centered design is to create a product that is both usable and accessible.

Accessibility Guidelines

An important aspect of Web design is checking the accessibility of your site's content. Whether your site's purpose is to solicit clients, sell products, or provide information, you want to make sure all users have equal access to the content.

Some users may have trouble accessing your content because of system limitations or settings; others may have trouble based on a specific disability, such as impaired vision. Many people with disabilities access the Web on a daily basis using a variety of hardware and software products that can assist them. For example, users with visual impairments can use software that converts textual content into live audio that essentially reads the content aloud. Although you, as the designer, may not be able to control some of these issues, the best way to ensure that your site is accessible is to check its pages against at least one set of accessibility guidelines. Two sets most commonly used are the U.S. Government Section 508 Accessibility Guidelines and the World Wide Web Consortium Web Content Accessibility Guidelines.

The U.S. Government Section 508 Accessibility Guidelines, <http://www.section508.gov>, were enacted by the U.S. Congress in 1998 as an amendment to the Rehabilitation Act to ensure that all government public-information Web sites and electronic materials would be made accessible to all users, regardless of their disability. Although the law applies also to software programs, telecommunication products, and other electronic media, it provides a set of 13 guidelines for Web-based materials, including Web sites. Figure 14–5 summarizes the U.S. Government Section 508 Accessibility Guidelines.

The World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines (WCAG) 2.0, <http://www.w3.org/TR/WCAG20>, are another commonly used set of accessibility guidelines that overlap with some of the Section 508 guidelines. The W3C is a group of institutions and individuals committed to creating accessible and consistent standards for Web development. The W3C's set of guidelines is based mostly on recommendations about design that have been proposed by the W3C and that are not mandated by any specific law.

1. Any Web sites designed for the U.S. government should meet the requirements of Section 508 of the Rehabilitation Act. Ideally, all Web sites should be accessible and compliant with Section 508.
2. Ensure that users using assistive technology can complete and submit online forms.
3. Ensure that all information conveyed with color is also available without color.
4. To aid those using assistive technologies, provide a means for users to skip repetitive navigation links.
5. Provide a text equivalent for every nontext element that conveys information.
6. To ensure accessibility, test any applets, plug-ins, or other applications required to interpret page content to ensure that they can be used by assistive technologies.
7. When designing for accessibility, ensure that the information provided on pages that utilize scripting languages to display content or to create interface elements can be read by assistive technology.
8. Provide text-only pages with equivalent information and functionality if compliance with accessibility provisions cannot be accomplished in any other way.
9. To improve accessibility, provide client-side image maps instead of server-side image maps.
10. To ensure accessibility, provide equivalent alternatives for multimedia elements that are synchronized.
11. Organize documents so they are readable without requiring an associated style sheet.
12. To ensure accessibility, provide frame titles that facilitate frame identification and navigation.
13. Design Web pages that do not cause the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

■ **Figure 14–5 ■**
Summary of the
U.S. Government
Section 508
Accessibility
Guidelines

Source: Adapted from U.S. Government Section 508 Accessibility Guidelines, <http://www.usability.gov/PDFs/Chapter3.pdf>.

Regardless of which set of accessibility guidelines you select, it is important to test your site to ensure you are providing equal access to your site to all users. You can print a set of these guidelines and use them to evaluate your site's level of accessibility.

Scripting Languages and Software-Authoring Tools

Every Web developer involved in developing Web-page content should have at least a basic knowledge of HTML (hypertext markup language). HTML includes tags used to mark up structural elements, such as headers, titles, body text, hyperlinks, and graphic content. Other scripting languages, such as XHTML, Cascading Style Sheets (CSS), JavaScript, and Hypertext Preprocessor (PHP), allow you to add global style sheets, create interactive graphics and forms, and retrieve information from a database for display in a Web browser. If you have the time and interest, you can learn HTML and other scripting languages to create more dynamic Web pages.

In many cases, you may want to use Web authoring software that does the markup and scripting of content for you. If your preference is to use a Web authoring tool, such as Microsoft FrontPage or Adobe Dreamweaver, you may benefit from learning a little HTML to help customize design and fix minor problems. A basic understanding of these elements is sufficient to help solve problems common to Web pages and smaller Web sites. Learning HTML helps familiarize you with the internal structure of Web documents. In the computer section of most bookstores, you can find many useful books that will help you learn HTML.

There are also many useful online references, such as the World Wide Web Consortium's (W3C) site (<http://www.w3.org>), which has many reference guides on a variety of scripting languages. Other useful references can be found by a quick search for "HTML reference guide" on any major search portal site (such as Yahoo! or Google). Many computer training centers and continuing-education programs offer introductory courses in HTML. However, Web sites for large organizations have become increasingly complex, providing access to large databases of information, and Web sites that take customer information must meet security requirements. As a result, Web administrators may need to be familiar with programming languages to maintain large Web sites.

There are also templates available through resources such as GoogleSites that will allow you to create a site and post it to the Web. These templates have many of the drawbacks of other kinds of templates—for example, fixed formats—but they may be useful for small organizations or personal Web sites such as portfolios like the ones in Model 14–1 and Model 14–2 on pages 560–564. Just as no developers should be without some knowledge of markup and scripting, they should also have knowledge of at least one Web software-authoring tool, such as Microsoft FrontPage or Adobe Dreamweaver. Today, most Web developers use software-authoring tools or Web software development programs. These software programs can make the development process much easier because they provide graphical tools and buttons that enable you to develop page layouts, format text, create navigation toolbars, and add interactive graphics, forms, and features. Learning a little about authoring software gives you an idea of its limitations and also gives you a clearer sense of what can and can't be done easily. Such knowledge may help your team refine goals and choice of development tools and methods.

>>> Structure

The second phase in developing a Web site is to develop a *structure* for the site. The structure of books is both linear and hierarchical, in that they are ordered or outlined with sequential page numbers, chapters, and tables of contents. Web sites tend to have more flexible structures—they are composed of content chunks interconnected by hyperlinks. Their structures may be linear, hierarchical, hypertextual, or custom. The structure helps define how individual pages are arranged and organized into a complete Web site. Structure also encompasses navigation, because the various toolbars, menus, and hyperlinks are the means by which we search and browse a site's contents. It is important to help users understand the site structure so they can browse and search your site more efficiently. Our discussion of the structure phase includes types of structures, the structure development process, navigation design, labeling, and guidelines for grouping and arranging pages.

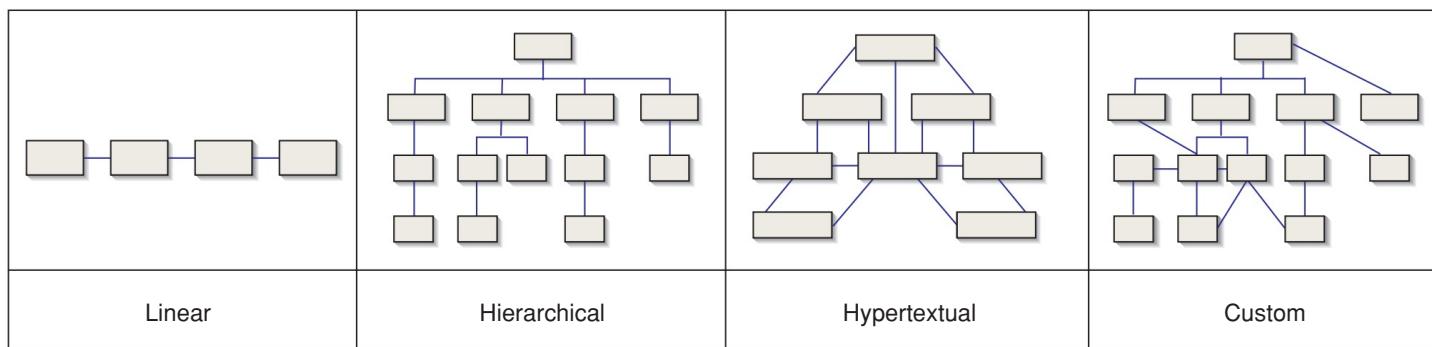


Dean Mitchell/Shutterstock

Site Structures and Types

This section describes the features and uses of four main Web structures: linear, hierarchical, hypertextual, and customized. See Figure 14–6 for a summary of these types.

Linear structures follow a designated order for arranging pages. They are similar to printed books, in that pages are arranged so that one follows another in a sequence (i.e., page 1, page 2). Such structures offer less flexibility to readers because they must follow a rigid sequence. Linear structures require every user to read the same information in the same sequence. Therefore they are used most commonly in Web-based training sites and online tutorials, where users must learn a specific process or sequence. Linear structures may also be used in sites that sell products; users deposit items in a virtual shopping cart and check out using a specific process or sequence of paying and confirming the order.



■ **Figure 14–6** ■ Four types of Web site structures

Hierarchical structures organize pages into a hierarchy of categories and subcategories that most resemble an outline or a table of contents in a book. These structures are commonly used in education, business, and news Web sites (on the latter, individual articles may be organized into a hierarchy of categories, such as “World,” “Science,” “Law,” and “Education”). In hierarchical structures, major categories are provided as navigation options on the home page, and subcategories and related content are found in subsequent pages on the site. Many sites use a more complex structure that allows users to search and browse more dynamically, by jumping from one subcategory to another, but the basic overall arrangement of the site may still resemble a hierarchy.

Hypertextual structures are typically nonlinear structures in which any content chunk or page can link to one or multiple pages in the site. Hypertextual structures work well for sites with large databases of information that permit flexible searching or browsing. These sites customize content by piecing together individual content chunks from a database. Many commercial retail sites are hypertextual because the results of any keyword search provide links to a number of pages. Therefore, hypertextual structures typically provide the most flexible navigation options for users. Other sites that use hypertextual structures are online reference guides, knowledge bases, and troubleshooting guides that link related content chunks to help users solve a problem.

Custom structures can combine multiple structural types and are usually tailored to the specific subject or purpose of the site. A custom structure might work best in a site that has multiple purposes or a specific need for a unique structural type. For example, a university’s Web site may require a hierarchical structure for its administration materials, such as policy statements, application guidelines, degree plans, and forms. Yet the same site might benefit from using a hypertextual structure for its course descriptions, a structure that allows users to search a database of descriptions and titles in order to find those that best match their own academic interests. Many sites that sell products provide a hierarchical organization of products, a hypertextual search feature, and a linear process for purchasing items. If your site has more than one function or purpose, it may benefit from the use of a custom structure.

Two important factors to consider in choosing a site structure are breadth and depth. *Breadth* is the number of choices or content areas at any given level in the site’s structure. For example, a site with 15 major content areas would be considered broad because it provides more categories or initial navigation pathways for users. A site with 6 major content areas is narrower because it offers fewer pathways. The breadth influences both the navigation and the organization of your site.

Depth can be determined by the number of mouse clicks required to reach content at the lowest level in the structure. Deep structures have more levels in each content area or pathway. For example, the National Transportation Safety Board Web site in Model 14–3 on pages 565–567 allows users to work down through four, five, or even six levels to access information in its databases. Shallow structures have fewer levels. The portfolio Web site in Model 14–1 has only three levels—a home page, introductory pages, and the documents that make up the portfolio. Deep structures can require more search time by users because there are more levels between the home page and the deepest content in the site. However, they accommodate larger volumes of content. Shallow structures

Figure 14–7
The four steps of developing a site structure

Analysis	Determining major content areas, content types, and file formats
Labeling	Selecting meaningful labels for pages and major content areas
Layout	Sketching a site map or blueprint of the site's structure
Editing	Making adjustments to the site structure based on user testing and reviews

place content closer to users because they typically have fewer clicks or pages between the home page and content pages. However, they may also seem less organized into specific topics and subtopics.

Process of Developing a Structure

The process of developing a site structure includes four major phases, as summarized in Figure 14–7.

In the analysis phase, you determine the major content areas and the types of documents to include. If you already have content chunks identified, this step requires you to organize them into specific content areas. One method of determining major content areas is to create an index of your content chunks. Some Web developers use sticky notes to develop the structure of a Web site. As they identify chunks of information for the site, they arrange the notes on a wall or whiteboard. They may even assign different colors of sticky notes to different kinds of chunks, such as product information or company information. At different phases in this process, a member of the Web development team may take digital pictures of the sticky notes on the wall to keep a record of the team's work. You can also use software that creates hierarchical charts to arrange chunks and design Web site structure.

In this section, we will describe a method that uses index cards, which can be grouped into stacks or taped to a wall or poster board.

To begin identifying your Web site's structure, place the following information on an index card:

1. A one-sentence description of the chunk
2. The content type—for example, description, definition, form, or information graphic
3. The file format of each content type, such as Web page, PDF document, GIF graphic, and so on

As you work, try to identify patterns or relationships between individual chunks and make note of them. After you have finished, sort your cards into stacks based on their similarities in subject or purpose.

During the labeling phase, your purpose is to select meaningful labels for all the pages in your site. First, write a label on each card that might serve as its title. Then, come up with a label for each card stack to serve as its group name. Be sure to choose

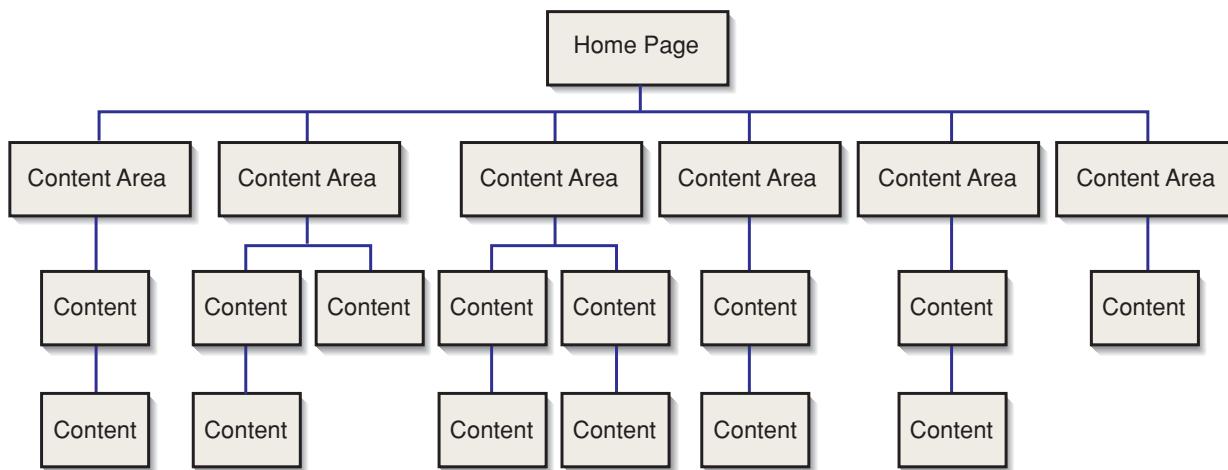
Structural Type	Advantages	Disadvantages
Linear	<ul style="list-style-type: none"> Is easy for users to learn the structure. Lets users read all content in the same order. Is good for process descriptions, instructions, and training. 	<ul style="list-style-type: none"> Has less flexible navigation options. Links pages only in a specific sequence.
Hierarchical	<ul style="list-style-type: none"> Organizes information into categories and subcategories. Is relatively easy for users to learn the site structure. 	<ul style="list-style-type: none"> Can be complex and difficult to navigate larger structures. Can be difficult to navigate hierarchies, causing users to back up in order to browse a different category.
Hypertextual	<ul style="list-style-type: none"> Accommodates more flexible forms of searching and browsing. Organizes content by association or relevance. Works well for searching large volumes of content. 	<ul style="list-style-type: none"> May be difficult for users to discern site structure. Can become complex to map the site structure in larger sites.
Custom	<ul style="list-style-type: none"> Can accommodate multiple structural types. Is the most flexible of structures. 	<ul style="list-style-type: none"> May be difficult for users to discern site structure. Is time-consuming to design an effective structure.

■ **Figure 14–8** ■ Advantages and disadvantages of site structural types

a word or short phrase for each stack that represents the overall subject, purpose, or function of all of the content chunks in that stack. Typically, labels are either nouns or verbs, but in some cases they can be phrased as answers to questions (e.g., “Who We Are,” “What We Do”). Your labels might be organized by one of many methods: alphabetically, by function, by a metaphor or theme, by question, by task or topic, or by another method. Using a scheme can make the task of labeling much easier. Be sure to select concise and meaningful labels that will help users scan and browse pages more easily.

To this point, your stacks of cards had been organized into groups of topics and subtopics. Now you must decide what type of structure best fits your site’s subject and purpose. Figure 14–8 summarizes the advantages and disadvantages of site structures.

The next step toward developing a site structure is layout. The goal of the layout phase is to select and sketch the site structure that best fits the nature of the content and communicates the site structure to users. You should proceed to (1) sketch your site structure as a flowchart on a piece of paper, (2) use boldface rectangles to represent your major content-area pages, (3) draw lines to indicate hyperlinks that link pages together, and (4) write your labels on each rectangle. As you develop your sketch, you might end



■ **Figure 14–9** ■ Sample site structure sketch

up making changes to labels or the organization of content areas. Naturally, as you try to create a unified structure, you will find better ways of arranging and labeling your pages as part of the process. Figure 14–9 shows a sample site-structure sketch.

The sample structure in Figure 14–9 is hierarchical, broad, and shallow. It has six major content areas, also known as *nodes*, which make it relatively broad. The structure has three levels at its deepest level, making it shallow. This type of structure offers users many content areas from which to choose and places content pages relatively close to the home page. Although this structure offers many initial choices, or *pathways*, for users to follow, it makes finding content at the deepest levels a quicker task for users.

The purpose of the editing phase is to test the site structure to make sure it is organized properly and demonstrates good usability. One way to test your site's structure is with a small group of typical users (four or five) who are not part of the development team. You can even use your set of cards for this basic test, as follows:

1. Provide your testers with an overview of your site's subject, purpose, and general function.
2. Give them your stack of cards.
3. Have them organize the cards into the stacks they think represent the best organization. To limit the time of the test, you could provide a reduced set of your cards to get a general idea of how they might organize the stacks.

This test examines how typical users might perceive the arrangement of pages in a site to help you design a more usable site structure. Once each tester finishes the test, record the information and compare it to your site-structure sketch to see how well they match. You may or may not decide to make changes based on your findings.

This exercise should give you a general idea of how users might expect content to be organized. As a final step, consider having members of your development team review the work and comment on alternate ways of arranging the site. Then, with the information from your testers and team review, you can decide what changes in the structure are necessary before you start planning the site's navigation.

Labeling Strategies

Once the navigation systems have been selected, the next step is to provide text labels for your links, buttons, and toolbar menu options. You can use the same labels you selected for your site structure and simply create a toolbar menu, site map, or other navigation tools. Sometimes these labels may need to be different to make them more visible to users.

Use a consistent scheme for labeling your navigation links and toolbars. Some commonly used labeling methods include alphabetic, by function, by a metaphor or theme, by question, by task or topic, or other means based on the site's subject and purpose. One advantage of using a scheme is that it follows an organized pattern that users recognize. Once users see a few links in the toolbar menu or site map, they can determine how each relates to the others and have a better idea of how the site as a whole is arranged. Select a scheme and appropriate labels for your navigation toolbars, menus, and hyperlinks to help users understand their meaning and function.

Another issue to consider is how to communicate the site structure effectively to users. There are a variety of means to communicate the structure to users, such as the following:

- Visual cues and elements, such as colors, icons, or graphics, can represent themes, concepts, categories, or subcategories. These visual cues can quickly suggest which pages go together as a collection.
- Toolbar menus show users how information is organized into major content areas.
- Headers and titles throughout the site can help users understand how information is arranged.
- “Breadcrumb” links show the trail of links a user has followed on the site.
- Site maps and indexes act as interactive maps of the site structure, showing the arrangement of pages and providing links to each page on the site.

Whichever methods you select, think carefully about how you show users the arrangement of your site.

Guidelines for Navigation Design

Site structure and navigation are interrelated in that the structure dictates the navigation options, or pathways, users have in searching and browsing the site. The site structure and labeling system can be used as an outline or a blueprint for developing the site's navigation, but first you must decide what types of navigation to provide for users. Some types commonly used are hyperlinks, toolbar menus, site maps, and search fields. Figure 14–10 lists each type and describes its function.

Many sites use multiple types of navigation to provide users with multiple means to navigate the site. Some users may prefer tabs and toolbar menus, whereas other users prefer search fields. Still others may look for site maps. Because we all have different preferences, it is important to provide more than one way of searching and browsing your site. For example, the Web site in Figure 14–11 includes a link to the home page, a site

Navigation Type	Function
Hyperlinks	Hyperlinks can be individual words, phrases, or images that, when clicked, link to another page or chunk of related content. Users can click on these words or images to access the related page or chunk. Hyperlinks are used in all site structures and are the foundation of other navigation types.
Toolbar Menus	Toolbar menus are groups of navigation choices that show the major content areas or functions of the site. They can be drop-down, pullout, graphic, or basic text labels. Each item in the menu links to a related page or section of the site. In larger sites, submenus can provide links to more specific content. Toolbars work well in all sites but are less effective in search portal sites, which have large databases of searchable content.
Site Maps	Site maps provide a structural layout of the site and links to all pages in the structure. They can be a graphic map or textual outline of your site structure map. They explicitly show the organization of pages, like an index or a table of contents. They help users plan paths through pages to find information. Site maps work well in sites with custom or complex site structures.
Search Fields	Search fields allow users to type in keywords or phrases in a search box and press a button to search the entire content of a site. Based on the results of the search, a list of possible pages that match is displayed and links are provided. Search fields typically work best in sites with large amounts of searchable content.

■ **Figure 14-10** ■ Navigation types and function

map, and a search box in the upper-right-hand corner of each page. The site also lists sections of the site horizontally, and the home page includes text hyperlinks (indicated with underlining) and Graphic User Interface, or GUI (pronounced “goo-ey”), links from images. Let the purpose of the site dictate the types of navigation you select, and choose at least two types to accommodate users’ individual preferences.



■ Figure 14–11 ■

Navigation and design principles in a Web page design

*Source: Courtesy of the
National World War I
Museum at Liberty
Memorial*

Some common guidelines for placing navigation links and toolbar menus found in many site designs are as follows:

>> **Navigation Guideline 1: Use Navigation Elements Consistently Throughout the Web Site**

Position toolbar menus and main site navigation links in the user's initial screen-viewing area on every page. Users should be able to see the navigation when the page first loads, without having to scroll to find it. Most site navigation is placed in one or more of three areas: top margin beneath the site's title banner, left margin, or page footer.

>> **Navigation Guideline 2: Group Main Site Navigation Links**

Think about how users would group information, and group links together so that users can easily find the site's major content areas.

>> **Navigation Guideline 3: Place Appropriate Navigation Tools in Each New Window or Frame**

If your site uses multiple windows or frames, provide navigation tools in each one. When users have moved through many pages, or if they are on a page or frame that has opened in a new window, this will help them return to a previous location on your Web site.

Navigation Guidelines

- Use navigation elements consistently throughout the Web site
- Group main site navigation links
- Place appropriate navigation tools in each new window or frame
- Place navigation links where they are clearly visible

>> **Navigation Guideline 4: Place Navigation Links Where They Are Clearly Visible**

Place links to your site map, search, and help systems near or with your main site navigation links so users can always find them when needed.

Once you have devised the structure and navigation, you have a structural blueprint of the site that is ready for the next step—the design of graphics and the interface.

>>> Content Development

The third phase in creating a Web site is *content development*, which includes writing, editing, and adapting both new and existing content for a Web environment. It also involves converting documents into readable formats for the Web. Because of fundamental differences between printed documents and Web sites, usually you won't be able to drop content into a Web page without some editing. This section explains content chunking, offers some guidelines for developing Web content, shows methods of adapting content for the Web, and explains some document conversion issues and common file formats.



Content Chunking

The basic written unit of a Web page is a content chunk. A *content chunk* is a stand-alone unit of text and graphics. An individual content chunk is often separated from other content chunks by spacing on a page. Content chunks can vary in size, depending on their purpose, screen layout, or specific project style guidelines. Generally, content chunks tend to average around four to seven lines of text, depending on the audience and subject. If a chunk includes graphics, it could be as large as what fits on the user's screen.

The goal of content chunking is not to reduce everything to a short description, but to write content so it is more readable and more likely to be read. One of the advantages of the Web is that individual chunks and entire sites can be interconnected by links, which may, in fact, accommodate more detailed and lengthy descriptions than most printed books.

Adapting Content for the Web

Your organization may already have material to be placed on a Web site, such as descriptions of services or equipment, procedural information, marketing materials, or annual reports. These may need to be converted from their existing format to a format more appropriate for a Web site. Before a document is converted, you should check for internal consistency to ensure that it is formatted according to your style sheet. Style sheets are composed of a list of rules that govern the consistent markup, format, and display of textual and graphic content for a Web site. They should include any internal style guidelines unique to your organization or project. For example, such guidelines may relate to fonts, colors, alignments, spacing, size, and format. Using consistent styles throughout your document makes it appear more professional, readable, and usable. After you determine your style guidelines and apply them, take a detailed approach to editing your work, just as you would for any printed document. Read through each chunk to ensure it is well written and edited and conforms to your style guidelines.

Part of adapting content for the Web involves deciding which electronic formats to use for documents. Initially, converting content into electronic format makes it easier to cut and paste your work into Web-page templates and existing layouts. Most Web content is formatted in HTML, a basic markup language used to structure and notate content so it can be read by a Web browser. However, if your Web site uses a large number of checklists, worksheets, fact sheets, or other such documents, it may be easier to convert these into file formats that are easily downloadable or printable. These may include Adobe Portable Document Format (.pdf), Microsoft Word (.docx), and Rich Text Format (.rtf). If you have larger printed documents, such as long reports, you may find it easier to use Web-authoring software or a word-processing program to convert them directly to HTML files or Web pages.

Document Conversion Issues and Common File Formats

You may have reference documents, product descriptions, definitions, forms, and documents that must be posted in their native format rather than converted to a Web page format. It may not be feasible to convert all of your site's documents to HTML files, or you

may need to convert them to more printer-friendly formats. For example, a site that sells personal computers might provide printable system configurations in Adobe PDF files because they tend to print more legibly than simply printing what appears on the screen.

You should try to select the file formats that are most commonly used, or to provide documents in multiple formats to accommodate the widest user base. You may need to do some research to see what software most of your users have on their systems. If they have Microsoft Word, then they can view documents in that format (.docx files). Using file formats that are readable with free document viewers, such as the Adobe Acrobat Reader, can save users the additional expense of purchasing software. You can put a link to the free downloads on your site to assist users.

If you are unable to use a single format for your digital documents, you can also provide multiple formats to accommodate users. Some sites provide one version in HTML format and an alternate version for printing. You can also save documents as Rich Text Format files (.rtf) or as Text files (.txt) that are viewable by most basic word-processing and text-editing programs. These file types are good for basic text documents that don't require complex formatting, tables, or graphics. Alternatively, you can scan documents and save them as images, or graphic formats (such as .jpg, .gif, or .png files), which are viewable by most Web browsers. Although typically used for graphic images, these file types can also be used to create quick snapshots of documents as images. However, they have some limitations; for example, they can be difficult to modify and can result in larger file sizes, longer download times, and poorer readability. Providing two to three different formats of documents is a good rule of thumb to accommodate most users.

>> Guidelines for Writing Web Content

Research suggests that Web readers tend to scan, skim, and “raid” sites for specific content. They read pages in a nonsequential order, based on association, and tend to dislike excessive scrolling in documents. Because users read content differently on screen than in print, the guidelines for writing Web content differ from those for writing printed materials. Following are some other general writing guidelines based on Web reading habits:

>> **Web Content Guideline 1: Use a General-to-specific Organization in Individual Content Chunks**

Provide a summary of important points first, followed by specifics. Web readers tend to look for results up front, and then to look for more details.

>> **Web Content Guideline 2: Keep Website Structure in Mind When Creating Chunks**

Organize content chunks into main content areas or categories that might serve as navigation links or sections of the Web site.

>> **Web Content Guideline 3: Format Text for Easy Reading**

Identify each content chunk or section of a chunk with meaningful headers to match users' habits of scanning documents. Reduce the size of individual chunks to fit on a single

screen when possible, because users tend to prefer less scrolling and shorter documents. Rewrite and reformat paragraphs that use lists into bulleted or numbered lists, which are visually more readable on the Web.

>> Web Content Guideline 4: Identify Text to Be Hyperlinked

Break up larger chunks into smaller ones that can be linked by hyperlinks. Providing “more information” links with summaries is a good method. Provide links to individual sections on longer pages with horizontal scrolling to aid users in searching and navigating.

>> Web Content Guideline 5: Develop a Style Sheet for Consistency

Style sheets establish the sizes, font faces, colors, and spacing for headers, chunks, graphics, and text. Anyone creating content for a Web site should use the style sheet to ensure consistency in the visual style of text chunks. This consistency helps establish credibility with users.

>> Web Content Guideline 5: Edit Carefully

As with other technical documents discussed in this book, mistakes can compromise the credibility of your work.

Although not exhaustive, this list provides some general writing guidelines to help you write the content chunks that best fit the users’ reading habits. Be certain to follow proper use of grammar and punctuation, as you would in writing any document. Once the textual content is written and edited, the next step is to adapt it properly for the Web.

Web Content Guidelines

- Use a general-to-specific organization in individual content chunks
- Keep Web site structure in mind when creating chunks
- Format text for easy reading
- Identify text to be hyperlinked
- Develop a style sheet for consistency
- Edit carefully

>>> Design

The fourth phase, the *design phase*, involves developing graphic content, page layouts, and design of the *interface* (what the user sees on the screen) into a whole site. Design involves much of the actual production work of the Web site. Your work involves arranging, formatting, and perhaps even redesigning some of your content to fit the site design. It includes the design of site maps, navigation tools, buttons, headers, backgrounds, and other elements developed in previous phases. You will create an effective interface design and individual page layouts for the site.

This section discusses design conventions and principles, development of graphic identity and content, different file formats, graphics, and guidelines for designing effective interface layouts.

Design Conventions and Principles

Effective design is much more than good aesthetics and instincts. Few people have the innate ability to design



Lamy010/Shutterstock

without some type of guidance or rules to assist them. Whether designing a graphic logo or an advertising banner or laying out the interface, it is important to use established design conventions and principles to guide your design work. Some of these commonly observed Web-design conventions include the following guidelines:

- Place a hyperlink on the title banner or logo to the home page.
- Place the site's main navigation in the left or top margin.
- Use consistent font faces, sizes, and colors on pages.
- Use descriptive titles and headers for each graphic and on every page.
- Provide contextual cues that give clues to the function, concept, or arrangement of specific pages or graphics.
- Maintain a consistent graphic identity, or *look*, using consistent colors and visual elements.
- Provide redundant navigation links to supplement graphic links.
- Provide alternate descriptions of graphic content.
- Use no more than three font faces for text in your site.
- Use colors that contrast well.

Because Web sites are used for a wide variety of purposes and in a wide range of contexts, no definitive list of design rules applies to all Web sites. Although this list may prove useful in your design work, no single set of conventions applies to all Web sites or documents. Your design team determines if there is a good reason for a convention to be followed or broken, considering your project scope, purpose, and context. To begin your design work, make a list of design conventions to use; then do some benchmarking research by viewing how conventions are used on sites that have a similar purpose and function. Add to your list any conventions that seem to apply to your site, ultimately arriving at a list that guides your design on a specific project.

Design principles are also based on theories of design. Although not prescriptive, they provide you with broad guidance to assist in the design of graphics and page layouts. For example, Gestalt theory provides a foundation for much contemporary visual design and suggests that users actively engage in organizing and making sense out of visual stimuli in their field of vision. Because of the visual and interactive nature of Web sites and Web content, Gestalt is particularly useful for design work in those media. The following design principles based on the Gestalt approach can be used to guide your design work:

- Consistency in the use of elements in repetitive and similar ways on a page creates a unified look. Maintaining a graphic identity through the repeated use of specific logos, icons, and colors in a Web site is one way to demonstrate consistency.
- Contrast in the use of visual elements, such as colors, lines, or shaded regions, draws the eye to those elements and creates visual emphasis. Placing white text on a black background creates good visual contrast because the text stands out more and is easier to read.
- Group elements together through the use of space, color, or other graphic elements. This includes placing elements together to show a relationship between them. Placing all elements of a search feature, such as the text boxes, buttons, and instructions,

in a shaded region creates conceptual grouping, telling users which elements belong to the feature.

The National World War I Museum page (Figure 14–11 on page 539) demonstrates good use of these three design principles. The page demonstrates consistency through its use of consistent font faces, sizes, colors, headers, and logos. It shows good use of grouping, using shaded headers, boxes, and white space to group related content together. The page also shows good contrast, using colors that make text easy to read and that emphasize headers and hyperlinks on a variety of background colors.

Finding a Theme and Developing Graphic Content

Once you have a set of design conventions and design principles, you can start designing your graphic content. First, you should establish a graphic identity or design theme for your site. The site's *graphic identity*, defined by the use of colors, fonts, lines, boxes, shapes, graphics, animation, and other visual information, defines the site's unique brand. Rather than selecting your choices at random, it is a good idea to select a specific theme or metaphor to guide your selections. You should consider the tone and impression you want the site to have. The student portfolio in Model 14–1 uses a clean design to emphasize a business-like image but softens that image with a less formal font and pink color for headings, to suggest that the student is both technically skilled and warm and personable. The student portfolio in Model 14–2 uses a graphic consistently throughout the Web site to emphasize the student's skills as a writer. Select a theme that is appropriate for your users, purpose, content, and the tone you want to convey, and then use the defined theme to help you develop graphics for your site's design.

Many development teams use a variety of methods in developing graphic content for Web sites. If you have existing graphic content to use in your site, it may need to be converted or improved for a Web environment. Graphic content for your Web site can come from a variety of sources. If you have printed material, such as sketches or photos, you can use a document scanner to convert them to graphic file formats for use on the Web. Also, you can create your own graphics or hire a graphic design professional to create them using graphic design software.

If you don't have the time or resources to develop your own content, you can search the Web's vast number of sites for graphic libraries (both free and for purchase). By typing in a search for "free Web graphics" in any search portal site, you will get access to thousands of sites that offer graphic libraries and utilities for generating custom graphics and animations, some for free and some for a fee. In some cases, you might be able to get some good recommendations from colleagues or friends. Choose the methods that best fit your budget, time, and project scope.

File Formats and Graphics

For static images, the three most common types of file formats used in Web sites are the Graphic Interchange Format (.gif), the Joint Photographic Experts Group format (.jpg),

and the Portable Network Graphic format (.png). Each type has relatively good *file compression capabilities*, which means that they typically have smaller file sizes compared to other formats. Smaller file sizes mean shorter user download times on the Web. Commonly used formats that tend to have less compression include Windows Bitmap (.bmp), Encapsulated PostScript (.eps), and Tagged Image File Format (.tif). Use these other formats only if you have a specific reason to do so.

When deciding which format to use, you should consider the following information about available features:

- *Color depths* affect both the quality and file size of the image. True color images display up to 16.7 million colors and produce images of photographic quality. However, not all graphics require this amount of color depth.
- *Transparency* allows you to set a single color in a graphic to be transparent, which allows graphics to blend well against different backgrounds.
- Some types of animation don't require special software plug-ins or programs to view them.
- *Interlacing* allows users to see pieces of the graphic on the screen as they load. Noninterlaced graphics remain unseen until the entire image is downloaded.

Figure 14–12 summarizes the capabilities of the three main graphics file formats.

Many other types of graphic formats are unique to different graphic design software and programs, such as animations, 3-D modeling, drafting files, and video clips. Most require specific software programs or plug-ins to view. If your site uses these types of files, make sure you instruct users on how to download and view them properly. Provide file formats that do not require users to purchase additional software or spend a lot of time downloading appropriate viewers. Be sure to consider all your audiences when making the choice. In designing a site for a general audience, consider using file formats that can be viewed with free viewers or software plug-ins, or provide users with alternate versions. Sometimes simple scanned images, saved as JPG files, are good supplements that allow users to view static images or parts of your dynamic content. If members of your team lack the expertise to address some of these issues, it might be best to hire a graphic design consultant to help you solve some of them.

File Format	Graphic Interchange Format (GIF)	Joint Photographic Experts Group (JPG)	Portable Network Graphic (PNG)
Color Depth	• 256 colors	• 16.7 million colors	• 16.7 million colors
Transparency	• transparency	• no transparency	• transparency
Animation	• animation	• no animation	• no animation
Interlacing	• interlaced	• noninterlaced	• interlaced

■ **Figure 14–12** ■ Graphic file formats

Interface Layouts

Once the graphic content has been developed, the next task is to begin laying out the interface—what the user sees on the screen. The interface serves as the user's control panel for browsing, searching, and interacting with the site. The typical Web interface includes the following five elements:

1. **Header**—includes the logo and a title banner that identifies the site's title and/or company name
2. **Navigation**—includes hyperlinks, site maps, toolbar menus, and search features, which are the main navigation tools for the user to search and browse the site
3. **Content window**—includes most content chunks and graphic content displayed on the screen and is placed in consistent locations throughout the site
4. **Graphic identity**—includes visual information (logo, icons, graphics, colors, or other visual elements) found throughout the site to give it a unique brand
5. **Contextual clues**—includes information that helps users understand the nature or organization of information on pages or in the site

Before you begin designing the interface, make a list of the graphics, content chunks, and objects that will be used in each of the basic interface elements.

The Internal Revenue Service Web site, shown in Figure 14–13, uses the five interface elements on its home page. The header displays the title of the site and the organization's logo. The site's main navigation is placed under the header and in the left margin. The content window is in the center of the page and features links and information by topic. Elements used in the site's graphic identity include a photo that suggests the average working taxpayer, graphic links for services such as E-file, and blue and white colors consistent with the logo. The page also uses contextual clues such as headers, boldface text, menus, toolbars, and graphic file folder tabs to help users understand how the site's contents are organized.

Designing the interface also includes arranging interface elements, such as content chunks, navigation tools, and graphics, as well as the interactive features of the site, in-

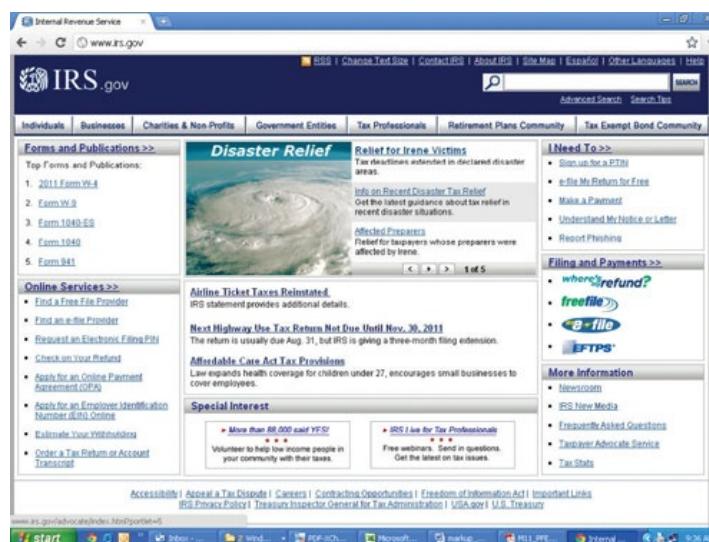
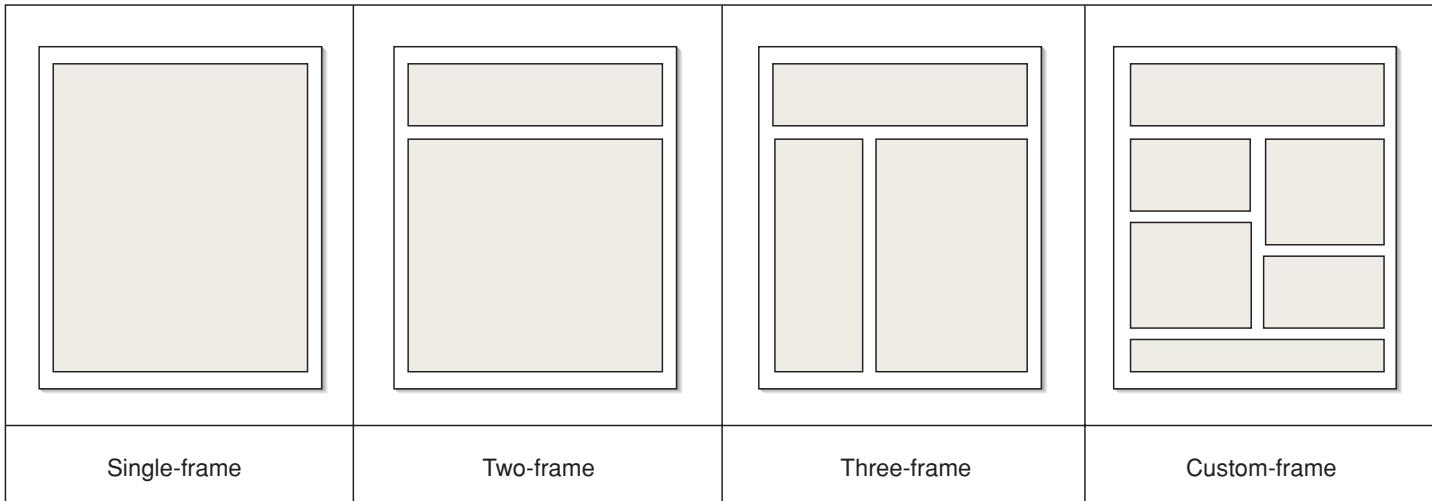


Figure 14–13 ■ Interface elements used in a Web page

Source: Internal Revenue Service, <http://www.irs.gov>.



■ **Figure 14-14** ■ Interface layout types

cluding buttons, links, and forms. Most sites use the same interface design, or layout, for all the pages in the site. Some sites may find it necessary to use two or more layouts, depending on the function and purpose of other pages or sections of the site. For example, a *splash page*, or an introduction page with a short animated movie, might have a simpler layout for that page and a separate one for the rest of the site. A site that sells clothing might use one layout for the home page, a second layout for all pages with product information, and a third layout for the shopping cart or purchasing page. You should decide if there are certain pages or sections of your site that require different interface layouts and make a list of the characteristics each layout should have.

Some typical types of interface layouts are single-frame, two-frame, three-frame, and custom-frame. Figure 14–14 shows a sample of each of the four interface layouts. There are many other ways of arranging layouts in the two-frame, three-frame, and custom-frame layouts, which you may devise on your own. One advantage of multiple-frame layouts is that you can anchor headers, navigation, and content in consistent locations on the screen to help users find each more easily as they move around in your site. Custom layouts usually are more complex and can be difficult to navigate or understand. Generally, the more complex the layout, the more contextual clues are needed to help users understand the arrangement of information in your site.

In drafting the layout, begin with a sheet of paper or workspace and sketch out a few interface layouts. Identify where to place each interface element, including the header, navigation tools, content window, graphic elements, and contextual clues. You might try a couple of different layouts to see which seems to best fit your site’s needs. Sometimes the true test of an interface layout is to take your paper sketches and set them up in your Web-authoring software program to see how they look on the screen.

Web Site Design Guidelines

When designing your interface layout, remember to use the three design principles: consistency, contrast, and grouping. You may want to consider some of the following guidelines based on these principles:

>> Web Site Design Guideline 1: Make Site Structure Recognizable

Provide contextual cues throughout the site, and more frequently at higher levels, to help users understand the structure and organization of the site. Use site maps, indexes, breadcrumb links, and consistent graphics to help users identify the site's structure and major content areas. Group navigation links into toolbars and place them in consistent locations to suggest the major content areas or information pathways to users.

>> Web Site Design Guideline 2: Focus Readers' Attention on the Information They Want

Emphasize elements visually that are most important, to readers. For example, follow the design principle of contrast to signal which elements readers should focus on (i.e., navigation tools, search interfaces, and help). Highlight information pathways for readers by using descriptive headers, site maps, and indexes.

>> Web Site Design Guideline 3: Indicate Active Areas of Web Pages

Use animation or mouseovers in navigation toolbars to indicate functional or clickable items. *Mouseovers* are images that change their appearance or animate when the mouse pointer is placed over them. Limit underlining to words that contain hyperlinks.

>> Web Site Design Guideline 4: Associate Text and Graphics

Group related visual and textual content using visual shapes or space so readers can understand their relationship or function in the whole. Use familiar shapes, icons, and other visuals to suggest concepts to users, and pair graphics used in unfamiliar contexts with text descriptions to help users understand them.

Your main goal should be to select a layout that organizes your interface elements consistently throughout the site. Consistency makes it easier for users to learn the organization, layout, and functions of your site. Select backgrounds, colors, and other elements that create good contrast on the screen to maximize the readability, clarity, and legibility of your content. Use white space, lines, or shaded regions to group or set apart individual elements in the interface in order to demonstrate how they relate. You may have to go through several iterations before you decide on a final version to test. Once your team has devised an interface layout, you can begin the task of adding content, navigation tools, graphics, and other elements to individual pages; then you can link pages together following your site structure map to create the finished product, or whole site.

Web Site Design Guidelines

- Make site structure recognizable
- Focus readers' attention on the information they want
- Indicate active areas of Web pages
- Associate text and graphics

```

<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
    <link rel="stylesheet" type="text/css" href="readystyles.css">
    <title>Untitled</title>
  </head>
  <body>
    <script language="JavaScript" type="text/javascript">
      normal_image = new Image();
      normal_image.src = "path/img1.gif";
      mouseover_image = new Image();
      mouseover_image.src = "path/img2.gif";
      <!-- repeat the 4 lines above for any subsequent images. --&gt;
      function swap(){
        if (document.images){
          for (var x=0;
            x&lt;swap.arguments.length;
            x+=2) {
              document[swap.arguments[x]].src = eval(swap.arguments[y])
            }
        }
      }
    &lt;/script&gt;
  &lt;/body&gt;
&lt;/html&gt;
</pre>

```

>>> Usability Testing

The fifth and final phase of developing Web sites is *usability testing*. It involves testing and editing the site so that it is readable by and accessible and useful to your audience. Resources for ensuring the usability of Web sites are available at www.usability.gov. Usability should be considered throughout the development process, not just at the end. Simply put, it means you must focus on the needs and expectations of your audience. When you make decisions on navigation, graphics, content chunks, site structure, and interface layout, always make choices that demonstrate good usability.

This section discusses testing your site by using a usability review, quick usability checks, and accessibility checks. We also cover how to publish your finished site. For more on usability testing, see Chapter 9.

Testing Your Site for Your User Base

Design team members should participate in the usability process so that the site is organized and functioning properly. This section describes the most feasible methods for most Web site developers—usability reviews and quick checks—and also covers the topic of accessibility and formal laboratory testing.

Performing Usability Reviews

Usability reviews function as a design review of a document or project. You can perform a simple usability review of your site using a limited number of participants (typically four or five) and a set of evaluation criteria to analyze your site. The review is composed of two parts: an internal review, using members of your design team; and an external review, using a small group of typical users.

To begin a usability review, select a set of evaluation criteria and write short definitions of each. You might choose to evaluate the site's navigation system, use of graphics, readability of content, or function. Once you have selected criteria, set up a checklist to use in the review. The checklist should define each criterion and any items reviewers should look for in their review. As part of your checklist, you may want to devise a ranking system for each item so the reviewers can assess the level of compliance. Provide adequate space for reviewers to record comments, observations, and notes. Figure 14–15 is a sample usability checklist that lists and defines evaluation criteria and identifies specific related items to look for in a review. You can create your own checklist using other evaluation criteria, items, and ranking system.

To begin the test, provide your reviewers with background information on the site, including its subject, purpose, and location. Explain the instructions of the test, including the allotted time, evaluation criteria, and any forms or checklists they will use. Instruct reviewers to identify items that violate any of the evaluation criteria and have them distinguish specific problems from general comments. After they complete their reviews, compile the responses and meet with your team to devise solutions for each of the problems noted by your reviewers. Be sure to take a close look

Navigation. The links, toolbar menus, search features, and other tools used to search and browse the site.

	Always	Sometimes	Never	Notes
All navigation systems and hyperlinks are functional and link to the appropriate pages.				
The navigation systems use descriptive labels.				
Navigation options are provided on all Web pages.				

Consistency. The repeated use of elements and styles.

	Always	Sometimes	Never	Notes
All design elements and page layouts demonstrate consistent use of fonts, colors, spacing, and alignments.				
Navigation tools are placed in consistent locations.				
Interface layouts organize elements in consistent locations.				

Clarity. The level of clarity of the structure, textual content, and graphics.

	Always	Sometimes	Never	Notes
The site structure is easy to discern through the use of contextual clues, labels and/or site maps, and indexes.				
Font faces, text styles, and colors use good contrast and are clear.				
Graphic content is clear and does not appear choppy or pixilated.				

Legibility. The ease with which textual content and graphics can be read or understood.

	Always	Sometimes	Never	Notes
Textual content is free of grammatical errors and conforms to appropriate style guidelines.				
Graphic content conforms to appropriate style guidelines and is easy to understand.				

Figure 14–15 Sample Web-usability checklist

at specific problems identified and any comments provided. You probably want to act on most of the problems identified but may choose whether to act on general comments.

Quick Usability Checks and System Settings

Another useful usability-testing method is performing quick usability checks that test the site by means of a variety of platforms, browsers, and different system settings. We each use different versions of software and have our monitors set at different resolutions that may affect the display and function of certain pages and layouts. What you see on your screen may not match what other users see on theirs. Although it might not be possible in every case to design a site that works optimally for every possible system, you can make adjustments to reduce problems or at least to ensure every user has equal access to your site's content.

To test your site, create a working copy of your Web site on a CD or publish it on a Web server. Test your site with at least two different browsers, preferably the most recent version of each. View the site using at least two different screen resolutions. Screen resolution is measured in *pixels*, or the individual dots that compose the picture you see on your monitor. The most commonly used screen resolution settings change with technology, but you should consider at least one lower setting (e.g., 640×480 or 800×600) and one higher setting (e.g., 1280×1024 or 1600×1200) for testing purposes. Check your screen resolution settings using your system's control panel (Windows) or system preferences (Mac). Color depth can also be checked in the display properties on your computer. Common settings are 16 colors, 256 colors, 16-bit (or 65,356) colors, and 32-bit (16.7 million) colors. Be sure to view and test your site on at least two color-depth settings, preferably 256 colors and 32-bit colors, to see if there are any problems with the clarity or readability of your site. You may also want to test your site on a laptop and a desktop computer, as well as with both standard and wide-screen monitors. If you think your users will be accessing your site through a small screen interface, such as a notepad computer or smart phone, check your site on those as well.

Once you have a list of the different system settings to test, create a quick-check worksheet to catalog each problem you find. When you test the site, examine the functionality of navigation, consistency of page layouts, and the readability of the textual and graphic content. Devise a system to rank the severity of the problem to help establish your redesign tasks later. For example, you might use the following system:

1. **Severe**—affects the accessibility of pages
2. **Serious**—affects the readability and legibility of pages
3. **Concern**—affects the clarity of pages

By identifying and ranking the severity level of problems, you can prioritize your work in editing and revision. After you complete your quick usability checks, be sure to devise solutions for each problem you identify and follow through on making changes to your site. You should consult with other team members in devising appropriate solutions.

>>> Publication

After you have completed all the tests and made the appropriate revisions, the site should be ready for publication. To publish the site, you must obtain dedicated storage space on a Web server. If you have an Internet service provider (ISP) that you use to connect to the Web or a company or school Web server, most likely you already have space allocated. There are Web-based options for hosting a Web site, as well. Services such as GoogleSites and DropBox allow you to upload material to create a site that is stored on their servers.

Normally, your ISP or system administrator assigns a URL for your site, as do the hosting services mentioned above. If you want a custom URL, you can purchase one over the Internet by searching for companies that sell them. Another important issue to consider before publishing your site is its size. Check to ensure the total size of your Web site does not exceed the available storage space. In many cases, you can purchase or request more space if needed.

You can publish, or *upload*, your site to the Web server in three ways: (1) save your files to the provided server space, as you would to any drive on your computer; (2) upload them through your Web-authoring software or by using a file transfer protocol (FTP) program; or (2) have a system administrator help you. How you upload and maintain your Web site depends on the kind of hosting service you are using. Keep a protected copy of your site on a computer or disk after you publish it, in case you encounter problems with the uploaded version. This copy can also serve as a working copy for you to make changes and later upload the corrected files.

>>> Chapter Summary

- Most organization's Web sites are created by a team of content developers, programmers, and designers. Your role in your organization's Web site will depend on your responsibilities and areas of expertise.
- Planning requires that you determine the audiences, purposes, and issues. User-centered design places the user at the center of the development process and focuses on how to design a product that is easy to use and understand.
- Structure includes developing a site structure, labeling content chunks and pages, and selecting the types of navigation.
- Content development involves writing content chunks, adapting existing content, knowing scripting languages and software authoring tools, and converting documents to Web-viewable formats.
- Design involves developing a graphic identity, optimizing graphic content for the Web, and creating effective interface designs and layouts.
- Usability testing involves the testing and editing of your site to ensure it is readable and accessible by the broadest user base.
- Publishing a Web site requires access to a Web server or Web site hosting service.

>>> Learning Portfolio

Communication Challenge What Does Your Company Do, Anyway?

In an effort to take a more aggressive marketing stance, the M-Global marketing department has decided to develop online marketing materials to complement the packages currently sent to potential clients. This case study provides background on M-Global's current Web site layout and the marketing team's plan for a redesign. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Background

Although M-Global already has a Web site, the site has less of a marketing emphasis and is not tailored to attract new business. Currently, the company Web site is organized into content sections that resemble the organization's major departments, such as foundation design, construction management, equipment development, environmental remediation, and training services (see below). Each page can be accessed from a single navigation toolbar that uses department names as labels for links. Individual site pages provide each department's mission, supervisor, employees, list of past projects, and technical references on the Internet. This organization works well for current clients and employees, but it is less comprehensible to new and potential clients not familiar with M-Global's firm. The sales staff has noted many questions from customers inquiring how to find information on specific services and past projects on the current Web site.

The Plan

To address these concerns, the marketing department has decided that a redesign of the current company Web site would be the best solution. The Web site must be redesigned and reorganized so it can serve both existing and potential customers and provide them with information on the range of M-Global's services. The marketing team identified the following goals in the site's redevelopment:

- Create a new labeling scheme that helps customers understand the range of services, projects, staff, and purpose of the firm.

- Implement multiple means of navigation to help users find information more easily.
- Develop a series of project description pages that provide the scope, work performed, services provided, and photos on specific projects completed by the firm.

Questions and Comments for Discussion

At this point, the marketing team has passed the project to a Web development team to determine how to best achieve the goals they have laid out. Although they identified rather high-level conceptual goals for the site redevelopment, they need a team to help them consider the following questions to determine specific approaches to meeting their goals:

1. Who should be involved on the Web development team and why?
2. What labeling schemes could be used to help achieve the team's goal of making the Web site easier to comprehend?
3. In addition to a navigation toolbar, what other navigation systems could be implemented to help users find information more easily?
4. What strategies would be most effective in designing the site to serve both customers and employees? Explain.
5. What other goals should the team consider in the site redevelopment project?

Write About It

Assume that you are the leader of the team that is redesigning the Web site. The team members have submitted the new Web site, below, for your feedback. In a memo, evaluate the proposed Web site, discussing its strengths and weaknesses. Make any recommendations that you feel are necessary. As team leader, don't forget to thank your team for their hard work.

M-Global International

Industrial Design and Engineering Solutions

Soils Analysis Core Sampling Drilling Laboratory	Oil Exploration Off-Shore Development	Natural Gas and	Light & Power	Training	Contact -MG World -Sales -Consulting -Outsourcing -Human Resources
Equipment Design & Manufacture	Waste Management	Content Management	New! SoftwareDevelopment		
NEW! Construction Site Solutions	Construction Solutions Topography & Aerial Photography Site Management Architectural Solutions	Clients Investors Suppliers Subsidiaries	Software Solutions: Information Management		
MG Internationale MG Moscow MG Frankfurt MG Buenos Aires MG London	<i>Careers at MGlobal: Current Divisions now hiring. Contact Division HR Management</i> -Research & Development -Software Application Design -Information Technology		CMS Development	Gulf Exploration '08	

■ **Figure** ■ Original M-Global website

The proposed M-Global website features a vibrant green header with a decorative pixelated border at the top. On the left side of the header is a circular graphic of the Earth. To the right of the graphic, the company name "M-Global International" is displayed in a large, dark green serif font, with "Engineering Technologies" in a smaller, orange sans-serif font underneath. A vertical green bar on the far right contains a close-up photograph of palm fronds.

Today's Date

Customer Service

Careers with MGlobal

Employment

Safety

Contact HR

News

Welcome to MGlobal International! Our record speaks for itself. MGlobal provides innovative technologies, outstanding customer service and unparalleled expertise. We combine the latest technologies with 45 years' experience to offer unsurpassed services and equipment. because every exploration initiative is unique we customize our services and equipment to our customers' needs, creating cost effective solutions that are tailor made for various situations. [Learn More ...](#)

Departments

Marketing
Audit & Compliance
Public Information
Information Systems
Accounting
Office of the Controller
Equipment Development
Publications Development

Services

Soils Analysis
Oil Exploration
Site Management-Builders
Site Management-Waste
Light & Power
Heavy Equipment R&D
Software Development
CMS Design
Training

■ **Figure** ■ Proposed M-Global website

Collaboration at Work Usable Navigation

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

One of the major hurdles in developing Web sites is developing a site that users can understand and navigate easily. Navigation systems should provide users with methods to search and browse content and help users understand how the site as a whole is organized through effective labeling. Good navigation systems outline the site's content and functions for users as well.

Although a design team may possess specialized knowledge of how navigation systems are developed, the end users often express frustration with such systems. For example, they fail to grasp the function and organization of the tools or comprehend the site's content because of the inability to move around the site with ease. Therefore, design

teams should anticipate problems potential users might face and design systems that are flexible, that are easy to use, and that help users understand the site's organization.

Team Assignment

Select a Web site that has multiple navigation systems on the home page and throughout the site, such as a news site or a school site, and complete the following steps in preparing a report: (1) browse the site's content to determine the audience and purpose of the site; (2) make a list of at least three types of navigation used in the site, such as navigation toolbars, drop-down menus, pull-down menus, search fields, and other hyperlinks; (3) evaluate each navigation system used to determine its flexibility, function, and labeling scheme. Consider some or all of the following questions: Do the navigation systems provide users with enough flexibility to search and browse the site? Are there problems with regard to their functionality and use? Do labeling schemes used help users understand how the site is organized and functions? (4) Devise a strategy to improve the function, organization, or labeling schemes used in the navigation. (5) Redesign each navigation system, either on paper or as a single prototype Web page.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: WWW Consortium's Home Page

Explore the World Wide Web Consortium's home page at <http://www.w3.org>. Perform an audience analysis on the site, identifying the primary, secondary, and tertiary audiences.

Also, identify the primary and any secondary purposes. Finally, identify any contextual constraints, such as legal, ethical, social, cultural, technical, or other issues that govern its content. How effective is the site in targeting its audience(s), achieving its purpose(s), and dealing with contextual issues? List three suggestions that might improve the site and make it more tailored to these user specifications.

2. Analysis: Government Web site

Select a government agency Web site (federal, state, or local) and make note of the types of content (e.g., descriptions, instructions, forms, pamphlets) that are used. Also, make note of the file format types used (e.g., HTML, DOC, PDF). How effective is the organization of the content? Is it easy to discern the organization? Are multiple formats used for downloadable or printable documents? Are there clarity or readability issues with documents? List three to five suggestions to improve the organization, readability, or overall accessibility of the content.

3. Analysis: Business Web Site

Find a business Web site and browse it for 15 minutes to become familiar with its organization and purpose. Then, sketch a basic site architecture map of the site based on information you find in the navigation and the use of titles, headers, visuals, and other clues. For larger sites, sketch only the first three or four levels of the structure. Identify the type of structure it most resembles and then its breadth and depth. Based on your findings, make a list of three to five recommendations for optimizing the site structure and organization.

4. Analysis: Entertainment Website

Select and familiarize yourself with an entertainment Web site. Identify the elements used in the design of the site that make up its graphic identity or brand. Look for titles, logos, colors, graphics, and other visuals used consistently throughout the site. In a few sentences, describe the overall design theme or graphic identity used. What general impression do these elements convey? Are there elements that don't fit the design theme used?

Follow these general guidelines for the practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

5. Practice: Creating a Simple Web Page

Using whatever tools your instructor assigns, create a simple Web page about yourself, a hobby or interest, or other topic your instructor suggests. One free, simple Web-page editor is NVU, available at www.nvu.org. You can view your Web page file in your browser, by using the File → Open File command in the browser menu.

6. Practice: Class Assignment Portfolio Web Site

Your instructor will indicate which assignments for this class to include in your class assignment portfolio, and whether you will be revising earlier assignments that you have completed for the class. Using NVU, GoogleSites, or Web site software available to you, create a Web site for your class assignment portfolio. Your instructor will indicate whether the Web site should include reflective essays for each assignment.

7. Practice: Professional Portfolio Web Site

Portfolios are an important part of the job search process for technical communicators. (See Chapter 16.) Using NVU, GoogleSites, or Web site software available to you, create a Web site that could house your portfolio of sample documents. Your site should include three levels. The first level is your home page. This should include whatever information seems appropriate for the site (see Model 14-1 and Model 14-2 and the information in Chapter 16). The second level should include your résumé and introduction pages for the individual projects you are including in your portfolio. The third level should include the portfolio projects themselves. If your instructor requires, you may set up the portfolio structure, use dummy pages as placeholders, and complete this assignment after you have read Chapter 16.

8. Practice: Usability Check of Web Site

Perform a quick usability check on an e-commerce site, using at least two different screen resolution settings and two different color-depth settings. If possible, use two different browser types as well. Make note of any exceptions that impair the function, readability, or legibility of the site. For each exception you note, propose a possible solution to the problem.

9. Practice: Graphic Design for a Web Site

Choose a campus organization of which you are a member, or which interests you. Using graphics or drawing tools (or even presentation slide software), design a Web page for the organization. Plan the navigation, layout, and colors and images that will be used on the home page, and that can be repeated throughout the Web site. You do not need to create text for the mockup Web page; instead, you can use *lorem ipsum*, the standard dummy text used in layout and design. You can find many free *lorem ipsum* generators through a search of the Internet. Simply copy and paste the generated text into the text blocks on your sample page.

10. Practice: Creating a Hierarchy

The list below is from the site map of the Web site of the National World War I Museum. (See Figure 14-11 on page 539.) Organize the topics into a hierarchy for the Web site structure that makes sense to you, as a user.

2010 Contributors	Look Who's Visited
2011 Annual Fund	Man & Machine: The German Soldier in WWI
A Look at Liberty Photo Contest	Membership
About the Collection	Mission and History
About Us	Museum Store

Board of Trustees	New at the Museum
Catering & Additional Event Services	News Room
Collections & Exhibitions	Our Partners
Contact Information	Over There Cafe
Directions & Parking	Permanent Exhibits
Doing Research	Plan Your Visit
Donating Objects	Policies
Education	Private Events
Employment	Public Programs
Event Spaces & Fees	Rental Policies & Procedures
Exhibit Archive	Special Exhibits
FAQ	Support the Museum
For Students	Upcoming Events
For Teachers	Visiting Kansas City
Group Tours	Volunteer
Honoring Our History Tour	Walk of Honor Bricks
Hours & Prices	Ways to Give
How to Book an Event	What You Will See
In the Spotlight	What's New
Lessons of Liberty	

11. Ethics Assignment

Digital text and graphics generally are protected by the same copyright laws that cover printed matter. In consideration of this point, choose one or more of the following tasks, depending on the directions given by your instructor: (a) develop a

list of specific ethical concerns that apply to the development of a Web site; (b) research current law as it applies to use of borrowed material on Web sites, and provide a narrative summary of the law; and (c) evaluate a particular Web site according to ethical concerns and guidelines with which you are familiar.



12. International Communication Assignment

Develop a list of general questions that should be asked in planning a Web site that will be written in English but that will be used primarily in cultures or countries other than your own. After locating an individual from another such culture or country, ask the questions you have developed and prepare a summary of the responses.



13. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

Choose a local, regional, or national environmental or sustainability issue in which you have interest—for example, overdevelopment in your town, availability of clean water, contamination of trout waters, global warming, air quality, or energy use. Using the guidelines presented in this chapter, do preliminary work in planning a Web site that addresses the issue. Specifically, do the following: (a) define your audience, (b) develop some content of the Web site, (c) describe the Web structure you plan to use, and (d) explain how graphics will be incorporated into the site. Then, to gather some preliminary usability information, share your ideas with another person to get suggestions on developing the site.

RACHEL STANCLIFF

Home
Resume
Self-Reflective Essay

Clean,
business-like
font for
main text

Casual font
for headings
to soften
image

Headings,
links, and
text clearly
indicated

Ownership of
Web site content

research and results

["Bad Robot: The Decaying Analogy between *I, Robot* and Modern Robotics"](#)

A research paper comparing the robots and views of robots in Isaac Asimov's *I, Robot* to the modern-day robotics field.

writing genres

["Soil Incineration Portfolio"](#)

An introduction to the various genres that technical communicators have to use in business situations, written in response to a scenario at the Donnelly Engineering Company.

real-world discourse communities

[STC/MWSU Chapter Website](#)

A website designed and built in Adobe Dreamweaver for the Missouri Western State University's Society for Technical Communication student chapter.

technical tools

["Lab Help File for English, Foreign Language, and Journalism Department Lab Workers"](#)

Documentation that covers the duties, responsibilities, and equipment for use by English department lab workers.

collaboration

["Nvu Documentation for Faculty and Students"](#)

Collaboratively-created documentation of the basic features of the WYSIWYG web editor Nvu, in two formats for faculty and students.

processes and procedures

[MovieMaker Print Documentation and Instructional Video](#)

Printed documentation for the basic features of Windows MovieMaker with an accompanying video created with Adobe Captivate.

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RACHEL STANCLIFF

[Home](#)
[Resume](#)
[Self-Reflective Essay](#)

Links to home page and important documents that appear on every page

MovieMaker Print Documentation and Instructional Video

Criteria: Ability to guide users through processes or procedures

Course: ETC 328 Multimedia Authoring, 2009

[View the print documentation »](#)

[View the how-to video » \(requires Adobe Flash\)](#)

Hyperlinks easily identified

Assignment Criteria

For ETC 320 Multimedia Authoring, all technical communication majors were assigned a project to 1) document the basic or most useful features of a program and 2) then present that documentation to the class as a whole, teaching them how to use the program. I have also included the Captive video version of this documentation, which was another project for this class, but nicely complements the print documentation. The Captivate video requires Flash and there are known problems viewing it in some browsers.

Users informed of requirement for viewing file

Audience

The audience for this project was my Multimedia Authoring class, which contained convergent media, journalism, and technical communication majors.

My Contribution

We were asked to choose programs that all the students in the class would find useful to know, such as PowerPoint, Adobe Captivate, Windows MovieMaker, or Photoshop. I chose to document Windows MovieMaker. After writing up the documentation, I taught the class how to use MovieMaker for editing our how-to videos.

Font style used to clearly identify headings

I enjoyed creating this documentation: between my technical communication classes and my work, I had reached a point where I was comfortable creating documentation and instructions. I was also very happy that by presenting my documentation to my class, I was able to know immediately if my instructions were valuable and helpful. More than one student kept my instructions close at hand as they edited their how-to video projects, and even came to me for additional help.

The presentation portion of this assignment gave me a valuable experience in training users. As a technical communicator I will most likely be expected to show people how to use the documents I create, especially if they are instructional. I learned that you cannot expect people to always read your instructions and follow them smoothly; someone will always have a problem with a certain step or a certain feature. While my presentation went well, in my self-evaluation I criticized myself for not taking more time to look at what students were doing on their computers and helping them one-on-one to use my documentation. My presentation in a way was a usability test for my documentation, giving me real-world feedback on the effectiveness of the writing strategies I had been learning.

Publication History

I presented this set of instructions to my class and stepped them through editing a sample video. I will also be presenting these instructions to Dr. Cynthia Bartel's ENG 100 class on April 8th.

Reworking of Publications

After receiving feedback from my professor about my instructions and presentation, I edited this documentation for minor design details and typos. I think the layout of the printed instructions could probably be revised to something more attractive—at the time I wrote it I was looking for a simple design that would keep the length of the documentation to a minimum, to meet the assignment criteria and to keep from overwhelming my users. However, it feels rather cramped now. As for the accompanying video, I would try to re-record the audio so that the quality is better.

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Complementary graphics and text, immediately communicate emphasis on writing

One section of résumé highlighted

Links to text blocks on home page kept short

Online Portfolio for:

TEDDY O. KOEHLER

TECHNICAL WRITER

[HOME](#) | [RÉSUMÉ](#) | [PORTFOLIO](#) | [ESSAY](#)

Reflective Essay

When I began school in 2005, I had no idea what I wanted to do professionally. I had just finished working eight years in Accounting/Finance for the federal government—six years in the military and two as a civilian—and I felt that it was time to move on to new career challenges. I have always enjoyed writing, so I checked into several English writing programs at Missouri Western State University—technical communication seemed to be exactly what I was looking for.

Fortunately, I had taken several of the general education requirements while I was stationed at Fort Lewis, Washington and Seoul, Korea, so I was able to jump right into the technical communication program once I declared my major. One thing that fascinates me about becoming a technical writer is the wide variety of opportunities available in the field.

One of the first classes I took was ETC 200 – Introduction to Technical Communication. It was in that class that I became exposed to all of the different genres of technical communication. There were several different scenarios, given as assignments, from which I first gained experience—scenarios that involved ~~ethics~~ in business, formal and informal reports, memos, letters, definitions/descriptions, and step-by-step instructions. It was from this class that I chose the Formal Report: Analysis of eBay Tutorial for my portfolio.

[More >>](#)

Résumé

- MS Word
- MS Excel
- MS Powerpoint
- MS Frontpage
- MS Publisher
- MS Visio
- Acrobat

[More >>](#)

Portfolio

[More >>](#)

[Home](#) | [Resume](#) | [Portfolio](#)

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Online Portfolio for:
TEDDY O. KOEHLER
 TECHNICAL WRITER

[HOME](#) | [RÉSUMÉ](#) | [PORTFOLIO](#) | [ESSAY](#)



My Portfolio

[Research Paper: The Evolution of Game Shows](#)



Demonstrates my ability to conduct research and present the results in the appropriate written form.

[Team Project: Website for MWSU Outdoor Semester](#)



Ability to work in teams.

[Tri-Fold Brochure: MWSU Outdoor Semester Program](#)



Demonstrates that I can create documents with an awareness of "real world" expectations.

[Quick Reference Guide: How To Write a Screenplay](#)



Ability to guide users through processes or procedures.

Both text and GUI links to documents used

[Formal Report: Usability Analysis - eBay Tutorial](#)



Demonstrates mastery of technical and business writing genres.

[Organization Newsletter: SPIG News](#)



Demonstrates the ability to use the technical tools available.

Ownership of Web site

[Home](#) | [Resume](#) | [Portfolio](#)

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Documents available in two formats

Links to key documents at top and bottom of each page

Online Portfolio for:
TEDDY O. KOEHLER
TECHNICAL WRITER

HOME | RÉSUMÉ | PORTFOLIO | ESSAY

<<Back Next>>

Total Pages: 2

Project: Quick Reference Guide: How to Write a Screenplay (PDF)
Course: ETC 420 Documentation and Editing - Spring 2007

Assignment Criteria

This assignment demonstrates the ability to guide users through processes or procedures. But it also demonstrates the ability to create a quick reference guide, which is an especially difficult task because I was required to figure out a way to cram several hundred pages worth of information into a two-page document. This required great attention to detail and very good editing skills. This is a front and back publication. The first page is about style and genres, along with writing tips. The second (back) is about format and where things go on the page.

Audience

The intended audience for this is anybody that would like a quick reference guide on how to write a screenplay. Novice Screenwriters could keep it at their side as a quick reminder of the basic format or beginning Screenwriters could use it as a how-to guide to complement their other learning materials.

My Contribution

I am the sole author and designer of this project. The layout and design was created in Microsoft Publisher.

Publication History

This is the first and only publication of this piece.

Reworking of Publications

This was an extremely challenging piece. I have a 300 page guide to writing screenplays that I somehow needed to condense into two pages. One of the biggest challenges was trying to determine what information had to go and what could be used. Therefore, I tried to add just the basics.

Structure, elements of fiction, required items, do's and don'ts, and terms to know were all subjects that I felt were important in learning the basics.

I also knew that format is very important when submitting screenplays to be reviewed. Many times, format alone will get a screenplay tossed in the trash, so I dedicated the entire back to format alone. I felt that an example with text bubbles surrounding it would be the most efficient use of space.

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Multiple options for finding information on Web site

NATIONAL TRANSPORTATION SAFETY BOARD

HOME NEWS & EVENTS TRANSPORTATION SAFETY ACCIDENT INVESTIGATIONS DISASTER ASSISTANCE LEGAL ABOUT

NTSB releases Annual Report to Congress

Report highlights agency efforts in FY 2010, including launching to six major accidents, releasing 10 major investigative reports, issuing 227 new safety recommendations and closing 132 others in an acceptable status.

Get the Report

Accident Dockets Safety Recommendations Aviation Accident Database Data & Stats Training Center

NTSB
An Independent U.S. Federal Government Agency
Charged with determining the probable cause of transportation accidents and promoting transportation safety, and assisting victims of transportation accidents and their families.

MOST WANTED LIST

Safety Improvements

- Addressing Human Fatigue
- General aviation safety
- Safety Management Systems
- Runway Safety
- Bus Occupant Safety
- Pilot & Air Traffic Controller Prof. Recorders
- Teen Driver Safety
- Alcohol-Impaired Driving
- Motorcycle Safety

Teen Driver Safety

News @ NTSB

It's Not Always a Smoking Hole <http://jwp.me/p1lQdj-8P>
6 hours ago · reply · retweet · favorite

NTSB Investigation:
@12:12PM EDT, Poughkeepsie, NY a Cessna crashed during go-around. At appx 300 feet, plane nosed over & impacted ground.
yesterday · reply · retweet · favorite

Update on Amtrak/Truck Accident June 27, 2011
<http://jlt.co/216jhyl> via @youtube

Safety Compass Blog
It's Not Always a Smoking Hole
By Debbie Hersman Last week, the NTSB sent a team of investigators to Atlanta to investigate a Delta Air Lines Boeing 757 that experienced an engine fire shortly after take-off. The captain, who noticed the problem just as the airplane climbed past...

Featured Video

Resources

- Press Releases
- Speeches/Testimony
- Databases
- Accident Dockets
- Training Center
- Safety Recommendations
- Strategic Plan, Performance & Accountability Reports & More

Publications

- Accident Animations
- Accident Reports
- Annual Review of Aircraft
- Accident Data

NTSB.gov

- Site Map
- Glossary of Terms
- Org Chart
- FAQs
- FoIA
- No Fear
- Privacy Statement
- OpenGov

About Us

- Organization
- Across the Board
- Office Locations
- Investigative Process
- Directions to Conference Center
- Board Members
- Contact Us
- Employment
- Web Policies & Notices

The Best Places to Work in the Federal Government

OPEN GOV

USA.gov

Model 14-3 ■ Government agency Web sites

Source: <http://www.ntsb.gov>.

Database accessed by date

Hyperlinks indicated by color

Links to other Web sites of interest to users

NTSB SAFETY RECOMMENDATIONS

Safety recommendations are issued by the NTSB following the investigation of transportation accidents and the completion of safety studies. Recommendations usually address a specific issue uncovered during an investigation or study and specify how to correct the situation. Letters containing the recommendations are sent to the organization best able to address the safety issue, whether it's public or private.

SAFETY RECOMMENDATIONS SEARCH

The NTSB provides multiple methods to search and view safety recommendations and associated correspondence:

- Search the NTSB's Safety Recommendations Database using a variety of criteria, including recommendation number, issue date, mode, addressee, keyword or other information. This query displays the text of the NTSB's recommendations, their current status, and correspondence with the recommendation recipient.
- Search the text of all NTSB recommendation letters. This query displays only the recommendation letter, but allows the user to conduct a comprehensive search of the text of all safety recommendation letters issued by the NTSB.

RECOMMENDATION LETTER ARCHIVE

2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000
1999 1998 1997 1996 1995 1994 1993 1992 1991 1990
1989 1988 1987 1986 1985 1984 1983 1982 1981 1980
1979 1978 1977 1976 1975 1974 1973 1972 1971 1970
1969 1968 1967

Resources

- Press Releases
- Speeches/Testimony
- Databases
- Accident Dockets
- Training Center
- Safety Recommendations
- Strategic Plan, Performance & Accountability Reports & More

Publications

- Accident Animations
- Accident Reports
- Annual Review of Aircraft
- Accident Data

NTSB.gov

- Site Map
- Glossary of Terms
- Org Chart
- FAGS
- FOIA
- No Fear
- Privacy Statement
- Open.gov

About Us

- Organization
- Across the Board
- Office Locations
- Investigative Process
- Directions to Conference Center
- Board Members
- Contact Us
- Employment
- Web Policies & Notices

Links to Other Websites

- The Best Places to Work in the Federal Government
- OPEN.GOV
- USA.GOV



Recommendation Letters

The following files represent safety recommendation letters issued by the NTSB during a single year.

Search recommendations issued this year:

- Navigate to your choice of recommendations, below.
- Note that file names correspond to mode, year, and recommendation numbers in most cases.
- Example: A-YY-01 indicates the mode of transportation is aviation, the year is 20YY, and the is the first letter of the year.

Search recommendation by number, issue date, mode, addressee, keyword or other information:

- The preferred method of viewing the letters and associated information is by using the interactive [Search & View](#) capabilities. This allows using a variety of criteria, including recommendation number, issue date, mode, addressee, keyword or other information. This query displays the text of the NTSB's recommendations, their current status, and correspondence with the recommendation recipient.

Recommendations' format:

- You must have the [Adobe Acrobat Reader](#) to open and view these PDF files.
- File sizes are less than 1MB, and are generally around 200K.

List of recommendations:

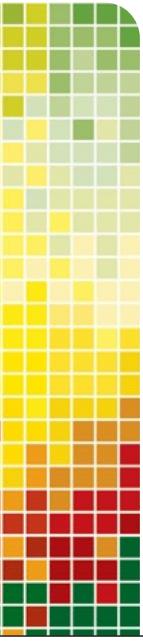
[A-11-001-006.pdf](#)
[A-11-007-011.pdf](#)
[A-11-012-015.pdf](#)
[A-11-016.pdf](#)
[A-11-017.pdf](#)
[A-11-018-031.pdf](#)
[A-11-032-034.pdf](#)
[A-11-035-036.pdf](#)
[A-11-037-038.pdf](#)
[A-11-039-047.pdf](#)
[A-11-048-051.pdf](#)
[A-11-052.pdf](#)
[P-11-001-002.pdf](#)
[P-11-003.pdf](#)

[Safety Recommendations](#)

Logo used to tell users they are still on the NTSB Web site

White background for easy reading used on text-heavy pages deeper in Web site structure

Information about file format and size



Chapter | 15 | Presentations



>>> Chapter Objectives

In this chapter, students will

- Learn the importance of oral presentations to their career success
- Be introduced to guidelines for preparing and delivering effective presentations
- Learn how to use presentation graphics effectively
- Be introduced to poster sessions that share the results of research
- Read advice for overcoming nervousness about presentations
- Read and analyze a model presentation

Photo © Endostock/Dreamstime.com

As the leader of the “Commute Group” in the Boston branch, Larry Beeman was responsible for preparing the report on the branch’s experiment with telecommuting. (See the Chapter 4 Communication Challenge, pages 106–108.) Because of the interest generated by the project, Larry was invited to present information about the project and answer questions about it at a meeting of all of the managers of M-Global’s domestic branches. After arriving at the corporate headquarters in Baltimore, Larry entered the elevator and pushed the button for the executive floor. Just as the door was about to close, a woman carrying a briefcase squeezed into the elevator. She noticed that the button for her floor had already been pushed and asked him, “Are you here for the branch managers’ meeting?”

Larry responded, “Yes, as a matter of fact, I’m going to be presenting.”

“What are you going to be talking about?” she asked.

“I’m from the Boston branch. I’m going to be talking about how the lessons we learned when we started our telecommuting project can be useful to other branches that are interested in trying it.”

“I’m looking forward to hearing about that,” she said as the elevator door opened on their floor.

As the woman walked down the hall and was greeted with “Good Morning, Ms. McDuff!” “Good morning, Jeannie!” Larry realized that he had been in the elevator with Jeannie McDuff, Vice President of Domestic Operations and the granddaughter of the company’s founder. He was glad that he had practiced an elevator

speech, a summary of his talk that is short enough to be delivered during an elevator ride.

Your career will present you with many opportunities for oral presentations, both formal and informal. At the time they arise, however, you may not consider them to be “opportunities.” They may seem to loom on the horizon as stressful obstacles. That response is normal. The purpose of this chapter is to provide the tools to help you create oral presentations that will contribute to your self-esteem and career success. There are guidelines for preparation and delivery of formal presentations, guidelines for more casual poster sessions, techniques for dealing with anxiety, and an example of a technical presentation. The chapter also addresses the related topic of running effective meetings.

The entire chapter is based on one simple principle: *Almost anyone can become an excellent speaker.* Put aside the myth that competent speakers are born with the talent—that “Either they have it or they don’t.” Certainly some people have more natural talent at thinking on their feet or have a more resonant voice, but success at speaking can come to all speakers, whatever their talent, if they follow the 3 Ps:

Step 1: Prepare carefully.

Step 2: Practice often.

Step 3: Perform with enthusiasm.

These steps form the foundation for all specific guidelines that follow. Before presenting these guidelines, this chapter examines specific ways that formal and informal presentations become part of your professional life.

>>> Presentations and Your Career

Some oral presentations you will choose to give; others will be “command performances” thrust upon you. Using M-Global, Inc., as a backdrop, the following examples present some realistic situations in which the ability to speak well can lead to success for you and your organization:

- **Getting hired:** As a job applicant with a business degree, you are asked to present several M-Global managers with a 10-minute summary of your education, previous experience, and career goals.

- **Getting customers:** As coordinator of an M-Global proposal team, you have just been informed that M-Global made the “short list” of companies bidding on a contract to manage a large construction project. You and your three team members must deliver a 20-minute oral presentation that highlights the written proposal. To be given in five days at the client’s office in Grand Rapids, Michigan, the presentation begins and ends with comments by you in your role as coordinator. Your three colleagues each contribute a 5-minute talk.
- **Keeping customers:** As a field engineer at M-Global’s St. Louis office, you recently submitted a report on your evaluation of a 50-year-old dam in the Ozarks. Now your clients, the commissioners of the county that owns the dam, have asked you to attend their monthly meeting to present an overview of your findings and respond to questions.
- **Contributing to your profession:** As a laboratory supervisor for M-Global, you belong to a professional society that meets yearly to discuss issues in your field. This year you have been asked to deliver a 15-minute presentation on new procedures for testing toxic waste samples in the laboratory.
- **Contributing to your community:** As an environmental scientist at M-Global’s San Francisco office, you have been asked to speak at the quarterly meeting of OceanSave, an activist environmental organization. The organization suggests that you speak for half an hour on environmental threats to aquatic life. You accept the invitation because you know that M-Global management encourages such community service.
- **Getting promoted:** As an employee about to be considered for promotion, you are evaluated on your ability to present information orally. Supervisors will discuss whether they themselves have heard—or heard from others—about your effective presentations to colleagues, clients, or community representatives.

As you can see from this list, oral presentations are defined quite broadly. Usually they can be classified according to criteria such as the following:

1. **Format:** From informal question/answer sessions to formal speeches
2. **Length:** From several-minute overviews to long sessions of an hour or more
3. **Number of presenters:** From solo performances to team presentations
4. **Content:** From a few highlights to detailed coverage

Throughout your career, you will speak to different-sized groups, on diverse topics, and in varied formats. The next two sections provide some common guidelines on preparation, delivery, and graphics.

>>> Guidelines for Preparation and Delivery

The goal of most oral presentations is quite simple: You must present a few basic points, in a fairly brief time, to an interested but usually impatient audience. Simplicity, brevity, and interest are the keys to success. If you deliver what *you* expect when *you* hear a speech, then you will give good presentations yourself.

Although the guidelines here apply to any presentation, they relate best to those that precede or follow a written report, proposal, memo, or letter. Few career presentations are isolated from written work. With this connection in mind, note that there are many similarities between the guidelines for good speaking and those for good writing covered in earlier chapters—especially the importance of analyzing the needs of the audience.

>> Presentation Guideline 1: Know Your Listeners

The following features are common to most listeners:



Orange Line Media/Shutterstock

- They cannot “rewind the tape” of your presentation, as opposed to the way they can skip back and forth through the text of a report.
- They are impatient after the first few minutes, particularly if they do not know where a speech is going.
- They will daydream and often must have their attention brought back to the matter at hand (expect a 30-second attention span).
- They have heard so many disappointing presentations that they might not have high expectations for yours.

To respond to these realities, you must learn as much as possible about your listeners. For example, you can (1) consider what you already know about your audience, (2) talk with colleagues who have spoken to the same group, and (3) find out which listeners make the decisions.

Most important, make sure not to talk over anyone’s head. If there are several levels of technical expertise represented by the group, find the lowest common denominator and decrease the technical level of your presentation accordingly. Remember—decision makers are often the ones without current technical experience. They may want only highlights; later, they can review written documents for details or solicit more technical information during the question-and-answer session after you speak.

>> Presentation Guideline 2: Use the Preacher’s Maxim

The well-known preacher’s maxim goes like this:

First you tell ’em what you’re gonna tell ’em, then you tell ’em, and then you tell ’em what you told ’em.

Why should most speakers follow this plan? Because it gives the speech a simple three-part structure that most listeners can grasp easily. Following is how your speech should be organized (note that it corresponds to the ABC format used throughout this text for writing). The beginning of the presentation, or the abstract, should (1) get the listeners’ interest (with an anecdote, a statistic, or other technique), (2) state the exact purpose of

the speech, and (3) list the main points you will cover. Do not try the patience of your audience with an extended introduction—use no more than a minute.

Example: “Last year, Jones Engineering had 56 percent more field accidents than the year before. This morning, I’ll examine a proposed safety plan that aims to solve this problem. My presentation will focus on three main benefits of the new plan: lower insurance premiums, less lost time from accidents, and better morale among the employees.”

In the body of your presentation, discuss the points mentioned briefly in the introduction, in the same order that they were mentioned. Provide the kinds of obvious transitions that help your listeners stay on track.

Example: “The final benefit of the new safety plan will be improved morale among the field workers at all our job sites.”

At the end of your presentation, the conclusion, review the main ideas covered in the body of the speech and specify actions you want to occur as a result of your presentation.

Example: “Jones Engineering can benefit from this new safety plan in three main ways....

If Jones implements the new plan next month, I believe you will see a dramatic reduction in on-site accidents during the second half of the year.”

This simple three-part plan for all presentations gives listeners the handle they need to understand your speech. First, there is a clear *road map* in the introduction so that they know what lies ahead in the rest of the speech. Second, there is an organized pattern in the body, with clear transitions between points. And third, there is a strong finish that brings the audience back full circle to the main thrust of the presentation.

ABC Format: Presentations

- **ABSTRACT:** Subject of presentation and overview of key topics
- **BODY:** Key topics in same order as presented in abstract
- **CONCLUSION:** Review of main ideas discussed in presentation and suggestion of how audience members should respond

>> Presentation Guideline 3: Stick to a Few Main Points

Our short-term memory holds a limited number of items. It follows that listeners are most attentive to speeches organized around a few major points. In fact, a good argument can be made for organizing information in groups of threes whenever possible. For reasons that are not totally understood, listeners seem to remember groups of three items more than they do any other size groupings—perhaps because

- The number is simple
- It parallels the overall three-part structure of most speeches and documents (beginning, middle, end)
- Many good speakers have used triads (Winston Churchill’s “Blood, sweat, and tears,” Caesar’s “I came, I saw, I conquered,” etc.)

Whatever the reason, groupings of three make your speech more memorable to the audience.

>> Presentation Guideline 4: Put Your Outline on Cards or Paper

The best presentations are *extemporaneous*, meaning the speaker shows great familiarity with the material but uses notes for occasional reference. Avoid extremes of (1) reading a speech verbatim, which many listeners consider the ultimate insult, or (2) memorizing a speech, which can make your presentation seem somewhat wooden and artificial.

Ironically, you appear more natural if you refer to notes during a presentation. Such extemporaneous speaking allows you to make last-minute changes in phrasing and emphasis that may improve delivery, rather than locking you into specific phrasing that is memorized or written out word for word. If you know your presentation information well, speaking extemporaneously also allows you to adjust your speech slightly in response to your audience's reactions, clarifying concepts that seem to confuse them or emphasizing information that they seem especially interested in.

Depending on your personal preference, you may choose to write speech notes on (1) index cards, (2) a sheet or two of paper, or (3) the "Notes View" available with most presentation software. The main advantages and disadvantages of each are presented in the list that follows.

1. Notes on Cards (3-by-5-inch or 4-by-6-inch cards)

Advantages

- ◆ Are easy to carry in a shirt pocket, coat, or purse
- ◆ Provide a way to organize points, through ordering of cards
- ◆ Can lead to smooth delivery in that each card contains only one or two points
- ◆ Can be held in one hand, allowing you to move away from lectern while speaking

Disadvantages

- ◆ Keep you from viewing outline of entire speech
- ◆ Require that you flip through cards repeatedly in speech
- ◆ Can limit use of gestures with hands
- ◆ Can cause confusion if they are not in correct order

2. Notes on Sheets of Paper

Advantages

- ◆ Help you quickly view outline of entire speech
- ◆ Leave your hands free to use gestures
- ◆ Are less obvious than note cards, for no flipping is needed

Disadvantages

- ◆ Tend to tie you to lectern, where the sheets lie
- ◆ May cause slipups in delivery if you lose your place on the page

3. Printout of "Notes View" pages from presentation software

Advantages

- ◆ Reminds you of text to accompany each slide
- ◆ Can lead to smooth delivery in that each page contains only a few points
- ◆ Can include special notes and reminders about information to be highlighted
- ◆ Can be used as record of the presentation

Disadvantages

- ◆ Requires you to flip pages with each new slide
- ◆ Tends to tie you to lectern, where the sheets lie
- ◆ Can cause confusion if they are not in correct order

>> Presentation Guideline 5: Practice, Practice, Practice

Many speakers prepare a well-organized speech but then fail to add the essential ingredient: practice. Constant practice distinguishes superior presentations from mediocre ones. It also helps eliminate the nervousness that most speakers feel at one time or another.

In practicing your presentation, make use of four main techniques, listed here from least to most effective:

- **Practice before a mirror:** This old-fashioned approach allows you to hear and see yourself in action. The drawback, of course, is that it is difficult to evaluate your own performance while you are speaking. Nevertheless, such run-throughs definitely make you more comfortable with the material.
- **Use of an audio recording:** Most presenters have access to an audio recorder, so this approach is quite practical. The portability of electronics allows you to practice almost anywhere. Although recording a presentation does not improve gestures, it helps you discover and eliminate verbal distractions such as *filler words* (e.g., *uhhhh, um, ya know*).
- **Use of video recording:** This practice technique allows you to see and hear yourself as others do. Your careful review of the recording, particularly when done with another qualified observer, can help you identify and eliminate problems with posture, eye contact, vocal patterns, and gestures. At first it can be a chilling experience, but you soon get over the awkwardness of seeing yourself on the screen.
- **Use of live audience:** Groups of your colleagues, friends, or family—simulating a real audience—can provide the kinds of responses that approximate those of a real audience. In setting up this type of practice session, however, make certain that observers understand the criteria for a good presentation and are prepared to give an honest and forthright critique.

>> Presentation Guideline 6: Speak Vigorously and Deliberately

Vigorously means with enthusiasm; *deliberately* means with care, attention, and appropriate emphasis on words and phrases. The importance of this guideline becomes clear when you think back to how you felt during the last speech you heard. At the very least, you expected the speaker to show interest in the subject and demonstrate enthusiasm. Good information is not enough—you must arouse the interest of the listeners.

You may wonder, “How much enthusiasm is enough?” The best way to answer this question is to hear or (preferably) watch yourself on a recording. Your delivery should incorporate just enough enthusiasm so that it sounds and looks a bit unnatural to you. Few if any listeners ever complain about a speech being too enthusiastic or a speaker being too energetic, but many people complain about dull speakers who fail to show that they themselves are excited about the topic. Remember—every presentation is, in a sense, *show time*.

>> Presentation Guideline 7: Avoid Filler Words

Avoiding filler words presents a tremendous challenge to most speakers. When they think about what comes next or encounter a break in the speech, they may tend to fill the gap with filler words and phrases such as these:

uhhhh ...

ya know ...

OK ...

well ... uh ...

like ...

I mean ...

umm ...

These gap fillers are a bit like spelling errors in written work: Once your listeners find a few, they start looking for more and are distracted from your presentation. To eliminate such distractions, follow these three steps:

Step 1: Use pauses to your advantage. Short gaps or pauses inform the listener that you are shifting from one point to another. In signaling a transition, a pause serves to draw attention to the point you make right after the pause. Note how listeners look at you when you pause. Do *not* fill these strategic pauses with filler words.

Step 2: Practice with a recorder. A recording is brutally honest: When you play it back, you become instantly aware of fillers that occur more than once or twice. Keep a tally sheet of the fillers you use and their frequency. Your goal is to reduce this frequency with every practice session.

Step 3: Ask for help from others. After working with audio recorders in Step 2, give your speech to an individual who has been instructed to stop you after each filler. This technique gives immediate reinforcement.

>> Presentation Guideline 8: Use Rhetorical Questions

Enthusiasm, of course, is your best delivery technique for capturing the attention of the audience. Another technique is the use of rhetorical questions at pivotal points in your presentation.

Rhetorical questions are those you ask to get listeners thinking about a topic, not those that you would expect them to answer out loud. They prod listeners to think about your point and set up an expectation that important information follows. Also, they break the monotony of standard declarative sentence patterns. One example of a rhetorical question could be used by a computer salesperson in proposing a purchase by one of M-Global's small offices:

Example: I've discussed the three main advantages that a centralized copy center would provide your office staff. But is this an approach that you can afford at this point in the company's growth?

Next the speaker could follow the question with remarks supporting the position that the system is affordable.

“What if” scenarios provide another way to introduce rhetorical questions. They gain listeners’ attention by having them envision a situation that might occur. For example, a safety engineer could use this kind of rhetorical question in proposing M-Global’s asbestos-removal services to a regional bank:

Example: What if you repossessed a building that contained dangerous levels of asbestos? Do you think that your bank would then be liable for removing all the asbestos?

Again, the question pattern heightens listener interest.

Rhetorical questions do not come naturally. You must make a conscious effort to insert them at points when it is most important to gain or redirect the attention of the audience. Three particularly effective uses follow:

1. **As a grabber at the beginning of a speech:** “Have you ever wondered how you might improve the control and distribution of your internal documents?”
2. **As a transition between major points:** “We’ve seen that a content management system can improve the control of internal documents, but will it simplify the access to those documents by your employees?”
3. **As an attention getter right before your conclusion:** “Now that we’ve examined the features of a content management system, what’s the next step you should make at M-Global?”

>> Presentation Guideline 9: Maintain Eye Contact

Your main goal—always—is to keep listeners interested in what you are saying. This goal requires that you maintain control, using whatever techniques possible to direct the attention of the audience. Frequent eye contact is one good strategy.

The simple truth is that listeners pay closer attention to what you are saying when you look at them. Think how you react when a speaker makes constant eye contact with you. If you are like most people, you feel as if the speaker is speaking to you personally—even if there are 100 people in the audience. Also, you tend to feel more obligated to listen when you know that the speaker’s eyes will be meeting yours throughout the presentation. Following are some ways you can make eye contact a natural part of your own strategy for effective oral presentations:

- **With audiences of about 30 or less:** Make regular eye contact with everyone in the room. Be particularly careful not to ignore members of the audience who are seated to your far right and far left (Figure 15–1). Many speakers tend to focus on the listeners in Section B. Instead, make wide sweeps so that listeners in Sections A and C get equal attention.
- **With large audiences:** There may be too many people or a room too large for you to make individual eye contact with all listeners. In this case, focus on just a few people in all three sections of the audience, as noted in Figure 15–1. This approach gives the appearance that you are making eye contact with the entire audience.

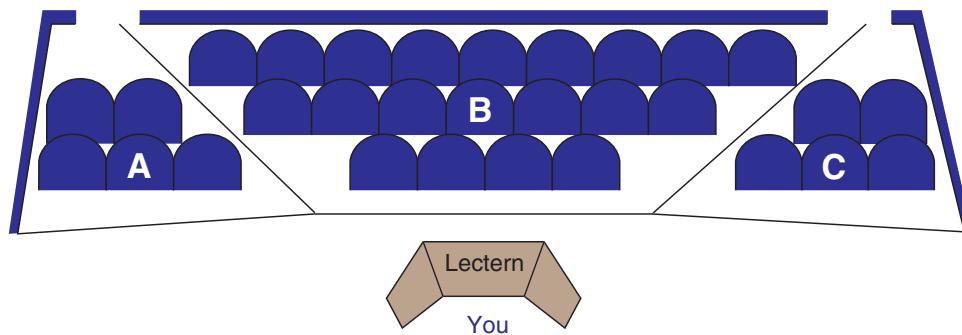


Figure 15-1
Audience sections

■ **With any size audience:** Occasionally, look away from the audience—either to your notes or toward a part of the room where there are no faces looking back. In this way, you avoid the appearance of staring too intensely at your audience. Also, these breaks give you the chance to collect your thoughts or check your notes.

>> Presentation Guideline 10: Use Appropriate Gestures and Posture

Speaking is only one part of giving a speech; another is adopting appropriate posture and using gestures that reinforce what you are saying. Note that good speakers are much more than “talking heads” before a lectern. Instead, they

1. Use their hands and fingers to emphasize major points
2. Stand straight, without leaning on or gripping the lectern
3. Step out from behind the lectern on occasion, to decrease the distance between them and the audience
4. Point toward visuals on screens or charts, without losing eye contact with the audience

The audience judges you by what you say and what they see, a fact that again makes video recording a crucial part of your preparation. With work on this facet of your presentation, you can avoid problems like keeping your hands constantly in your pockets, rattling change (remove pocket change and keys beforehand), tapping a pencil, scratching nervously, slouching over a lectern, and shifting from foot to foot.

Presentation Guidelines

- Know your listeners
- Use the preacher’s maxim
- Stick to a few main points
- Put your outline on cards or paper
- Practice, practice, practice
- Speak vigorously and deliberately
- Avoid filler words
- Use rhetorical questions
- Maintain eye contact
- Use appropriate gestures and posture



>> Guidelines for Presentation Graphics

More than ever before, listeners expect good graphics during oral presentations. Much like gestures, graphics transform the words of your presentation into true communication with the audience. When you display graphics and text during a presentation, they should illustrate and clarify your speech. Therefore, we include displayed text in our discussion of graphics in this section.

>> Presentation Graphics Guideline 1: Discover Listener Preferences

Some professionals prefer simple speech graphics, such as flip charts or transparencies. Others prefer more sophisticated presentations, such as animations, audio, or video. Some audiences prefer simple outlines, some may prefer charts and graphs, and still others may prefer full-color images.

Your listeners are usually willing to indicate their preferences when you call on them. Contact the audience ahead of time and make some inquiries. Also ask for information about the room in which you will be speaking and about the presentation technology that will be available to you. If possible, request a setting that allows you to make best use of your graphics choice. If you have no control over the setting, then choose graphics that best fit the constraints. Details about lighting, wall space, projection technology, and chair configuration can greatly influence your selection.

>> Presentation Graphics Guideline 2: Match the Graphics to the Content

Plan graphics while you prepare the text so that the final presentation seems fluid. Remember that everything you project on a screen or present on a flip chart should support and enhance your presentation. Choose images and words that help your reader focus on what you are saying.

>> Presentation Graphics Guideline 3: Keep the Message Simple

When Edward Tufte critiqued PowerPoint slides in *The Cognitive Style of PowerPoint*, one of the problems he pointed to was the use of too many graphic elements on each slide, the equivalent of the *chartjunk* that he had argued against in his earlier studies of graphics¹ (see Chapter 13). Some basic design guidelines apply, whether you are using posters, overhead transparencies, or computer-aided graphics such as PowerPoint.

- Use few words, emphasizing just one idea on each frame.

Note: A common PowerPoint mistake is the use of too much text, which then gets read to the audience by the speaker.

- Use more white space, perhaps as much as 60%–70% per frame.
- Use landscape format more often than portrait, especially because it is the preferred default setting for most presentation software.
- Use sans-serif large print, from 14 pt. to 18 pt. minimum for text to 48 pt. for titles.

¹E. R. Tufte. (2003). *The cognitive style of PowerPoint*. Cheshire, CT: Graphics Press.

Your goal should be to create graphics that are seen easily from anywhere in the room and that complement—but do not overpower—your presentation.

You should also use audio and video elements sparingly. Most presentation software programs include sound effects to accompany slide changes or the appearance of text or images. These are distracting and annoying, and should be avoided. You should also use video carefully. For example, during a presentation on automobile safety, the presenter included an animation of a crash that ran in a constant loop throughout her presentation. This made it difficult for the audience to focus on the findings of the presenter's study. However, if the presenter had allowed the video to run once, discussed the important aspects of the video, and then stopped the action (or even blanked it from the screen), the audience would have focused on the information she was presenting.

>> **Presentation Graphics Guideline 4: Consider Alternatives to Bulleted Lists**

Recently, there has been a move away from the default slide layouts in most presentation software. One recommendation is to use full-sentence headings on slides to help the audience understand and remember the information being presented; another is to combine text with graphics on slides when appropriate.²

>> **Presentation Graphics Guideline 5: Use Colors Carefully**

Colors can add flair to visuals. Use the following simple guidelines to make colors work for you:

- Have a good reason for using color (such as the need to highlight three different bars on a graph with three distinct colors).
- Be sure that a color contrasts with its background (e.g., yellow on white does not work well).
- Use no more than three or four colors in each graphic (to avoid a confused effect).

>> **Presentation Graphics Guideline 6: Learn the Tools Available to You**

Today, most presentations are created with presentation slide software, such as PowerPoint, but the defaults on these programs often do not follow the guidelines listed above. To create effective presentation graphics, you should learn to create and save customized templates for your presentations. Learn to use the master slide tools in your software to customize color schemes, backgrounds, and bullets. Consider incorporating your organization's logo into the master slide. Including information about the presentation, such as the date and location, can be useful for your future reference. Learn how to create and arrange text boxes and image boxes on individual slides, and how to insert hyperlinks to Web sites and sound or image files. Remember that all files related to your slide presentation need to be stored in the same folder on your computer or flash drive.

²M. Alley & K. A. Neeley. (2005). Rethinking the design of presentation slides: A case for sentences headlines and visual evidence. *Technical Communication*, 52(4), 417–426.

>> Presentation Graphics Guideline 7: Leave Graphics Up Long Enough

Because graphics reinforce text, they should be shown only while you address the particular point at hand. For example, reveal a graph just as you are saying, “As you can see from the graph, the projected revenue reaches a peak in 2013.” Then pause and leave the graph up a bit longer for the audience to absorb your point.

How long is too long? A graphic outlives its usefulness when it remains in sight after you have moved on to another topic. Listeners continue to study it and ignore what you are now saying. If you use a graphic once and plan to return to it, take it down after its first use and show it again later.

>> Presentation Graphics Guideline 8: Avoid Handouts

Because timing is so important in your use of speech graphics, handouts are usually a bad idea. Readers move through a handout at their own pace, rather than at the pace the speaker might prefer. Thus handouts cause you to lose the attention of your audience. Use them only if (1) no other visual will do, (2) your listener has requested them, or (3) you distribute them as reference material after you have finished talking.

>> Presentation Graphics Guideline 9: Maintain Eye Contact While Using Graphics

Do not stare at your visuals while you speak. Maintain control of listeners’ responses by looking back and forth from the visual to faces in the audience. To point to the graphic aid, use the hand closest to the visual. Using the opposite hand causes you to cross over your torso, forcing you to turn your neck and head away from the audience.

>> Presentation Graphics Guideline 10: Include All Graphics in Your Practice Sessions

Dry runs before the actual presentation should include every graphic you plan to use, in its final form. This is a good reason to prepare graphics as you prepare text, rather than as an afterthought. If you are going to be projecting images from a transparency or computer program, the projected image may appear different than the original image. Colors may look slightly different, and text and images that are clear on your computer screen or transparency may seem out of focus or too small for an audience looking at a screen. By previewing your graphics, you are able to fix them before your presentation. The goal is to use graphics you can be proud of. Never put yourself in the position of having to apologize for the quality of your graphic material. If an illustration is not up to the quality your audience would expect, do not use it.

You should also practice timing your graphics with your speech. Running through a final practice without graphics would be much like doing a dress rehearsal for a play without costumes and props—you would be leaving out parts that require the greatest degree of timing and orchestration. Practicing with graphics helps you improve transitions.

>> Presentation Graphics Guideline 11: Plan for Technology to Fail

Murphy’s Law always seems to apply when you use another person’s audiovisual equipment: Whatever can go wrong will, and at the worst possible moment. For example, a

new bulb burns out and there is no extra bulb in the equipment drawer; an extension cord is too short; the screen does not stay down; the client's computer doesn't read your file—many speakers have experienced these problems and more. Even if the equipment works, it often operates differently from what you are used to. The only sure way to put the odds in your favor is to carry your own equipment and set it up in advance.

However, most of us must rely on someone else's equipment at least some of the time. Following are a few ways to ward off disaster:

- Find out exactly who is responsible for providing the equipment and contact that person in advance.
- If you will be using a laptop or notebook computer to present your slides, ask about the projection technology that you will be using. Learn how to switch the image from your computer screen to the projecting equipment that you will be using.
- Have some easy-to-carry backup supplies in your car—an extension cord, an overhead projector bulb, large tablets, felt-tip markers, and chalk, for example.
- Bring handout versions of your visuals to use as a last resort.
- In short, you want to avoid putting yourself in the position of having to apologize. Plan well.

Presentation Graphics Guidelines

- Discover listener preferences
- Match the graphics to the content
- Keep the message simple
- Consider alternatives to bulleted lists
- Use colors carefully
- Learn the tools available to you
- Leave graphics up long enough
- Avoid handouts
- Maintain eye contact while using graphics
- Include all graphics in your practice sessions
- Plan for technology to fail

>> Poster Guidelines

Poster sessions have long been a common feature of science and engineering conferences, and they have become popular ways to share the results of research in a wide range of professional and academic fields. Poster sessions are a regular part of conferences of professional organizations like the Society for Technical Communication and academic organizations like the Association of Teachers of Technical Writing. Many campuses are now using poster sessions as a way for students across campus to share their research, and the Council for Undergraduate Research sponsors regional and national conferences that feature poster sessions.

If you have participated in a science fair, you are already familiar with the basic setup of a poster session. In poster sessions like the one in Figure 15–2, a number of researchers display their posters, and other participants walk around the room from poster to poster, discussing research projects with the presenters. Posters offer a snapshot of the research project and are a good way to share preliminary results. The feedback from poster session audience members can be helpful to researchers. The following guidelines will help you design a poster that is informative and appropriate for the setting of a poster session.

>> Poster Guideline 1: Follow the Requirements of the Call for Posters

Many conferences include a Call for Posters as part of their Call for Papers (CFP) announcements. Read the announcement carefully and submit exactly the information that



Figure 15–2 ■ 2010 Posters on the Hill

Source: Council for Undergraduate Research, www.cur.org.

ABC Format: Posters

- **ABSTRACT:** Research question and summary of theory that forms the basis for the study
- **BODY:** Methodology and discussion of results
- **CONCLUSION:** Summary of key findings or description of future work on the project

than it takes about 10 minutes to read. To format your poster for ease of reading in this setting, you should clearly design your poster with blocks of information, formatted as follows:

- Center your title at the top of the poster, using a font size of 60 to 78 points.
- Center your name, your organization, and the event where the poster is being presented below the title in a slightly smaller font size.
- Use clear, informative headings (for example, “Stress Tolerances of Framing Materials” instead of “Findings”) for each section, in a font size of at least 50 points.
- Use a font size of at least 35 points for body text, and use lists and tables when possible to organize your information.
- Use graphs, charts, drawings, and photographs to illustrate your poster, as appropriate.
- Allow plenty of white space around poster sections. A common problem with early drafts of posters is too much text.

>> Poster Guideline 4: Include Acknowledgments as Appropriate

If your research project was completed as part of a class assignment, if it was funded by an outside source, or if a person or organization was particularly helpful with your project,

is requested. Once your poster is accepted for the conference, check all requirements for content, size, and materials for posters. You should also be given information about what materials the conference will make available (for example, easels and pushpins).

>> Poster Guideline 2: Follow the ABC Format for Research Posters

The ABC format for posters is similar to the ABC format for presenting research, which is discussed on page 268 in Chapter 9. The abstract of a poster should explain the research question that was studied, and it should identify any key theories that informed your research. The body should explain your research methodology and summarize your results. The conclusion of a research poster may either summarize conclusions of a completed study or outline the next steps in a study that is still in progress.

>> Poster Guideline 3: Design Your Poster for Ease of Reading

Poster sessions can include anywhere from a few posters to dozens of posters displayed in a room, and a conference may have dozens or hundreds of participants. Thus your poster needs to be easy to read from about three feet away and should contain no more information

include an acknowledgment statement. If your project required approval from an Institutional Review Board (IRB—see Chapter 9), you should state that information. You should also include a brief bibliography of important sources, especially any that you cite on your poster.

>> **Poster Guideline 5: Prepare Handouts as Appropriate to the Setting**

Some conferences encourage poster session participants to include a handout for those attending the session. Handouts may include a complete bibliography and your contact information. If you are still seeking feedback through a survey or questionnaire, you can include information about how conference attendees can participate in your study. You may also want to have business cards printed up, in case someone wants your contact information, and don't be shy about asking for the business card of someone who may be a good resource for your project.

>> **Poster Guideline 6: Edit Carefully**

As with all other documents discussed in this book, you should edit your poster carefully. Remember that your audience may include potential employers or representatives of universities to which you may apply for graduate study, so you want to make a good impression.

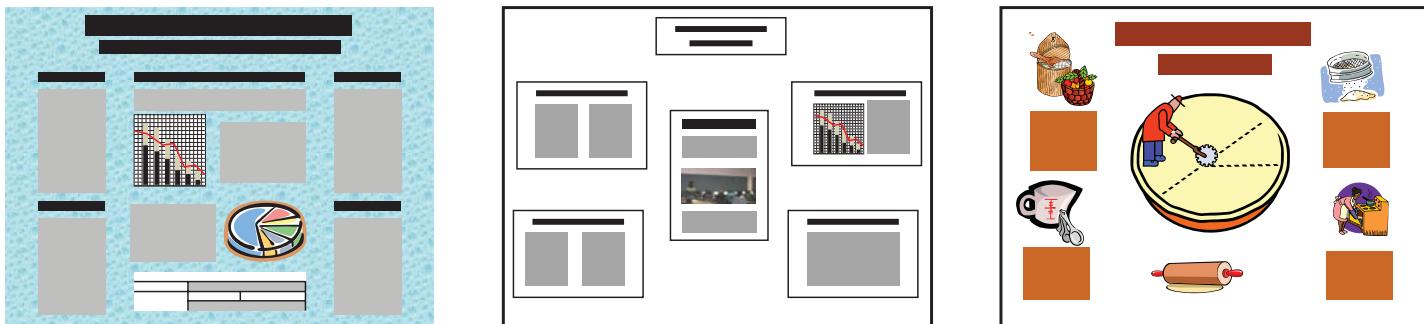
>> **Poster Guideline 7: Be Prepared to Discuss Your Research**

During a poster session, you will probably be asked to explain your research. Respond with enthusiasm and a clear understanding of your project. You may want to practice a brief summary of your research beforehand (like the elevator speech at the beginning of this chapter), but make sure that your responses do not sound memorized.

One easy way to create a poster is to use slide presentation software such as PowerPoint. If you have access to a poster printer (either in your organization or through a commercial quick-print center) you can format your slide to the appropriate size for the printer (usually about 32 inches by 40 inches). If you do not have access to a poster printer, you can still put your information on individual presentation slides and attach those slides to poster board. Figure 15–3 shows three possible ways to design a poster. The first design shows a poster that uses a traditional format with text boxes arranged in columns and that is printed on a single sheet of paper. The second poster is also fairly traditional in its format and uses individual sheets of paper attached to poster board. The third poster uses a more creative design, using baking as a visual and verbal metaphor for discussing results displayed in a pie chart.

Poster Guidelines

- Follow the requirements of the call for posters
- Follow the ABC format for research posters
- Design your poster for ease of reading
- Include acknowledgments as appropriate
- Prepare handouts as appropriate to the setting
- Edit carefully
- Be prepared to discuss your research



■ **Figure 15–3** ■ Sample research poster designs

>>> Overcoming Nervousness

The problem of nervousness deserves special mention because it is so common. Virtually everyone who gives speeches feels some degree of nervousness before “the event.” An instinctive fight-or-flight response kicks in for the many people who have an absolute dread of presentations. In fact, surveys have determined that most of us rate public speaking at the top of our list of fears, even above sickness and death! Given this common response, we consider the problem and offer suggestions for overcoming it.

Why Do We Fear Presentations?

Most of us feel comfortable with informal conversations, when we can voice our views to friends and indulge in impromptu exchanges. We are used to this type of casual presenting of our ideas. Formal presentations, however, put us into a more structured, more awkward, and thus more tense environment. Even if we know the audience is friendly and interested in our success, the formal context triggers nervousness that is sometimes difficult to control.

This nervous response is normal and, to some degree, useful. It gets you “up” for the speech. That adrenaline pumping through your body can generate a degree of enthusiasm that propels the presentation forward and creates a lively performance. Just as veteran actors admit to some nervousness helping improve their performance, excellent speakers usually can benefit from the same effect.

The problem occurs when nervousness felt before or during a speech becomes so overwhelming that it affects the quality of the presentation. Because sympathy is the last feeling a speaker wants the audience to have, it is worth considering some techniques to combat nervousness.

A Strategy for Staying Calm

As the cliché goes, do not try to eliminate butterflies before a presentation—just get them to fly in formation. In other words, it is best to acknowledge that a certain degree of

nervousness will always remain; then go about the business of getting it to work for you. Following are a few suggestions:

>> **No Nerves Guideline 1: Know Your Speech**

The most obvious suggestion is also the most important one. If you prepare your speech well, your command of the material helps conquer any queasiness you feel—particularly at the beginning of the speech, when nervousness is usually at its peak. Be so sure of the material that your listeners overlook any initial discomfort you may feel.

>> **No Nerves Guideline 2: Prepare Yourself Physically**

Your physical well-being before the speech can have a direct bearing on anxiety. More than ever before, most cultures understand the essential connection between mental and physical well-being. This connection suggests you should take the following precautions before your presentation:

- **Avoid caffeine or alcohol for at least several hours before you speak.** You do not need the additional jitters brought on by caffeine or the false sense of ease brought on by alcohol.
- **Eat a light and well-balanced meal within a few hours of speaking.** However, do not overdo it—particularly if a meal comes right before your speech. If you are convinced that any eating will increase your anxiety, wait to eat until after speaking.
- **Practice deep-breathing exercises before you speak.** Inhale and exhale slowly, making your body slow down to a pace you can control. If you can control your breathing, you can probably keep the butterflies flying in formation.
- **Exercise normally the same day of the presentation.** A good walk helps invigorate you and reduces nervousness; however, do not wear yourself out by exercising more than you would normally.

>> **No Nerves Guideline 3: Picture Yourself Giving a Great Presentation**

Many speakers become nervous because their imaginations are working overtime. They envision the kinds of failure that almost never occur. Instead, speakers should be constantly bombarding their psyches with images of success. Mentally take yourself through the following steps of the presentation:

- Arriving at the room
- Feeling comfortable at your chair
- Getting encouraging looks from your audience
- Giving an attention-getting introduction
- Presenting your supporting points with clarity and smoothness
- Ending with an effective wrap-up
- Fielding questions with confidence

Sometimes called *imaging*, this technique helps to program success into your thinking and to control negative feelings that pass through the minds of even the best speakers.

>> **No Nerves Guideline 4: Arrange the Room as You Want It**

To control your anxiety, assert some control over the physical environment as well. You need everything going for you if you are to feel at ease. Make sure that chairs are arranged to your satisfaction, that the lectern is positioned to your taste, that the lighting is adequate, and so on. These features of the setting can almost always be adjusted if you make the effort to ask. Again, it is a matter of your asserting control to increase your overall confidence.

>> **No Nerves Guideline 5: Have a Glass of Water Nearby**

Extreme thirst and a dry throat are physical symptoms of nervousness that can affect delivery. There is nothing to worry about as long as you have water available. Think about this need ahead of time so that you do not have to interrupt your presentation to pour a glass of water.

>> **No Nerves Guideline 6: Engage in Casual Banter Before the Speech**

If you have the opportunity, chat with members of the audience before the speech. This ice-breaking technique reduces your nervousness and helps start your relationship with the audience.

>> **No Nerves Guideline 7: Remember That You Are the Expert**

As a final psyching up exercise before you speak, remind yourself that you have been invited or hired to speak on a topic about which you have useful knowledge. Your listeners want to hear what you have to say and are eager for you to provide useful information to them. So tell yourself, “I’m the expert here!”



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>> **No Nerves Guideline 8: Do Not Admit Nervousness to the Audience**

No matter how anxious you may feel, never admit it to others. First of all, you do not want listeners to feel sorry for you—that is not an emotion that leads to a positive critique of your speech. Second, nervousness is almost never apparent to the audience. Your heart may be pounding, your knees may be shaking, and your throat may be dry, but few if any members of the audience can see these symptoms. Why draw attention to the problem by admitting to it? Third, you can best defeat initial anxiety by simply pushing right on through.

>> **No Nerves Guideline 9: Slow Down**

Some speakers who feel nervous tend to speed through their presentations. If you have prepared well and practiced the speech on an audio recording, you are not likely to let this happen. Having heard yourself on tape, you will be better able to sense that the pace

is too quick. As you speak, constantly remind yourself to maintain an appropriate pace. If you have had this problem before, you might even write “Slow down!” in the margin of your notes.

>> No Nerves Guideline 10: Join a Speaking Organization

The previous nine guidelines will help reduce your anxiety about a particular speech. To help solve the problem over the long term, however, consider joining an organization like Toastmasters International, which promotes the speaking skills of all its members. Like some other speech organizations, Toastmasters has chapters that meet at many companies and campuses. These meetings provide an excellent and supportive environment in which all members can refine their speaking skills.

No Nerves Guidelines

- Know your speech
- Prepare yourself physically
- Picture yourself giving a great presentation
- Arrange the room as you want it
- Have a glass of water nearby
- Engage in casual banter before the speech
- Remember that you are the expert
- Do not admit nervousness to the audience
- Slow down
- Join a speaking organization

>>> An Example of an M-Global Oral Presentation

Model 15–1 on pages 593–597 presents the text and visuals of a short presentation given by Kim Mason, an environmental expert for M-Global’s Atlanta office. She has been invited to speak at the monthly lunch meeting of an organization of building owners in the Atlanta region. The agreed-on topic is the problem of asbestos contamination.

The members of Kim’s audience have an obvious interest in the problem: They own buildings at risk. Yet they know little more about asbestos than that it is a health issue they must consider when they renovate. Kim’s job is to inform them and heighten their awareness. She must cover only the highlights, however, because the presentation will be followed by a detailed question-and-answer session. Although some of these owners have been and will be clients of M-Global, she has an ethical obligation to avoid promoting M-Global during her presentation.

>>> Chapter Summary

- Oral presentations are an important part of success in your career.
- A well-written presentation will be created with the audience in mind, will focus on a few main points, and will use the ABC format.
- Preparation for a speech should include creating an outline and practicing speaking clearly and directly to your audience.

- Eye contact and appropriate gestures and posture will help you connect with your audience.
- Presentation graphics should match your content, be attractive, and clarify your speech.
- Speakers are often expected to use presentation technology, but they should have a backup plan in case the technology fails.
- Poster sessions provide an excellent opportunity for students and professionals to share their research in a casual setting.
- Posters should follow the general organization for presenting research, but they should be visually interesting and designed for easy reading.
- At a poster session, researchers are expected to discuss their research with fellow conference participants.
- Speakers can help prevent nervousness by visualizing a great presentation.
- Speaking organizations can help you overcome nerves.
- Preparation for a speech includes arranging the room as you want, having a glass of water nearby, and engaging members of the audience in informal conversation.

>>> Learning Portfolio

Communication Challenge Ethics and the Technical Presentation

Carlos Santiago had been looking forward to attending his first international conference. The Association of Medical Technology invited him to speak at its annual meeting. Now, however, some of his research presents him with an ethical dilemma. This case study presents background on his invitation. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

An Opportunity in Caracas

Carlos Santiago works as an equipment development specialist in M-Global's San Francisco office. For two years he has been helping a large medical equipment firm, MedExcel, Inc., improve its C-2000 electrocardiograph. An electrocardiograph records electrical changes that occur during the human heartbeat. One of the most important pieces of equipment in diagnosing heart problems, it is made up of four main parts:

- Electrodes attached to the patient's body
- Electronics that convert and amplify the signal traveling from the electrodes to the computer
- A computer that interprets information provided by the electrodes
- An output screen and printer that provide information to the medical professional

In his work on the C-2000, Carlos (1) developed new electrodes that take extremely accurate readings, (2) designed a panel that is easier to read, and (3) created electronics that convert and amplify signals better than any model he has seen produced by any firm. These major refinements, as well as a host of smaller ones, created what he and MedExcel believe is the most user-friendly and accurate electrocardiograph on the market.

As a result, Carlos' work has been recognized in the industry. Next week he will fly from San Francisco to Caracas, Venezuela, to speak at the annual meeting of the Association of Medical Technology (AMT). MedExcel, which conveyed the invitation to him from the AMT, will be paying all his expenses for the eight-day trip. He has been asked to speak on "Advances in the Electrocardiograph." As you might expect, MedExcel expects that Carlos will showcase the C-2000 as an example of the most current technological advances.

A Late-Breaking Surprise

Everything has come together for Carlos. His client is happy, his branch manager is overjoyed that M-Global's small-equipment development team is gaining recognition in a major in-

dustry, and a high-visibility professional association is about to showcase his work. The public relations and marketing potential are significant, both for M-Global and for MedExcel.

Now the other shoe has dropped. Yesterday, just a week before the conference, Carlos was shocked to learn that Worldwide Medical, the main competitor of MedExcel, just came out with an updated version of its electrocardiograph, the HeartCart 300. From the article he reviewed in a weekly health care newspaper, the machine is competitive with the C-2000 in accuracy of electrode readings and in electronics. In addition, the panel pictured in the article appears to be a significant improvement over the previous HeartCart model. After reading the article, Carlos went to his computer to find the home page for Worldwide Medical on the Internet. From the additional information he found there, it appears the HeartCart 300 is competitive with the C-2000.

Carlos has mixed emotions about this finding. On the one hand, he is glad to see that another firm is investing research dollars in this technology, which is crucial to health care throughout the world. On the other hand, he is understandably concerned that his two years of work may become upstaged by the work of a competing company. For the sake of the investment his client has made in this research, he was hoping that the C-2000 would enjoy sales that would justify the research investment.

Questions and Comments for Discussion

More to the immediate point, Carlos is wondering what effect, if any, this new information should have on his presentation—a presentation that is being underwritten by a \$5,000 grant from MedExcel. Following are some questions for you to consider:

1. Do you think Carlos is obligated to revamp his presentation to include information about the HeartCart 300? If your answer is yes, explain exactly how he should proceed. If your answer is no, give your rationale.
2. Should his association with MedExcel have any bearing on his decision?
3. Should the manner by which Carlos received this new information have any effect on the answer to Question 1?
4. Give what you think would be the opinion of the AMT in response to Question 1.
5. Explain how your answer to Question 1 relates to the ethical guidelines for work discussed in Chapter 1 (see pages 13–15).

6. Generally, do you see any larger concern here in the relationship between professional associations and private enterprise? Explain your answer.

Write About It

Assume the role of Carlos. You feel that you must contact MedExcel about the HeartCart 300. Decide what you will

say. Will you ask questions? Make suggestions? Propose changes in your presentation? Write the text of an e-mail that you will send to Robert Morgan, the president of MedExcel. Remember that this is professional correspondence, so use appropriate tone. Provide the context, and include all of the information that Robert needs to give you an appropriate response.

Collaboration at Work Speeches You Have Heard

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Even if you have little experience as a public speaker, you already know a lot about what makes a good or bad speech because you have listened to so many presentations in your life, from informal lectures in a classroom to famous speeches by national figures. Every day you see or hear snippets of presentations in the media, so your exposure has been high. Considering all the visual input, you probably have developed preferences for certain features in presentations.

Team Assignment

In this exercise, you and your fellow team members will do the following:

1. Share anecdotes about good and bad presentations you have heard, focusing on criteria such as content, organization, delivery, graphics, and gestures.
2. Assemble a first list that includes features of speeches and characteristics of speakers that you consider worthy of modeling.
3. Assemble a second list that includes features of speeches and characteristics of speakers that you think should be avoided.

Share your list with the class, following your instructor's directions. You may be asked to use presentation software, overhead transparencies, or simply write your list on a large table or on a chalkboard. Be able to provide reasons why these features are positive or negative.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Speech Presented to an Audience

As directed by your instructor, attend a campus event that features a speaker, or find a recording of a live presentation on a Web site like www.ted.com. During the speech, take notes that will help you answer the following questions: What techniques does the speaker use to engage the audience? If the speech is given for a specific context (for example, a commencement speech), how does the speaker address that context? Do you think the speech is effective? Why or why not? Your instructor may show a speech to class for discussion, or you may be asked to write an analysis of two or three pages.

2. Analysis: Presentation Slides

On the Internet, find slides from a presentation in a commercial or government setting. Look for slides that explain a project or concept, not slides with advice about PowerPoint presentations. The easiest way to find these examples is to use the advanced search features of a search engine like Google, search for the word *presentation*, and look for results in one of the following formats: .pdf, .ppt, or .pptx. Analyze the slides using the guidelines in this chapter. What recommendations would you make for revising the slides? What assumptions can you make about the audience and context from the slides? Be clear about your reasons for these assumptions. Do the slides seem to be from an actual presentation, or do they seem to be a publication of record, designed primarily to prove that information has been presented to an audience or reader? How do you know? Your instructor may ask you to present your analysis to the class, or you may be asked to write your results in an essay of about five pages. If you are asked to write an essay, include images of some of the slides you are analyzing, as screen captures or as downloaded from the Web site. (See Chapter 13 for more on screen captures.)

3. Analysis: Posters at a Poster Session

If your campus sponsors a poster session where students present the results of their research, attend the event, study the posters, and choose one that you think is a good example of an effective poster. Make notes about the poster, the project, and the researcher. Consider asking permission to take a digital picture of the poster and the student or students who created it. In a two- or three-page essay, explain why you think the poster is a good model. Include the digital photo if you have one.

4. Analysis, M-Global Context: Asbestos Information Presentation

Analyze the presentation in Model 15–1 on pages 593–597. Consider the text of the speech located on the left-hand side of each page, the slides, and the slide notes that appear below each slide. Analyze the presentation using the guidelines in this chapter. Assume that you are one of Kim Mason's co-workers, and she wants your feedback before she gives her presentation next week. What strengths do you see in the presentation? What suggestions would you make for improvement? Be prepared to discuss your responses in class.

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.

- Invent addresses when necessary.
- Invent any extra information you may need for the correspondence, but do not change the information presented here.

5. Practice, M-Global Context: 2- to 3-Minute Presentation Based on M-Global Projects

Select one of the projects described in Model 12–6 on pages 472–478. Use information from the project and, if you wish, additional details you invent that could relate to the project. For this presentation, assume you are an M-Global marketing specialist talking to a group of potential clients in a meeting. They may hire M-Global for a similar project and thus want a summary of the job described in the project sheet.

6. Practice: 2- to 3-Minute Presentation Based on Your Academic Major

Give a presentation in which you discuss (a) your major field, (b) reasons for your interest in this major, and (c) specific career paths you may pursue. Assume your audience is a group of students with undecided majors who may want to select your major.

7. Practice: 5- to 6-Minute Presentation Based on a Short Report

Select any of the short written assignments in chapters that you have already completed. Prepare a presentation based on the report you have chosen. Assume that your main objective is to present the audience with the major highlights of the written report, which they have all read. Use at least one visual aid.

8. Practice: 5- to 6-Minute Presentation Based on a Proposal

Prepare a presentation based on one of the proposal assignments at the end of Chapter 12. Assume that your audience wants highlights of your written proposal, which they have read.

9. Practice: Research Poster

Create a poster for a topic that you researched for one of the assignments at the end of Chapter 9, or for another class. Your instructor may ask you to format your poster as individual sheets that can be arranged on poster board, or as a full-sized poster (if you have access to a poster printer on campus), or you may be asked to submit a digital version of your poster. If your campus sponsors a student research day, your instructor may ask you to share your poster in that forum.

10. Team Presentation

Prepare a presentation in teams assigned by your instructor. The presentation may be related to a collaborative writing assignment in an earlier chapter, or it may be done as a separate project. Review the Chapter 3 guidelines for collaborative work. Although related to writing, some of these suggestions apply to any team project.

Your instructor will set time limits for the entire presentation and perhaps for individual presentations. Make sure that your team's members move smoothly from one speech to the next; the individual presentations should work together for a unified effect.

11. Ethics Assignment

Suzanne Anthony, a prominent ecologist with M-Global's Atlanta office, has been asked to make a 30-minute speech to a public workshop on environmentalism, sponsored by SprawlStopper, a regional environmental action organization. She agrees to give the talk—for which she will receive an “honorarium” of \$500—on her area of expertise: the effects of unplanned growth on biological diversity of plant and animal species. Suzanne views the talk as a public service and has no knowledge of the sponsoring organization.

A few weeks before the speech, Suzanne's boss, Paul Finn, gets heartburn over his morning coffee as he reads an announcement about Suzanne's speech in the “Community Events” column of the local paper. Just yesterday, a large local builder, Action Homes, accepted his proposal for M-Global to complete environmental site assessments on all of Action Homes' construction sites for the next three years. Paul is aware that Action Home's has an ongoing court battle with SprawlStopper concerning Action Homes' desire to develop a large site adjacent to a Civil War national park north of Atlanta. Although M-Global is not now involved in the suit, Paul is worried that if Action Homes sees the name of an M-Global scientist associated with an event sponsored by SprawlStopper, Action Homes may have second thoughts about having chosen M-Global for its site work.

Do you think Paul should say something to Suzanne? If so, what should he say, and why should he say it? If not, why not? If you were in Suzanne's place, how would you respond to a suggestion by Paul that her speech might be inappropriate? Are there any similarities between the situation described here and the one characterized in this chapter's “Communication Challenge”?



12. International Communication Assignment

Prepare a team presentation that results from research your team does on the Internet concerning speech communication in a country outside the United States.

Option A: Retrieve information about one or more businesses or careers in a particular country. Once you have split up the team's initial tasks, conduct some of your business by e-mail, and then present the results of your investigation in a panel presentation to the class. For example, your topic could be the computer software industry in England, the tourist industry in Costa Rica, or the textile industry in Malaysia.

Option B: Retrieve information on subjects related to this chapter—for example, features of public speaking, business presentations, presentation graphics, and meeting management.



13. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

For this assignment, use the same context as that described in the A.C.T. N.O.W. exercise in Chapter 13 (see page 524). Prepare the text of a short speech on the topic—with at least one presentation graphic—as if the speech is to be delivered to an audience with a strong interest in the topic. Assume the speech narrative is the basis for notes you develop for the speech. Alternatively, your instructor may ask that you prepare the speech notes and deliver the presentation either to the class or to another appropriate group.

Good evening. My name is Kim Mason, and I work for the asbestos abatement division of M-Global, Inc., in Atlanta. I've been asked to give a short presentation on the problem of asbestos and then to respond to your questions about the importance of removing it from buildings. I'll focus on three main reasons why you, as building owners, should be concerned about the asbestos problem:

(NEXT SLIDE)

How to avoid asbestos contamination

Kim Mason, Environmental Engineer, M-Global, Inc., Atlanta

krmason@mglobal.com



Ryan McVay/Photodisc/Getty Images

1. To prevent future health problems of your tenants
2. To satisfy regulatory requirements of the government
3. To give yourself peace of mind for the future

Again, my comments will provide just an overview, serving as a basis for the question session that follows in a few minutes.

(NEXT SLIDE)

By avoiding asbestos contamination, you can



Michael Matisse/
Digital Vision/
Getty Images

1. Prevent health problems
2. Satisfy regulatory requirements
3. Give yourself peace of mind

Three main reasons why building owners should be concerned about asbestos:

1. To prevent future health problems of your tenants.
2. To satisfy regulatory requirements of the government.
3. To give yourself peace of mind for the future.

Question: What is the most important reason you need to be concerned about asbestos?

Answer: The long-term health of the tenants, workers, and other people in buildings that contain asbestos. Research has clearly linked asbestos with a variety of diseases, including lung cancer, colon cancer, and asbestosis (a debilitating lung disease). Although this connection was first documented in the 1920s, it has been taken seriously only in the last few decades. Unfortunately, by that time asbestos had already been commonly used in many building materials that are part of many structures today.

(NEXT SLIDE)

What are some of the most common building products containing asbestos?

Asbestos was used in materials as varied as floor tiles, pipe wrap, roof felt, and insulation around heating systems.

(NEXT SLIDE)

Prevent future health problems of your tenants.



Craig Brewer/Photodisc/Getty Images

Most important reason to be concerned?

Long-term health of your tenants.

Asbestos linked to:

Lung cancer

Colon cancer

Asbestosis (debilitating lung disease)

Connection first documented in 1920s but taken seriously only in last few decades.

By this time, asbestos common in buildings.

Asbestos is found in

- Paper products
- Plastic products
- Insulating products



Chris Knapton/Photo Researchers, Inc.

Where will you find asbestos in buildings? [wait for response—discuss response]

[reveal list]

Plastic products: floor tile, coatings, sealants

Paper products: roof felt, gaskets, pipe wrap

Insulating products: sprayed coating, preformed pipe wrap, insulation board, boiler insulation

An abundant and naturally occurring mineral, asbestos was fashioned into construction materials through processes such as packing, weaving, and spraying. Its property of heat resistance, as well as its availability, was the main reason for such widespread use.

While still embedded in material, asbestos causes no real problems. However, when it deteriorates or is damaged, fibers may become airborne. In this state, they can enter the lungs and cause the health problems mentioned a minute ago. This risk prompted the Environmental Protection Agency in the mid-1970s to ban the use of certain asbestos products in most new construction. But today the decay and renovation of many asbestos-containing building materials may put many of our citizens at risk for years to come.

(NEXT SLIDE)

After your concern about occupants' health, what's the next best reason to learn more about asbestos? It's the *law*.

Both the Occupational Safety and Health Administration (OSHA) and the Georgia Department of Natural Resources (DNR) require that you follow certain procedures when structures you own could endanger tenants and asbestos removal workers with contamination. For example, when a structure undergoes renovation that will involve any asbestos-containing material (ACM), the ACM must be removed by following approved engineering procedures. Also, the contaminated refuse must be disposed of in approved landfills. Considering the well-documented potential for health problems related to airborne asbestos, this legislative focus on asbestos contamination makes good sense.

(NEXT SLIDE)



Gary Ombler/DK Images

Abundant, naturally occurring mineral
Fashioned into construction materials by packing, weaving, and spraying
Heat resistance, and availability, main reasons for widespread use
While embedded, asbestos causes no real problems.
When deteriorates/is damaged, fibers become airborne—enter lungs, cause health problems.
Mid-1970s—EPA banned use of certain asbestos products in most new construction.

Satisfy regulatory requirements of the government.

Occupational Safety and Health Administration (OSHA)

Georgia Department of Natural Resources (DNR)



U.S. Department of Energy

Next reason?

It's the law.

OSHA and Georgia DNR require following certain procedures w/structures you own—don't endanger tenants & asbestos removal workers with contamination.

When structure undergoes renovation involving ACM—follow engineering procedures.

Contaminated refuse—disposed of in approval landfills.

Both OSHA & DNR require removal of asbestos by licensed contractors.

Contractors assume liability only for what they have been told to remove.

By the way, both OSHA and DNR regulations require removal of asbestos by licensed contractors. These contractors, however, will assume liability only for what they have been told to remove. They may or may not have credentials and training in health and safety. Therefore, building owners should hire a firm with a professional who will (1) survey the building and present a professional report on the degree of asbestos contamination and (2) monitor the work of the contractor in removing the asbestos. By taking this approach, you as an owner stand a good chance of eliminating all problems with *your* asbestos.

(NEXT SLIDE)

Yes, it is *your* asbestos. As owner of a building, you also legally own the asbestos associated with that building—*forever*. For example, if a tenant claims to have been exposed to asbestos because of your abatement activity and then brings a lawsuit, you must have documentation showing that you contracted to have the work performed in a “state-of-the-art” manner. If, as recommended, you have hired a qualified monitoring firm and a reputable contracting firm, liability will be focused on the contractor and the monitoring firm—not on you. (NEXT SLIDE)

Find a qualified asbestos removal professional.

1. The professional should survey the building and present a professional report on the degree of asbestos contamination.
2. The professional should monitor the work of the contractor.

By taking this approach, you stand a good chance of eliminating all problems with your asbestos.

It's *your* asbestos!

Yes, it is *your* asbestos!

As owner, you legally own the asbestos forever.

A tenant claims to have been exposed to asbestos because of abatement, brings lawsuit?

Have documentation showing you contracted to have work performed in “state-of-the-art” manner.

Liability will be on contractor & monitoring firm, not you

Which brings me to the last reason for concerning yourself with any potential asbestos problem: *peace of mind*. If you examine and then effectively deal with any asbestos contamination that exists in your buildings, you will sleep better at night. (NEXT SLIDE)

Give yourself peace of mind for the future.



James Lemass/Photolibrary

Last reason—Peace of mind
If you effectively deal w/asbestos contamination—
you will sleep better at night

For one thing, you will have done your level best to preserve the health of your tenants. For another, as previously noted, you will have shifted any potential liability from yourself to the professionals you hired to solve the problem—assuming you hired professionals. Your monitoring firm will have continuously documented the contractor's operations and will have provided you with reports to keep in your files, in the event of later questions by lawyers or regulatory agencies. (NEXT SLIDE)

You benefit from safe asbestos removal because

- You have preserved the health of your tenants.
- You are no longer legally liable.
- You have helped your community.
- You have helped the environment.

Assuming you have hired professionals
Your monitoring firm will have continuously documented contractor's operations; provided reports to keep in your files

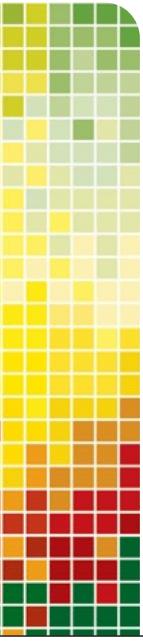
In just these few minutes, I have given only highlights about asbestos. It poses a considerable challenge for all of us who own buildings or work in the abatement business. Yet the current diagnostic and cleanup methods are sophisticated enough to suggest that this problem, over time, *will* be solved. Now I would be glad to answer questions.

Questions?

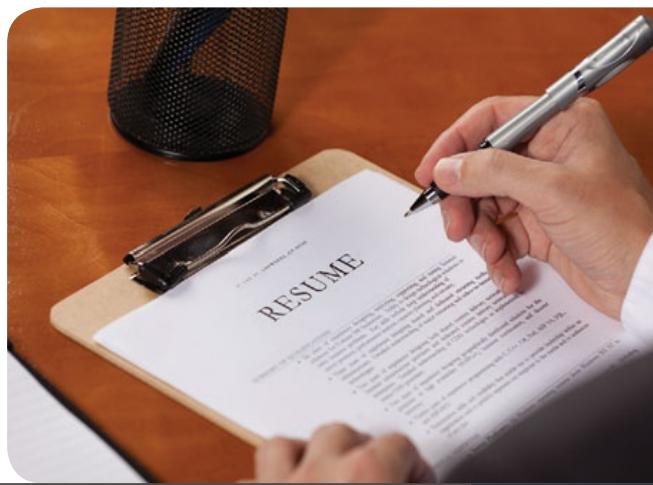


Gary Ombler/DK Images

These are highlights about asbestos.
Poses challenge for all who own buildings or work in abatement business.
Current diagnostic & cleanup methods sophisticated enough to suggest this problem will be solved over time.
Questions???



Chapter | 16 | The Job Search



>>> Chapter Objectives

In this chapter, students will

- Be introduced to resources for learning about career opportunities
- Learn to write effective job application letters
- Learn to format résumés that emphasize their strengths
- Learn to prepare for successful job interviews
- Read and analyze model job application letters and résumés

Photo © Tony Northrup/Shutterstock

In applying for a job, you are selling yourself. It is no time for either self-delusion or false modesty. You must first assess your abilities, then find an appropriate job match, and finally, persuade a potential employer that you are the right one for the job.

This chapter offers suggestions for landing a job in your profession, but these suggestions will also be

useful if you are applying for an internship. You'll find information on these main activities:

- Researching occupations and companies
- Writing job letters and résumés
- Succeeding in job interviews

>> Researching Occupations and Companies

Before writing a job letter and résumé, you may need information about (1) career fields that interest you (if you have not already chosen one), (2) specific companies that hire graduates in your field, and, obviously, (3) specific jobs that are available. Following are some pointers for finding such information—both from traditional sources and from your computer.

>> Do Basic Research in Your College Library or Placement Office

Libraries and placement centers offer one starting point for getting information about professions. Following are a few well-known handbooks and bibliographies found in reference collections. They either give information about occupations or provide names of other books that supply such information:

Career Choices Encyclopedia: Guide to Entry-Level Jobs

Dictionary of Occupational Titles

Directory of Career Training and Development Programs

Encyclopedia of Business Information Sources

Encyclopedia of Careers and Vocational Guidance

High-Technology Careers

Occupational Outlook Handbook

Professional Careers Sourcebook: An Information Guide for Career Planning

You can also check online sources such as careeronline.com.

You should also take advantage of services provided by your college placement office. Many placement offices offer services like reviews of résumés, job announcement lists, workshops, job fairs, and mock interviews.



R Perreault/Shutterstock

>> Build a Network of Professionals in Your Field

Networking is one of the most useful approaches to learning about your field, and the contacts that you make can become excellent resources in your job search. Although networking may lead to an invitation to interview for a job, that is not its main purpose. Instead, you are developing relationships with colleagues and learning about current issues in your professional field. Informal and formal networking opportunities are everywhere. Just be prepared to take advantage of them.

- **Casual networks:** You already have a network of friends and family, but look for other ways to build connections. For example, volunteering with community organizations can put you in touch with members of your local business community. Although these networks are not directly related to your career, you may learn of opportunities through people you meet in these informal settings.
- **Professional networks:** Attend regular meetings of professional organizations, and introduce yourself to others at the meetings. Converse with them in a relaxed manner, listening to what they have to say. As a conversation is winding down, ask for one of their business cards, and offer business cards of your own. Also carry a pen so that you can make notes on the back of the business cards you collect. Remember that these meetings, although professional, are still somewhat casual and are not the place for determined job hunting. You can mention that you are looking for a job, but don't press for job interviews or offer your résumé.
- **Online networks:** Discussion lists and social networking sites for professionals are a good way to make initial contact with others in your field. Look for discussion lists that are sponsored by professional organizations such as the Society for Technical Communication and professional networking sites such as LinkedIn. When you join an online group or networking service, take time to learn about it. Read the organization's Web site, especially the Frequently Asked Questions (FAQs). Consider *lurking*, or simply reading messages on the list for a while, to get a feel for the kinds of topics discussed and the level of formality of the posts. You should also think about your online presence in other social media (such as FaceBook). Even if you think you have clearly separated your professional and personal online lives, be aware that many employers search the Internet for information about potential employees, including posts they have made to discussion lists, pages they maintain on social networking sites, and posts to Web sites, and blogs.

If someone in your network lets you know about a job opportunity, make sure to thank her or him for the referral (an e-mail is fine). If the referral results in a job offer, consider following up with a handwritten note.

>> Interview Someone in Your Field of Interest

To get the most current information, arrange an interview with someone working in an occupation that interests you. This abundant source of information often goes untapped by college students, who mistakenly think such interviews are difficult to arrange. In fact, you can usually locate people to interview through (1) your college placement office,

(2) your college alumni association, (3) your college major adviser, or (4) your own network of family and friends. Another possibility is to call a reputable firm in the field and explain that you wish to interview someone in a certain occupation. Make it clear, however, that you are not looking for a job—only information about a profession.

Once you set up the interview, prepare well by listing your questions in a notebook or on a clipboard that you take with you to the interview. This preparation keeps you on track and shows persons being interviewed that you value their time and information. Following are some questions to ask:

- How did you prepare for the career or position you now have?
- What college course work or other training was most useful?
- What types of activities fill your typical working day?
- What features of your career do you like the most? The least?
- What personality characteristics are most useful to someone in your career?
- How would you describe the long-term outlook of your field?
- How do you expect your career to develop in the next 5 years, 10 years, or 15 years?
- Do you know any books, periodicals, or online sources that might help me find out more about your field?
- Do you know any individuals who, like you, might permit themselves to be interviewed about their choice of a profession?

Although this interview may lead to a discussion about job openings in the interviewer's organization, the main purpose of the conversation is to retrieve information about an occupation.

>> Find Information on Companies in Your Field

With your focus on a profession, you can begin screening companies that employ people in your chosen field. First, determine the types of information you want to find; examples include location, net worth, number of employees, number of workers in your specific field, number of divisions, types of products or services, financial rating, and names and titles of company officers. The following are some sources that might include such information. They can be found in the reference sections of libraries and in college placement centers.

The Career Guide gives overviews of many American companies and includes information such as types of employees hired, training opportunities, and fringe benefits.

Corporate Technology Directory profiles high-tech firms and covers topics such as sales figures, number of employees, locations, and names of executives.

Facts on File Directory of Major Public Corporations gives essential information on 5,700 of the largest U.S. companies listed on major stock exchanges.

Job Choices in Science and Engineering, an annual magazine published by the College Placement Council, includes helpful articles and information about hundreds of companies that hire technical graduates.

Peterson's Business and Management Jobs provides background on employers of business, management, and liberal arts graduates.

Peterson's Engineering, Science, and Computer Jobs provides background information on employers of technical graduates.

Standard & Poor's Register of Corporations, Directors, and Executives lists names and titles of officials at 55,000 public and private U.S. corporations.

>> Do Intensive Research on a Selected List of Potential Employers

The previous steps help get you started finding information on occupations and firms. Ultimately, you will develop a selected list of firms that interest you. Your research may have led you to these companies, or your college placement office may have told you that they had job openings. Now you must conduct an intensive search to learn as much as you can about the firms. Following are a few sources of information, along with the kinds of questions each source helps answer.

- **Annual reports** (often available at company Web sites and in your library or placement office): How does the firm describe its year's activities to stockholders? What are its products or services?
- **Web sites or media kits** (available online or from public relations offices): How does the firm portray itself to the public? What can you infer about the firm's corporate culture?
- **Personnel manuals and other policy guidelines:** What are features of the firm's *corporate culture*? How committed is the firm to training? What are the benefits and retirement programs? Where are its branches? What are its customary career paths?
- **Graduates of your college or university now working for the firm:** What sort of reputation does your school have among decision makers at the firm?
- **Company newsletters and in-house magazines:** How open and informative is the firm's internal communication?
- **Business sections of newspapers and magazines:** What kind of news gets generated about the firm?
- **Professional organizations or associations:** Is the firm active within its profession?
- **Stock reports:** Is the firm making money? How has it done in the past five years?
- **Accrediting agencies or organizations:** How has the firm fared during peer evaluations?
- **Former employees of the company:** Why have people left the firm?
- **Current employees of the company:** What do employees like, or dislike, about the company? Why do they stay?

Other good sources include the Better Business Bureau, Chamber of Commerce, and local newspapers. In other words, you should thoroughly examine an organization from the outside. The information you gather helps you decide where to apply and, if you later receive a job offer, where to begin or continue your career.

>> Use Your Computer to Gather Data

Today, many applicants go directly to the computer to find information about professions, organizations, graduate schools, and job openings. No doubt between the time this book is written and then published, the names and number of online resources will change dramatically. Generally, some of the information available includes the following:

- College and university catalogs
- Web sites for companies, organizations, and schools
- Employment listings from local and national sources
- Online discussion forums involving recent graduates of colleges and universities

There are a number of job search sites available on the Internet. The following list is current, as of this writing:

America's Career InfoNet, www.acinet.org
CareerBuilder, www.careerbuilder.com
College Grad Job Hunter, www.collegegrad.com
Jammin' Jobs, www.jamminjobs.com
Monster, www.monster.com
NationJob Network, www.nationjob.com

At many of these sites, you can

1. Get tips on writing your résumé and searching for jobs
2. Post your résumé at the site, in multiple forms for varied employers
3. Peruse lists of job openings
4. Receive advice from professionals who are in the career you wish to pursue
5. Read in-depth reports on particular companies
6. Share comments with other job seekers

In other words, the Internet helps you locate a variety of information during your job search. Moreover, you can use your computer to search for openings and respond to job ads, as mentioned in the next section.

>>> Job Correspondence

Job letters and résumés must grab the attention of busy readers, who may spend only 60 seconds deciding whether to consider you further. This section gives you the tools to write a successful letter and résumé. *Successful*, of course, means a letter and résumé that get you an interview. After that, your interpersonal skills help you land the job. The letter and résumé only aim to get you to the personal interview.



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Most job letters and résumés are still sent through the mail. However, a growing number of applicants use the Internet to apply for jobs.

For example, online services can place résumés in a bank used by hundreds and perhaps thousands of companies. The résumés are scanned with software that searches for keywords that reflect abilities needed for specific jobs. The program then sends selected résumés to companies. If you use this kind of service, remember one point: When you send credentials into cyberspace, you cannot be sure where they will land. Do not expect the level of confidentiality and security that you have with personal mail.

Whether you use online techniques like e-mail and résumé services or stick with the traditional approach, the same basic writing guidelines apply. Your letter, no longer than one page, should be specific about the job you seek and your main selling points. Then the résumé—one page or two at most—should simply, specifically, and neatly highlight your background.

Job Letters

A job letter is just another type of sales letter—except that you are selling yourself, not a product or service. In preparing to write one, take the point of view of the persons to whom you are writing. What criteria will they use to evaluate your credentials? How much or how little will they want in the letter? What main points are they hunting for as they scan your résumé? This section first examines the needs of these readers and then gives guidelines for you, the writer. Models 16–1 through 16–4, on pages 622–629, include sample job letters and résumés.

The Readers' Needs

You probably will not know personally the readers of your job letter, so you must think hard about what they may want. Your task is complicated by the fact that often there are several readers of your letter and résumé who may have quite different backgrounds.

One possible scenario follows:

Step 1: The letter may go first to the personnel office, where a staff member specializing in employment selects letters and résumés that meet the criteria stated in the position announcement. (Some large employers may even store letters and résumés in a computer, where they are scanned for keywords that relate to specific jobs.)

Step 2: Applications that pass this screening are sent to the department manager who will supervise the employee who is hired. The manager may then select a group to be interviewed. This manager interviews applicants and ultimately hires the employee.

One variation of this process has the personnel department doing an interview as well as screening letters and résumés—before the department manager even hears about any applications. Another variation, as noted earlier, has the employer relying on an online résumé service for the initial screening.

Yet sooner or later, a supervisor or manager reads your letter and résumé. And most readers, whatever their professional background, have the following five characteristics in common:

>> Feature 1: They Read Job Letters in Stacks

Most search-and-screen processes are such that letters get filed until there are many to evaluate. Your reader faces this intimidating pile of paper, from which you want your letter to emerge as the victor.

>> Feature 2: They Are Impatient

Your readers expect major points to jump right out at them. In most cases, they will not dig for information that cannot be found quickly.

>> Feature 3: They Are Tired

Some employment specialists may save job letters for their fresher moments, but many people who do the hiring get to job letters at the end of a busy day or at home in the evening, so they have even less patience than usual for flowery wording or hard-to-read typeface.

>> Feature 4: They Become Picky Grammarians

Readers of all professional and academic backgrounds expect good writing when they read job letters. There is an unspoken assumption that a letter asking for a chance at a career will reflect solid use of the language. Furthermore, it should have no typographical errors. If the letter does contain a typo or grammar error, the reader may wonder about the quality of writing you will produce on the job.

>> Feature 5: They Want Attention Grabbers but Not Slickness

You want your letter and résumé to stand out without the use of gimmicks. Most readers prefer a tasteful and reserved format that does not draw too much attention to itself. For example, white or off-white stationary is still the standard, along with traditional fonts with lots of white space for easy reading. If you want to attract attention in a professional manner, consider attaching a business card to your letter so that the reader has your name and number handy. Students can design and print business cards with software available in many college computer labs.

Of course, likes and dislikes vary. An advertising director, who works all day with graphics, may want a bolder format design than an engineering manager, who works with documents that are less flashy. If you cannot decide, it is best to use a conservative format and style.

ABC Format: Job Letters

- **ABSTRACT:** Apply for a specific job
 - Refer to ad, mutual friend, or other source of information about the job
 - Briefly state how you can meet the main need of your potential employer
- **BODY:** Specify your understanding of the reader's main needs
 - Provide your main qualifications that satisfy these needs (but only highlight points from your résumé—do not simply repeat all résumé information)
 - Address specific qualifications mentioned in a job announcement
 - Discuss skills or experience listed on the résumé that are directly related to the job announcement
 - Avoid mentioning weak points or deficiencies
 - Keep body paragraphs to six or fewer lines
 - Use a bulleted or numbered list if it helps draw attention to three or four main points
 - Maintain the “you” attitude throughout
- **CONCLUSION:** Tie the letter together with one main theme or selling point, as you would a sales letter
 - Refer to your résumé
 - Explain how and when the reader can contact you for an interview

The Letter's Organization

The job letter guidelines that follow relate to the features mentioned about readers. Your one and only goal is to tantalize the reader enough to want to interview you—that is all. With that goal and the reader's needs in mind, your job letter should follow the ABC format on the left.

This pattern gives you a starting point, but it is not the whole story. There is one feature of application letters that cannot be placed easily in a formula—style. Work hard with your draft to develop a unity and flow that, by itself, sets you apart from the crowd. Your attention grabber engages interest, but the clarity of your prose keeps readers attentive and persuades them that you are an applicant who should be interviewed.

Résumés

Résumés usually accompany application letters. Three points make writing résumés a challenge:

1. **Emphasis:** You should select just a few major points of emphasis from your personal and professional life. Avoid the tendency to include college and employment details best left for the interview.
2. **Length:** You usually should use only one page. For individuals with extensive experience, a two-page résumé is acceptable—if it is arranged evenly over both pages.
3. **Arrangement:** You should arrange information so that it is pleasing to the eye and easy to scan. Prospective employers spend less than a minute assessing your application. They may even use computers to scan résumés, taking even less time.

Computers pose a special challenge to you as a résumé writer because they fail to appreciate some of the elegant variations and innovations sometimes used to get the human reader's attention. If you are writing a résumé that may be read by a computer, you may want to (1) use white or very light-colored paper, (2) focus on keywords—especially job skills—that might be picked up by the computer scan, and (3) avoid design features that might present obstacles to the scan, such as italics, fancy typefaces, and graphics like those in Model 16–7, on page 632. Actually, you may find that your placement office uses a computer résumé program that requires a particular format, effectively removing decisions about style from your consideration.

You may also need to format a résumé that can be copied and pasted into forms for online applications. Such résumés should be saved as text files (.txt). It is a good idea to

create this kind of résumé in Notepad or a similar program on your computer. Avoid using tabs, italics, bolding, bullets, or other special characters, as these do not translate to the text file. (For an example of a résumé formatted to be submitted online, see Model 16–6, on page 631.)

This section distills the best qualities of many formats into three basic patterns:

1. The chronological résumé, which emphasizes employment history
2. The functional résumé, which emphasizes the skills you have developed
3. The combined résumé, which merges features of both the chronological and the functional formats. (See the “Experience” section that follows to learn when to use each format. Choose the pattern that best demonstrates your strengths.)

The following paragraphs describe the main parts of the résumé. The “Experience” section explains the differences between chronological, functional, and combined résumés. Refer to the models on pages 622–632 for résumé examples.

Objective

Personnel directors, other people in the employment cycle, and even computers may sort résumés by the statement of your objective. Writing a good objective is hard work, especially for new graduates, who often just want a chance to start working at a firm at any level. Despite this eagerness to please, do not make the mistake of writing an all-encompassing statement such as “Seeking challenging position in innovative firm in civil engineering field.” Your reader will find such a general statement of little use in sorting your application. It gives the impression that you have not set clear professional goals.

Most objectives should be short, preferably one sentence. Also, they should be detailed enough to show that you have prepared for, and are interested in, a specific career, yet open-ended enough to reflect a degree of flexibility. If you have several quite different career options, you might want to design a different résumé for each job description, rather than trying to write a job objective that takes in too much territory.

Note: Some employers prefer that you not include an objective. For example, you may be applying for an entry-level job, for which an objective would be inappropriate. As always, consider your reader’s needs as you make decisions about objectives.

Education

Whether you follow the objective with the “Education” or the “Experience” section depends on the answer to one question: Which topic is most important to the reader? Most recent college graduates lead off with “Education,” particularly if the completion of the degree prompted the job search.

This section seems simple at the outset. Obligatory information includes your school, school location, degree, and date of graduation. It is what you include beyond the bare details, however, that most interests employers. Following are some possibilities:

- **Grade point average:** Include it if you are proud of it; do not if it fails to help your case.



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- **Honors:** List anything that sets you apart from the crowd—such as dean’s list or individual awards in your major department. If you have many, include a separate “Recognitions” heading toward the end of the résumé.
- **Minors:** Highlight any minors or degree options, whether they are inside or outside your major field. Employers place value on this specialized training, even if (and sometimes especially if) it is outside your major field.
- **Key courses:** When there is room, provide a short list of courses you consider most appropriate for the kind of position you are seeking. Because the employer probably will not look at your transcripts until a later stage of the hiring process, use this brief listing as an attention grabber.

Experience

This section poses a problem for many applicants just graduating from college. Students often comment that experience is what they are looking for, not what they have yet. Although you haven’t begun your professional career, you may have experience that can help you stand out as a job candidate. Consider experience such as training and scheduling other employees or balancing cash registers and entering information about bank deposits. You should also include leadership positions in campus organizations, such as organizing fund-raising activities. Experience like this shows employers that you are responsible and professional.

Depending on the amount of work experience you have gained, consider three options for completing this section of the résumé: (1) emphasize specific positions you have held (chronological résumé), (2) emphasize specific skills you have developed in your experience (functional résumé), or (3) emphasize both experience and skills (combined résumé).

Option 1: Chronological Format

This option works best if your job experience has led logically toward the job you now seek. Models 16–1 and 16–2 on pages 622–625 include examples of chronological résumés that meet these guidelines:

- List relevant full-time or part-time experience, including internships, in reverse chronological order.
- Be specific about your job responsibilities while still being brief.
- Be selective if you have had more jobs than can fit on a one-page résumé.
- Include nonprofessional tasks (such as working on the campus custodial staff) if it helps your case (e.g., the employer might want to know that you worked your way through college).

- Remember that if you leave out some jobs, the interview will give you the chance to elaborate on your work experience.
- Select a readable format with appropriate white space.
- Use action verbs and lists to emphasize what you did or what you learned at jobs—for example, “Provided telephone support to users of System/23.” Use parallel form in each list.

Option 2: Functional Format

This approach works best if (1) you wish to emphasize the skills and strengths you have developed in your career rather than specific jobs you have had, or (2) you have had “gaps” in your work history that would be obvious if you used the chronological format. Although the functional format is sometimes used by those whose job experience is not a selling point, this is not always the case. Sometimes your skills built up over time are the best argument for your being considered for a position, even if your job experience is also strong. For example, you may have five years’ experience in responsible positions at four different retailers. You then decide to write a functional résumé focusing on the three skill areas you developed: sales, inventory control, and management. Models 16–3 and 16–4 on pages 626–629 include functional résumés.

If you write a functional résumé that stresses skills, you may still want to follow this section with a brief employment history (see Option 3). Most potential employers want to know where and when you worked, even though this issue is not a high priority. *Note:* If you decide to leave out the history, bring it with you to the interview on a separate sheet.

Option 3: Combined Format

The combined format uses features of both chronological and functional formats. This format works best when you want to emphasize the skills you have developed while still giving limited information on the chronology of your employment.

Models 16–5 and 16–6 on pages 630–631 show two variations of the combined format. Model 16–5 integrates chronological information into the skills section. The positions held may not be prestigious, but together they show that the applicant has considerable experience developing the two sets of skills listed: Editing/Writing and Teaching/Research. In Model 16–6, the experience section looks exactly as it would in a functional résumé, with subheadings giving the names of skills. However, the writer adds a brief skeleton work history near the end of the page; she believes the reader will want some sort of chronological work history, even if it is not the writer’s strength.

Activities, Recognitions, and Interests

Most résumés use one or two of these headings to provide the reader with additional background information. The choice of which, if any, to use depends on what you think best supports your job objective. Following are some possibilities:

- **Activities:** Selected items that show your involvement in your college or your community or both.

- **Recognitions:** Awards and other specific honors that set you apart from other applicants. (Do not include awards that might appear obscure, meaningless, or dated to the reader, such as most high-school honors.)
- **Interests:** Hobbies or other interests that give the reader a brief look at the “other” you.

However you handle these sections, they should be fairly brief and should not detract from the longer and more significant sections described previously.

References

Your résumé opens the door to the job interview and later stages of the hiring process, when references will be called. There are two main approaches to the reference section of the résumé:

1. Writing “Available upon request” at the end of the page
2. Listing names, addresses, and phone numbers at the end of the résumé or on a separate page

The first approach assumes that the reader prefers the intermediate step of contacting you before references are sent or solicited. The second approach assumes that the reader prefers to call or write references directly, without having to contact you first. Use the format most common in your field or, most important, the one most likely to meet the needs of a particular employer. As always, be ready to tailor your letter and résumé each time you put it in the mail.

Your goal is to write an honest résumé that emphasizes your good points and minimizes your deficiencies. To repeat a point made at the outset, you want your résumé and job letter to open the door for later stages of the application process. Look on this writing task as your greatest persuasive challenge. Indeed, it is the ultimate sales letter, for what you are selling is the potential you offer to change an organization and, perhaps, the world as well. Considering such heady possibilities, make sure to spend the time necessary to produce first-rate results.

>> Job Interviews

Your job letter and résumé have only one purpose: to secure a personal interview by the personnel director or other official who screens applicants for a position.

Much has been written about job interviews. Fortunately, most of the good advice about interviewing goes back to just plain common sense about dealing with people. Following are some suggestions to show you how to prepare for a job interview, perform at your best, and send a follow-up letter.

Preparation

>> Do Your Homework on the Organization

You have learned how to locate data about specific companies. Once you have been selected for an interview, review whatever information you have already gathered about the employer, and then go one step further by searching for the most current

information you can find. Your last source may be someone you know at the organization or a friend of a friend.

When you don't have personal contacts, use your research skills again. For large firms, locate recent periodical or newspaper articles by consulting general indexes—such as the *Business Periodicals Index*, *Wall Street Journal Index*, *Readers' Guide to Periodicals*, *New York Times Index*, or the index for any newspaper in a large metropolitan area. For smaller firms, consult recent issues of local newspapers for announcements about the company. Being aware of current company issues demonstrates your initiative and shows your interest in the firm.

As noted earlier, the company's Web site can also be a good source of current information about an organization.

>> Prepare Portfolio Materials, If Appropriate for the Position

Portfolios have become important in a variety of career fields. They are expected of technical communicators, but if you have created projects of any type as part of your major, you may be asked to submit a portfolio. Later in your career, you may find that designing and writing documents, Web sites, and other material have become an important part of your job, and that a portfolio will help display your skills.

Whether you are officially asked to submit a portfolio or not, having one available can help distinguish you from other job candidates, and it offers an opportunity to show off your writing, design, and software skills. Your portfolio should start with a copy of your résumé. It should also include five or six projects that you have created. Each project should have a cover sheet that briefly explains the information listed below. If you have created proprietary or other private materials during an internship or for your job, do not include those materials in your portfolio.

- **Brief description:** What kind of document is the project (e.g., a report, a Help file)? Was the project created as a class assignment, for a client, or for a campus or community organization?
- **Audience:** Who was the project created for? What special audience concerns did you take into account when you created the project?
- **Skills:** What special skills or abilities does the project illustrate? Does it show your ability to write procedural documents? To conduct and present research? To use a software tool? To design graphics? Basically, explain what the project shows about you as a technical communicator.

If you are creating a print portfolio, use consistent design and formatting throughout the portfolio, especially in the project cover sheets. Look for ways to use design elements such as color or simple graphics to create a portfolio that is a unified document. Put your



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portfolio in a nice notebook or portfolio folder, and take it to interviews with you. When the interviewer asks about your projects, you can offer to share your portfolio. You can offer to send a copy of portfolio items later, or you can have a copy of your portfolio burned onto a CD-ROM to offer interviewers.

Providing a digital version of your portfolio is especially important if you have digital documents such as bookmarked PDFs, Help files, instructional videos, or Web pages. You can burn a digital portfolio on a CD-ROM, and you can also make your portfolio available as a Web site, like the ones in Model 14–1 on pages 560–561 and Model 14–2 on pages 562–564. Like print portfolios, digital portfolios should have a unified look and feel on all pages. Using templates or a cascading style sheet for your Web site will help maintain a uniform look throughout a Web site. (For more on creating Web sites, see Chapter 14.) Web sites that present digital portfolios usually have three levels and four types of pages.

- **Level 1: The home page (index page).** This is the first page that viewers will access. It should set the tone for your Web site. It may include a personal statement about your qualifications and your goals. It must include links to your résumé and to the introduction pages for each of the projects in your portfolio. This page should be formatted in HTML.
- **Level 2: Résumé page and project cover pages.** Save your résumé as a PDF. Different computers have different settings for styles. Even the “normal” text style in Microsoft Word may vary from one computer to the next. To ensure that the résumé someone else sees (and prints) is exactly the one you created, save your résumé as a PDF. Your cover pages for your projects should each include a link to the project that they describe. Web pages formatted in HTML usually are best for pages that include links, but it is possible to put links in PDFs if you have the right software. If the project requires special software to access, such as Flash Player or Adobe Reader, include this information and a link to where the software may be downloaded.
- **Level 3: Project pages.** Your projects should be saved in a format that can be opened by any reader. People reading your portfolio may not have access to the same document design, graphic, or video software that you used to create your project, so save the project in the format most easily accessed by most of your readers.

>> Write Out Answers to the Questions You Consider Likely

You should not take written answers with you to the interview, but writing them out in advance will give you a level of confidence unmatched by candidates who only ponder possible questions that might come their way, without writing them out. This technique resembles how some people prepare for oral presentations: First, they write out a speech, then they commit it to notes, and finally, they give an extemporaneous presentation that reflects confidence in themselves and knowledge of the material. This degree of preparation places you ahead of the competition.

There are few, if any, original questions asked in job interviews. Most interviewers simply select from some standard questions to help them find out more about you and your background. Following are some typical questions, along with tips for responses:

1. **Tell me a little about yourself.** Keep your answer brief and relate it to the position and company—do not wander off into unrelated issues, like hobbies, unless asked to do so.
2. **Why did you choose your college or university?** Be sure your main reasons relate to academics—for example, the academic standing of the department, the reputation of the faculty, or the job placement statistics in your field.
3. **What are your strengths?** Focus on two or three qualities that would directly or indirectly lead to success in the position for which you are applying.
4. **What are your weaknesses?** Choose weaknesses that if viewed from another perspective, could be considered strengths—for example, your perfectionism or overattention to detail.
5. **Why do you think you would fit into this company?** Using your research on the firm, cite several points about the company that correspond to your own professional interests—for example, the firm may offer services in three fields that relate to your academic or work experience.
6. **What jobs have you held?** Use this question as a way to show that each previous position, no matter how modest, has helped prepare you for this position—for example, part-time employment in a fast-food restaurant developed teamwork and interpersonal skills.
7. **What are your long-term goals?** Be ready to give a 5- or 10-year plan that, preferably, fits within the corporate goals and structure of the firm to which you are applying—for example, you may want to move from the position of technical field engineer into the role of a project manager, to develop your management skills.
8. **What salary range are you considering?** Avoid discussing salary if you can. Instead, note that you are most interested in criteria such as job satisfaction and professional growth. If pushed, give a salary range that is in line with the research you did on the career field in general and this company in particular.
9. **Do you like working in teams or prefer working alone?** Most employers want to know that you have interest and experience in teamwork—whether in college courses or previous jobs, but they also admire and reward individual accomplishment. In deciding what part of your background to emphasize, consider the corporate culture of the organization interviewing you.
10. **Do you have any questions of me?** Always be ready with questions that show further your interest in the organization and your knowledge of the position—for example, “Given the recent opening of your Tucson warehouse, do you plan other expansions in the Southwest?” or “What types of in-house or off-site training do you

offer new engineers who are moving toward project management?" Other questions can concern issues such as (a) benefits, (b) promotions, (c) type of computer network, and (d) travel requirements.

>> Do Mock Interviews

You can improve your chances considerably by practicing for job interviews. One of the easiest and best techniques is role playing. Ask a friend to serve as the interviewer and give him or her a list of questions from which to choose. Also, inform that person about the company so that he or she can improvise during the session. This way, you are prepared for the real thing.

You can get additional information about your interviewing abilities by videotaping your role-playing session. Reviewing the videotape helps you highlight (1) questions that pose special problems for you and for which you need further preparation and (2) mannerisms that need correction. This preparation technique is especially useful if you are one of the growing number of applicants who take part in a video interview with a recruiter.

>> Be Physically Prepared for the Interview

Like oral presentations, job interviews work best when you are physically at your best; therefore, all the old standbys apply:

- Get a good night's rest before the interview.
- Avoid caffeine or other stimulants.
- Eat about an hour beforehand so that you are not distracted by hunger pangs during the session.
- Take a brisk walk to dispel nervous energy.

Performance

Good planning is your best assurance of a successful interview. Of course, there are always surprises that may catch you. Remember, however, that most interviewers are seriously interested in your application and want you to succeed. Help them by selling yourself and thus giving them a reason to hire you. Following are some guidelines for the interview:

>> Dress Appropriately

Much has been written on the topic of appropriate attire for interviews. Some practical suggestions that are often emphasized include:

- Dress conservatively and thus avoid drawing attention to your clothing—for example, do not use the interview as an opportunity to break in a garment in the newest style.
- Consider the organization—for example, a brokerage firm interview may require a dark suit for a man and a tailored suit for a woman, whereas an interview at a construction firm may require less formal attire.

- Avoid excessive jewelry.
- Pay attention to the fine points—for example, wear shined shoes and carry a tasteful briefcase or notebook.

>> Take an Assertive Approach

Either directly or indirectly, use everything you say to make the case for your hiring. Be positive, direct, and unflappable. Use every question as a springboard to show your capabilities and interest, rather than waiting for point-blank questions about your qualifications. To be sure, the degree to which you assert yourself partly depends on your interpretations of the interviewer's preference and style. Although you do not want to appear pushy, you should take the right opportunities to sell yourself and your abilities.

>> Use the First Few Minutes to Set the Tone

What you have heard about first impressions is true: Interviewers draw conclusions quickly. Having given many interviews, they are looking for an applicant who injects vitality into the interview and makes their job easier. Within a minute or two, establish the themes and the tone that will be reinforced throughout the conversation—that is, your relevant background, your promising future, and your eagerness (not pushiness). In this sense, the interview subscribes to the preacher's maxim mentioned in Chapter 15: "First you tell 'em what you're gonna tell 'em, then you tell 'em, and then you tell 'em what you told 'em."

>> Maintain Eye Contact While You Speak

Although you may want to look away occasionally, much of the time your eyes should remain fixed on the person interviewing you. This way, you show interest in what she or he is saying.

If you are being interviewed by several people, make eye contact with all of them throughout the interview. No one should feel ignored. You are never quite certain exactly who may be the decision maker in your case.

>> Be Specific in the Body of the Interview

In every question, you should see the opportunity to say something specific about you and your background. For example, rather than simply stating that your degree program in computer science prepared you for the open position, cite three specific courses and briefly summarize their relevance to the job.

>> Do Not Hesitate

A job interview is no time to hesitate, unless you are convinced the job is not for you. If the interviewer notes that the position involves travel 40 percent of the time, quickly respond that the prospect of working around the country excites you. The question is this: Do you want the job or not? If you do, then accept the requirements of the position and show excitement about the possibilities. You can always turn down the job if you receive an offer and decide later that some restrictions, like travel, are too demanding.

>> Reinforce Main Points

The interviewer has no text for the session other than your résumé; therefore, you should drive home main points by injecting short summaries into the conversation. After a 5-minute discussion of your recent work experience, take 15 seconds to present a capsule version of relevant employment. Similarly, orchestrate the end of the interview so that you have the chance to summarize your interest in the position and your qualifications. Here is your chance to follow through on the “Tell ‘em what you told ‘em” part of the preacher’s maxim.

Follow-up Letters

Follow every personal contact with a letter or e-mail—whatever is most appropriate—to the person with whom you spoke. Send it within 24 hours of the interview or meeting so that it immediately reinforces the person’s recollection of you. This simple strategy gives you a powerful tool for showing interest in a job.

Follow-up letters abide by the same basic letter pattern discussed in Chapter 6. In particular, follow these guidelines:

- Write no more than one page.
- Use a short first paragraph to express appreciation for the interview.
- Use the middle paragraph(s) to (a) reinforce a few reasons why you would be the right choice for the position or (b) express interest in something specific about the organization.
- Use a short last paragraph to restate your interest in the job and to provide a hopeful closing.

See Chapter 6 for the various formats appropriate for all types of business letters. A sample thank-you letter follows:

Dear Ms. Ferguson:

I enjoyed meeting with you yesterday about the career possibilities at Klub Kola’s district headquarters. The growth that you are experiencing makes Klub an especially exciting company to join.

As I mentioned, my marketing background at Seville College has prepared me for the challenge of working in your new Business Development Department. Several courses last semester focused specifically on sales strategies for consumer goods. In addition, an internship this semester has given me the chance to try out marketing strategies in the context of a local firm.

Again, thank you for the chance to learn about your firm’s current success and promising future. I remain very interested in joining the Klub Kola team.

Sincerely,
Marcia B. Mahoney

When your audience might appreciate a less formal response, consider writing your interviewer a personal note instead of a typed letter. This sort of note is most appropriate when you plan a short message.

>>> Chapter Summary

- College Libraries can provide basic information about career opportunities and professional fields.
- College placement offices can help students find job opportunities and prepare for job interviews.
- Networking is a valuable tool in professional development. Students should cultivate the informal networks that they already have, such as family and friends, and they should build more formal networks through professional organizations and online groups.
- Interviews with professionals and research on companies can provide important information for the job search.
- Effective job application letters take into account the needs of the reader.
- The ABC format provides a clear organization for application letters and résumés.
- Résumés should include information about the applicant's career objectives, education, experience, and appropriate activities, recognitions, and interests. They may include a list of references or offer to make references "available upon request".
- Résumés may use a chronological format, a functional format, or a combined format.
- Prepare for a job interview by learning about the organization, writing out answers to possible interview questions, and practicing beforehand.
- Portfolios allow technical communicators to demonstrate their abilities through sample projects.
- During an interview, present a professional image, be assertive, and offer specific answers to questions.
- Follow up an interview with a thank you letter.

>>> Learning Portfolio

Communication Challenge 20-Something—Have Degree, Won't Travel

Zach Lipkowski has been out of Mountain State College for almost a year and is still looking for his first real job. In the meantime, he has become a part-time ski instructor and worked in construction. With the help of a cheap apartment and a loan from his parents, he is managing to cover his bills, but he certainly hasn't used his biology degree from Mountain State. Now he finally has a break, having learned about an opening at M-Global's Denver office. This case study describes Zach's background. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

A Checkered College Career

At Mountain State, Zach majored in biology, a field that had interested him since childhood and that he thought promised a good career. His boyhood hobby of studying poison arrow frogs kindled his interest in the life sciences. It also led to a field trip to the Costa Rican rain forest in high school with a Denver biological group. He even helped a well-known frog expert on a study, providing the Denver researcher with observations about the exotic frogs Zach kept as pets at home. So biology was a good fit.

In the first couple years of college, Zach considered many career options. Perhaps he could enter veterinary or medical school, or he might do research for industry or the government in environmental science. Another possibility was graduate school in biology toward a teaching career. By the time he was a junior, however, it was clear his grades probably were not high enough for him to get into medical or vet school or a Ph.D. program in biology. He graduated with a 2.5 overall and a 2.9 in his major—respectable, but not stellar. Some low grades in subjects like math, history, and English had hurt his average.

Despite some mediocre grades, he had the chance to work on an interesting senior project in which he studied microbe digesters, organisms used to clean up pollution sites by converting toxins into nontoxic substances through the chemical digestive process. Although only one member of a six-person team, he helped place microbes and then gather data at the site—a paper mill with toxic water. A team member who was a graduate student actually wrote most of the report, but Zach helped draft the summary of fieldwork. His modest part in the project had further inspired his hands-on interest in biology.

Zach Meets the Job Market—Twice

Although Zach did not seem destined to inhabit the ivy-covered walls of graduate school, he thought he would have a good shot at entry-level jobs in environmental science, and he was right. He applied for many environmental science openings and got two good offers, both in the Midwest.

After much thought he turned down both offers, wanting to stay in Colorado because his mother was ill and, frankly, because he had always wanted to work in Colorado for his career. He was confident that an opportunity would open up as the Denver job market improved. When his mother recovered from her illness, Zach started working in August for a small construction firm as a day laborer, stopping for several months to work at a ski resort. He also took off a month for the trip he had always dreamed about—a fishing and canoeing venture to British Columbia.

By May, a year after graduation, he was regretting not having taken one of the job offers a year earlier. Most of his college friends were working in their fields, even if only at modest jobs, yet he was still doing the same kind of work he had done during summers in college. So Zach decided to reapply for entry-level jobs in environmental consulting firms. These jobs would involve the following main tasks: (1) visiting sites that needed environmental remediation, (2) overseeing lab tests, (3) forming conclusions and recommendations based on these tests, (4) writing reports that summarize activities, and (5) writing proposals and giving presentations to seek new work.

An Offer Brings Self-Assessment

This week, Zach's college placement center called him about an opening for an environmental scientist at M-Global's Denver office. He planned to send a job letter and résumé and hoped for a chance to interview.

Taking the advice of a placement specialist at his alma mater, Zach evaluated his skills, abilities, and experience before writing his new letter and résumé. He jotted down these basic points about his background, some of which were detailed previously:

Positive

- Has good work ethic
- Has long-time interest in applied biology
- Took four-course sequence in environmental science—two courses short of a minor in the field

- Enjoys outdoors and travel
- Worked on microbe project in college, helping to write report

Neutral or Negative

- Did not take professional position after college
- Had mediocre college grade point average
- Focused more on straight biology than on applied environmental science
- Got a C in a required technical writing course
- Had no outstanding extracurricular activities—study, part-time work in the dining hall, and “winding down” seemed to take up most of his time

Questions and Comments for Discussion

Put yourself in Zach’s shoes. As he prepares for the job application process, what advice would you give him on the following issues? Refer to the guidelines in the chapter in formulating your answers.

1. This chapter cites specific goals for cover letters. What should Zach emphasize in his letter to M-Global?
2. Zach plans to submit a one-page résumé with his letter. What format should he select? Why?

3. Reread Zach’s list of positive and neutral or negative features. Do you agree with his self-assessment? What features of his background will be of most concern to M-Global? Why? What can Zach do to reduce the impact of negative items in his background during the entire application process?
4. Specifically, how should Zach deal with (a) his mediocre grade point average and (b) the year he has spent doing work unrelated to his intended profession?
5. If his letter and résumé interest M-Global, Zach will interview with Ken Pierson, an M-Global project manager who knows very little about biology or microbes. His field is geology. Yet he manages projects that use the talents of a wide range of scientists, engineers, and technicians. What advice would you give Zach to make the best possible impression during the interview?

Write About It

Assume the role of Zach. Write a one-page letter of application addressed to Carl Jensen, Director of Human Resources for the Denver branch of M-Global. Find ways to present negatives (such as Zach’s year of experiences since graduation) as strengths.

Collaboration at Work Planning for Success

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

Some students attend college for its own sake because they love learning; others may like to learn but mainly view college as a stepping-stone to a career. Because most students are in the second group, they give a good deal of thought to what they will do with their working lives. If they don’t, they should. Achieving success in a career starts with establishing a careful plan for getting from here to there. It is a process that involves considerably more than gaining a degree.

Team Assignment

For this exercise, you and your team members must brainstorm about a strategy for getting a particular job or entering a particular career desired by one of your team’s members. (You can do the exercise for several careers, if you have time.) Following are the three steps:

1. Share information about the ideal jobs of all team members.
2. Choose one position or career that best fits the assignment (i.e., one that lends itself to being achieved in an incremental process that is doable).
3. Generate a list of specific steps for getting the position or entering the career (include deadlines and criteria for success at each stage).

If you have time to conduct some research and have access to the Internet, go to one of the Web sites listed on page 603 in this chapter for assistance in your research.

Assignments

Assignments can be completed either as individual exercises or as team projects, depending on the directions of your instructor. You instructor will ask you to prepare a response that can be delivered as an oral presentation for discussion in class. Analyze the context of each Assignment by considering what you learned in Chapter 1 about the context of technical writing, and answer the following questions:

- What is the purpose of the document to be written?
- What result do you hope to achieve by writing it?
- Who are your readers and what do they want from your document?
- What method of organization is most useful?

1. Analysis: Job Announcement

Find a job advertisement in the newspaper, on the Internet, or at your college placement office. The ad should match either qualifications you have now or those you plan to have after you complete the academic program on which you are now working. Read the ad carefully and make a list of the required and recommended qualifications for the job. Write a brief statement of how you meet as many of the qualifications as possible.

2. Analysis: Potential Employer

Search Web sites of organizations where you might apply for a job to find one that lists job openings on its site. Briefly answer the following questions: (1) How do you apply for jobs with the organization? (2) What information does the Web site offer about the organization's mission? If the organization has an opening in a position that you are eligible for or will be when you graduate, note the qualifications and responsibilities listed.

3. Analysis: Job Search Site

Search one of the job-posting sites listed on page 603 for jobs in your field. Write a brief tutorial for searching the site, including information about how to choose keywords for a search in your field and how to use the advanced search features of the Web site.

Follow these general guidelines for the Practice assignments:

- Print or design a letterhead when necessary.
- Use whatever letter, memo, or e-mail format your instructor requires.
- Invent addresses when necessary.

- Invent any extra information you may need for the correspondence, but do not change the information presented here.

4. Practice: Job Letter and Résumé

Find a job advertisement in the newspaper, on the Internet, or at your college placement office. The ad should match either qualifications you have now or those you plan to have after you complete the academic program on which you are now working. Write a job letter and résumé that respond to the ad. Submit the letter, résumé, and written advertisement to your instructor.

If useful for this assignment and if permitted by your instructor, you may fictionalize part of your résumé so that it lists a completed degree program and other experience not yet acquired. This way, the letter and résumé reflect the background you would have if you were applying for the job. Choose the résumé format that best fits your credentials.

As an alternative, write a letter and résumé to apply for an internship in your major field. To find out about internships, contact your department or campus internship director, or ask about internships at your college placement office.

5. Practice: Job Search Portfolio

Create a print or digital portfolio that you can use for internship or job applications. Include a résumé, four to six projects, and cover pages for each project. Use elements of document design throughout the portfolio to create an attractive, cohesive document that demonstrates your abilities as a writer and designer and your skills with software tools. Your instructor may encourage you to include projects such as software programs you have written, equipment schematics you have created, or papers that you have written for classes in your major field.

6. Practice: Job Interview

Pair up with another classmate for this assignment. First, exchange the letters, résumés, and job ads referred to in Assignment 1. Discuss the job ads so that you are familiar with the job being sought by your counterpart, and vice versa. Then perform a role-playing exercise during which you act out the two interviews, one person as applicant and the other as interviewer.

Option:

Include a third member in your team. Have this person serve as a recorder, providing an oral critique of each interview at the end of the exercise. Then collaborate among the

three of you in producing a written critique of the role-playing exercise. Specifically, explain what the exercise taught you about the main challenges of the job interview.

7. Practice: Follow-up Letter

After the interview in Assignment 2, write a follow-up letter to the interviewer.

8. Practice: Follow-up Letter—M-Global Projects

Last month, you submitted a job letter and résumé for a position with the Barlow Group in Dallas, Texas. Now the firm has written to express interest in your application. It wants to know more about some summer employment you mentioned on your résumé—the project you worked on was similar to some of Barlow's projects.

Assume the summer work in question was as student-in-training on one of the projects described in Model 12–6 on pages 472–478. Write a letter that briefly describes the project and your participation in it. Use information from the project, along with invented details about the activities you completed as an assistant. Even if your tasks were not especially glorified—manual labor or office support, for example—strive to describe learning experiences that would be meaningful to your reader. You are writing Daniel C. Yates, Barlow Consulting Group, 600 Industrial Way, Dallas, TX 75221.

9. Ethics Assignment

Searching for employment presents job seekers with some ethical challenges. A few “ethically challenged” individuals paint the portrait in their résumé of someone who only remotely resembles the real thing. Certainly, lying and deception occur, but most writers simply want to present what they have accomplished and learned in the best possible light. As this chapter suggests, the writing of a résumé is no time to be overly modest. With the goal of supportable self-promotion in mind, evaluate the degree to which the following résumé entries are accurate representations of the facts that follow them.

- a. **Résumé Entry:** June–September 2011—Served as apprentice reporter for a Detroit area weekly newspaper.

Reality: Worked for a little over three months as a fact checker for a group of reporters. Was let go when the assistant editor decided to offer the apprentice position to another, more promising individual with more journalistic experience.

- b. **Résumé Entry:** July 2010—Participated in university-sponsored trip to Germany.

Reality: Flew to Germany with two fraternity brothers for a two-day fraternity convention in Munich, after

which the three of you toured Bavaria for a week in a rental car.

- c. **Résumé Entry:** Summer 2010, 2011, 2012—Worked for Berea Pharmacy as a stock clerk, salesperson, and accountant.

Reality: Helped off and on with the family business, Berea Pharmacy, during three summers while in college—placing merchandise on shelves, working the cash register, and tallying sales at the end of the day. Your father had regular help so you were able to spend at least half of each summer camping with friends, playing in a softball league, and retaking a couple of college courses.

10. International Communication Assignment

There are many opportunities to work abroad, whether in internships, through a contracting firm, or through direct hiring. Using a Web site for a professional organization in your major field or a Web site such as <http://www.goabroad.com/intern-abroad>, find an overseas internship or employment opportunity that interests you. Research and write a report on the cultural practices of the country in which the internship or employment is located. Your instructor will indicate whether your report will be oral or written. Information can be acquired from sources such as the following:

- Faculty and students who have visited the country
- Internet sites on other nations and on international communication
- Friends and colleagues familiar with the country you have chosen
- Books and articles on international communication and working overseas

11. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

The purpose of this assignment is to assist members of the college or university community who want help writing job letters and résumés. It is a team assignment. First, use this chapter or any other source gathered by your team members to establish a short set of written guidelines for job correspondence. (Be sure to acknowledge sources on the document you prepare.) Second, meet with your instructor to review the guidelines document, making sure all members of your team have a good grasp of the material. Third, submit the document for consideration for publication in the campus newspaper, human resources newsletter, or similar campus publication.

201 Edge Drive

Norcross PA 17001

March 14, 2012

Mr James Vernon Personnel Director
M-Global Inc
105 Halsey Street
Baltimore MD 21212

Dear Mr. Vernon:

My academic adviser, Professor Sam Singleton, informed me about an electrical engineering opening at M-Global, where he worked until last year. I am writing to apply for the job.

I understand that M-Global is making a major effort to build a full-scale equipment development laboratory. That prospect interests me greatly because of my academic background in electrical engineering. At Northern Tech, I took courses in several subjects that might be useful in the lab's work—for example, microprocessor applications, artificial intelligence, and fiber optics.

Also, related work at Jones Energy & Automation, Inc., has given me experience building and developing new electronics systems. In particular, my work as an assembler taught me the importance of precision and quality control. I'd like the opportunity to apply this knowledge at M-Global.

Personal business will take me to Baltimore April 8–10. Could you meet with me on one of those days to discuss how M-Global might use my skills? Please let me know if an interview would be convenient at that time.

Enclosed is a résumé that highlights my credentials. I hope to be talking with you in June.

Sincerely,

Donald Vizano

Donald Vizano

Enclosure: Résumé

Donald Vizano
201 Edge Drive
Norcross PA 17001
(300) 555-7861
dvizano@nct.edu

OBJECTIVE: A full-time position in electrical engineering, with emphasis on designing new equipment in automation and microprocessing

EDUCATION: 2006–2012 Bachelor of Science in Electrical Engineering (expected June 2012)
Northern College of Technology,
Shipley, PA 3.5 GPA (out of 4.0 scale)

Major Courses:

Fiber Optics	Artificial Machine Intelligence
Automated Manufacturing Systems	Communication Control Systems
Microprocessor Control	Microcomputer Applications
Microcomputer Systems	Digital Control Systems
	Semiconductor Circuits and Devices

Related Courses:

Information Systems	Programming Languages
Business Communication	Engineering Economy
Industrial Psychology	Technical Communication

Other Skills: Fluent in Spanish

ACTIVITIES

AND HONORS: Institute of Electrical and Electronic Engineering (IEEE)
Dean's List, eight quarters.

EMPLOYMENT:

2008–2012	Electronic Assembler (part time) Jones Energy & Automation, Inc. Banner, PA
2007–2008	Lab Monitor (part time) Computer Services Northern College of Technology Shipley, PA

REFERENCES: Available upon request

1523 River Lane
Worthville OH 43804
August 6, 2012

Mr Willard Yancy
Director, Automotive Systems
XYZ Motor Company, Product Development Division
Charlotte NC 28202

Dear Mr. Yancy:

Recently I have been researching the leading national companies in automotive computer systems. Your job ad in the July 6 *National Business Employment Weekly* caught my eye because of XYZ's innovations in computer-controlled safety systems. I would like to apply for the automotive computer engineer job.

Your advertisement notes that experience in computer systems for machinery or robotic systems would be a plus. I have had extensive experience in the military with computer systems, ranging from a digital communications computer to an air-traffic-control training simulator. In addition, my college experience includes courses in computer engineering that have broadened my experience. I am eager to apply what I have learned to your company.

My mechanical knowledge was gained from growing up on my family's dairy farm. After watching and learning from my father, I learned to repair internal combustion engines, diesel engines, and hydraulic systems. Then for five years I managed the entire dairy operation.

With my training and hands-on experience, I believe I can contribute to your company. Please contact me at 614/555-2731 if you wish to arrange an interview.

Sincerely,



James M. Sistrunk

Enclosure: Résumé

James M Sistrunk
jmsistrunk@tmail.com
1523 River Lane
Worthville OH 43804
(614) 555-2731

Professional Objective:

To contribute to the research, design, and development of automotive computer control systems

Education:

B.S., Computer Engineering, 2009–present

Columbus College, Columbus, Ohio

Major concentration in Control Systems with minor in Industrial Engineering. Courses included Microcomputer Systems, Digital Control Systems, and several different programming courses.

Computer Repair Technician Certification Training,
2006–2007

**U.S. Air Force Technical Training Center,
Keesler Air Force Base, Biloxi, MS**

General Computer Systems Option with emphasis on mainframe computers. Student leader in charge of processing and orientation for new students from basic training.

Career Development:

Computer Repair Technician, U.S. Air Force, 2005–2007

Secret Clearance

Responsibilities and duties included:

- Repair of computer systems
- Preventive maintenance inspections
- Diagnostics and troubleshooting of equipment

Accomplishments included:

- “Excellent” score during skills evaluation
- Award of an Air Force Specialty Code “5” skill level

Assistant Manager, Spring Farm, Wootan, Ohio, 2000–2005

Responsible for dairy operations on this 500-acre farm.

Developed management and technical skills; learned to repair sophisticated farm equipment.

Special Skills:

Adobe Creative Suite
Microsoft Word
Object Oriented Languages
C++ Programming

References:

Available upon request

456 Cantor Way #245

Gallop Minnesota 55002

September 3, 2012

Ms Judith R Gonzalez
American Hospital Systems
3023 Center Avenue
Randolf Minnesota 55440

Dear Ms. Gonzalez:

My placement center recently informed me about the Management Trainee opening with Mercy Hospital. As a business major with experience working in hospitals, I wish to apply for the position.

Your job advertisement notes that you seek candidates with a broad academic background in business and an interest in hospital management. At Central State College, I've taken extensive course work in three major areas in business: finance, marketing, and personnel management. This broad-based academic curriculum has provided me a solid foundation for a wide variety of management tasks at Mercy Hospital.

My summer and part-time employment also matches the needs of your position. While attending Central State, I've worked part time and summers as an assistant in the Business Office at Grady Hospital. That experience has acquainted me with the basics of business management within the context of a mid-sized hospital, much like Mercy.

The enclosed résumé highlights the skills that match your Management Trainee opening. I would like the opportunity to talk with you in person and can be reached at 612-555-1111 for an interview.

Sincerely,



Denise Ware Sanborn

Denise Ware Sanborn
sanborndenise@cscm.edu
456 Cantor Way #245
Gallop Minnesota 55002
612-555-1111

Objective

Entry-level management position in the health care industry. Seek position that includes exposure to a wide variety of management and business-related tasks.

Education

Bachelor of Arts Degree, June 2012

Central State College

Gallop, Minnesota

Major: Business Administration

Grade Point Average: 3.26 of possible 4.0, with 3.56 in all major courses

All college expenses financed by part-time and summer work at Grady Hospital in St. Paul, Minnesota.

Skills and Experience

Finance

Helped with research for three fiscal-year budgets

Developed new spreadsheet for monthly budget reports

Wrote accounts payable correspondence

Marketing

Solicited copy from managers for new brochure

Designed and edited new brochure

Participated in team visits to 10 area physicians

Personnel

Designed new performance appraisal form for secretarial staff

Interviewed applicants for Maintenance Department jobs

Coordinated annual training program for nursing staff

Awards

2012 Arden Award for best senior project in the Business Administration Department (paper that examined Total Quality Management)

Dean's list for six semesters

References

Academic and work references available upon request.

2389 Jenson Court
Gulfton MS 39200
(601) 555-1111
February 18, 2012

Mr Nigel Pierce Personnel Director
Structural Systems Inc
105 Paisley Way
Jackson MS 39236

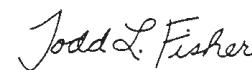
Dear Mr. Pierce:

I am writing in response to your ad for a technical representative in the July 13 (Sunday) edition of the *Jackson Journal*. I believe my experience in construction and my degree in civil engineering technology make me an excellent candidate for this position.

I am very familiar with your products for the wood construction market. The laminated beams and floor joists your company manufactures were specified by many of the architects I have worked with during my co-op experience at Mississippi College. Work I have done in the residential and small commercial construction industry convinced me of the advantages of your products over nominal lumber.

Enclosed is my résumé, which focuses on the skills gained from my co-op work that would transfer to your firm. I look forward to meeting you and discussing my future with your company.

Sincerely,



Todd L. Fisher

Enclosure: Résumé

Todd L Fisher
2389 Jenson Court
Gulfton MS 39200
(601) 555-1111
tlfish@ail.com

PROFESSIONAL**OBJECTIVE**

Use my education in civil engineering and my construction experience to assume a technical advisory position.

EDUCATION

Mississippi College
Hart, Mississippi; Bachelor of Science,
Civil Engineering Technology
June 2011, GPA: 3.00 (out of 4.00)

PROFESSIONAL**EXPERIENCE**

Financed education by working as co-op student for two Jackson construction firms for 18 months.

Design Skills

Assisted with the layout and design of wall panels for Ridge Development condominium project.

Created layout and design for complete roof and floor systems for numerous churches and small commercial projects.

Computer Skills

Introduced computerization to the design offices of a major construction company (HP hardware in HPbasic operating system).

Designed trusses on Sun workstations in the UNIX operating system. Operated as the system administrator for the office.

Leadership Skills

Instructed new computer-assisted design (CAD) operators on the operation of design software for panel layout and design.

Designed and implemented management system for tracking jobs in plant.

REFERENCES

References available upon request.

Karen S Patel

300 Park Drive

Birtingdale NY 20092

(210) 555-2112

KSPatel@tmail.net

OBJECTIVE

Position as in-house technical writer and as trainer in communication skills

EDUCATION**Sumpter College, Marist, Vermont**

M.S. in Technical Communication, GPA: 4.0, December 2011

Warren College, Aurora, New York

M.A. in English, Cum Laude, June 2009

University of Bombay, India

B.A. in English, First Class Honors, June 2005

EMPLOYMENT***Editing/Writing*****Public Relations Office, Sumpter College 2010–present**

Administrative Assistant: Write press releases and conduct interviews. Publish news stories in local newspapers and in *Sumpter Express*. Edit daily campus newsletter.

Hawk Newspapers, Albany, New York, 2007–2008

Warren College Internship: Covered and reported special events; conducted interviews; assisted with proofreading, layout, headline count. Scanned newspapers for current events; conducted research for stories. Published feature stories.

Teaching/Research**Sumpter College, Marist, Vermont, 2010–2011**

Teaching Assistant: Tutored English at the Writing Center, answered “Grammar Hotline” phone questions, edited and critiqued student papers, taught English to non-English speakers, and helped students prepare for Regents exams.

Warren College, Aurora, New York, 2008–2009

Teaching Assistant: Taught business writing, supervised peer editing and in-class discussions, held student conferences, and graded students’ papers.

Research Assistant: Verified material by checking facts, wrote brief reports related to research, researched information and bibliographies.

COMPUTER SKILLS

Microsoft Office, Adobe Creative Suite, Adobe Technical Communication Suite

REFERENCES

Available upon request

SUSAN A MARTIN

SCHOOL ADDRESS

540 Wood Drive

Bama CA 90012

(901) 555-2222

PERMANENT ADDRESS

30 Avon Place

Atlas, CA 90000

(901) 555-6074

E-MAIL

smartin@piercecollege.edu

OBJECTIVE

Analyze and solve problems involving natural and pollution control systems as an Environmental Scientist

EDUCATION

Pierce College, Bama, California

Bachelor of Science, Environmental Science

May 2012, GPA: 3.15 (out of 4.00)

Pleasant Valley College, Barnes, Nevada

Associate in Applied Science, Engineering Science

May 2010, GPA: 3.20 (out of 4.00)

PROFESSIONAL EXPERIENCE

Research Skills:

- * Worked as lab assistant in a research project to analyze the effect of acid rain on frog reproduction in Lake Lane.
- * Designed Pierce College computer program to analyze data on ozone depletion.

Leadership Skills:

- * Taught inventory procedures to new employees of Zane's Office Supply.
- * Helped incoming freshmen and transfer students adjust to Pierce College as dormitory resident assistant.

Organizational Skills:

- * Maintained academic department files as student assistant in Environmental Science Department.
- * Organized field trips for Pierce College Mountaineering Club.

HONORS AND ACTIVITIES

Dean's list (five semesters)

President of Cycling Club

EMPLOYMENT HISTORY

Dormitory Resident Assistant, Peirce College, Bama, CA 2011-2012

Trainer, Zane's Office Supply, Bama, CA, 2010-2011

REFERENCES

References and transcripts available upon request



Leslie Highland
997 Simmons Drive
Boise Idaho 88822
(208) 555-2233
lnh@btt.net



OBJECTIVE: A full-time position in architectural design with emphasis on model making and renderings for future buildings.

EDUCATION: **Boise Architectural College**
Boise, Idaho
Bachelor of Science
Architectural Engineering Technology
June 2010

Harvard University
Cambridge, Massachusetts
Certificate in Advance Architectural Delineation
August 2004

ACTIVITIES AND HONORS: **Boise Architectural College**
Winner of Senior Design Project
Architectural Engineering Technology
Charter Member of American Society of
Architectural Perspectives

EMPLOYMENT:

2004–2010	Architectural Designer and Delineator Dorsey-Hudson, Architects Boise, Idaho
2002–2004	Architectural Designer and Renderer Windsor and Associates, Architects St. Lake, Utah
1999–2002	Architectural Renderer and Drafter Sanders and Associates, Architects Provo, Utah
1997–1999	Architectural Drafter Brown Engineering St. Lake, Utah

REFERENCES: References and portfolio available upon request.



Chapter | 17 | Style in Technical Writing



>>> Chapter Objectives

In this chapter, students will

- Be introduced to the basic elements of style
- Learn to revise sentences for clear, concise style
- Learn the importance of accurate word choice
- Learn to use active and passive voice appropriately
- Be introduced to ways to avoid biased language
- Be introduced to standards for Plain English and Simplified English
- Practice revising sentences for clear, readable, accurate style

This chapter, as well as the Handbook (Appendix A), focuses on the final stage of the writing process—revising. As you may already have discovered, revision sometimes gets short shrift during the rush to finish documents on time. That's a big mistake. Your writing must be clear, concise, and correct if you expect the reader to pay attention to your message. Toward that end, this chapter offers a few basic guidelines on style. The Handbook contains alphabetized entries on grammar, mechanics, and usage.

After defining style and its importance, this chapter gives suggestions for achieving five main stylistic goals:

- Writing clear sentences
- Being concise
- Being accurate in wording
- Using the active voice
- Using unbiased language

>>> Overview of Style

Style is usually thought of as a series of personal decisions you make when you write. As noted in Chapter 3, however, much writing is being done these days by teams of writers. Collaborative writing requires individual writers to combine their efforts to produce a consensus style, usually a compromise of stylistic preferences of the individuals involved. The style decisions for individual documents may be recorded in a *style sheet* (Figure 17–1), a table where writers can record decisions that they have made about style. Many writers find it useful to create a style sheet for their own writing, especially for longer documents. Developing a style sheet can help establish a consistent voice across similar documents. Similarly, many organizations tend to

■ **Figure 17–1** ■

Sample rows from a style sheet

EDITORIAL STYLE SHEET		
Numbers and Dates		Abbreviations/Punctuation
Spell out numbers from one to nine:		Serial comma used:
12 categories		Jobs, promotions, raises, and professional prestige
56 businesses		Depth, logic, clarity, unity, supporting evidence, and grammar business, industry, or other settings
10-year-old		
50 years		
D	decision-making process decision makers	E easy-to-read sections e-mail e-book e-reader
		F face-to-face meeting flowchart/flowcharts Flip Book

develop an in-house style in documents like reports and proposals, a style that establishes a consistent voice and image in all documents produced in the organization. Thus personal style becomes absorbed into a jointly produced product.

This section (1) provides an overview of *style* as it applies to technical writing and (2) defines one particularly important aspect of style—called *tone*—that relates to every guideline in this chapter.

Style: The features of writing that show its individuality, shaping it to fit the needs of particular audiences and situations. Style results from the conscious and subconscious decisions each writer makes in matters like word choice, word order, sentence length, and active and passive voice. These decisions are different from the “right and wrong” matters of grammar and mechanics (see the Handbook in Appendix A). Instead, they are composed of choices writers make in deciding how to transmit ideas. Technical writing style emphasizes clarity, conciseness, and correctness.

Definition of Style

Just as all writers have distinct personalities, they also display distinct features in their writing. A definition of writing style is shown above.

The more that you revise with an eye to elements of style such as tone, the more subconscious your decisions about style will become.

Importance of Tone

Tone is a major component of style and thus deserves special mention here. Through tone, you express an attitude in your writing—for example, neutral objectivity, on the one hand, or unbridled enthusiasm, on the other. The attitude evident in your tone exerts great influence on the reader. Indeed, it can determine whether your document achieves its objectives. Much like the broader term *style*, *tone* refers to the way you say something rather than what you say.

The following adjectives show a few examples of the types of tone or attitude that can be reflected in your writing. Here they are correlated with specific examples of documents:

1. **Casual tone:** E-mail to three colleagues working with you on a project.
2. **Objective tone:** Formal report to a client in which you present data comparing cost information for replacing the company’s computer infrastructure.
3. **Persuasive tone:** Formal proposal to a client in hopes of winning a contract for goods or services.
4. **Enthusiastic tone:** Recommendation letter to a university to accept one of your employees in a master’s program.
5. **Serious tone:** Memorandum to employees about the need to reduce the workforce and close an office.
6. **Authoritative tone:** Memo to an employee in which you reprimand him or her for violations of a policy about documenting absences.
7. **Friendly tone:** Letter to long-term clients inviting them to an open house at your new plant location.

Although there are almost as many variations in tone as there are occasions to write documents, one guideline always applies: Be as positive as you can possibly be, considering the context. Negative writing has little place in technical communication. In particular, a

condescending or sarcastic tone should be avoided at all costs. It is the kind of writing you will regret. When you stress the positive, you stand the best chance of accomplishing your purpose and gaining the reaction you want from the reader.

Despite the need to make style conform to team or company guidelines, each individual remains the final arbiter of her or his own style in technical writing. Most of us will be our own stylists, even in firms in which in-house editors help improve written documents. This chapter helps writers deal with everyday decisions of sentence arrangement, word choice, and the like. However, although style is a personal statement, you should not presume that anything goes. Certain fundamentals are part of all good technical style in the professional world. Let's take a look at these basics.

>>> Writing Clear Sentences

Each writer has his or her own approach to sentence style, yet everyone has the same tools with which to work: words, phrases, and clauses. This section defines some basic terminology in sentence structure, and then it provides simple stylistic guidelines for writing clear sentences.

Sentence Terms

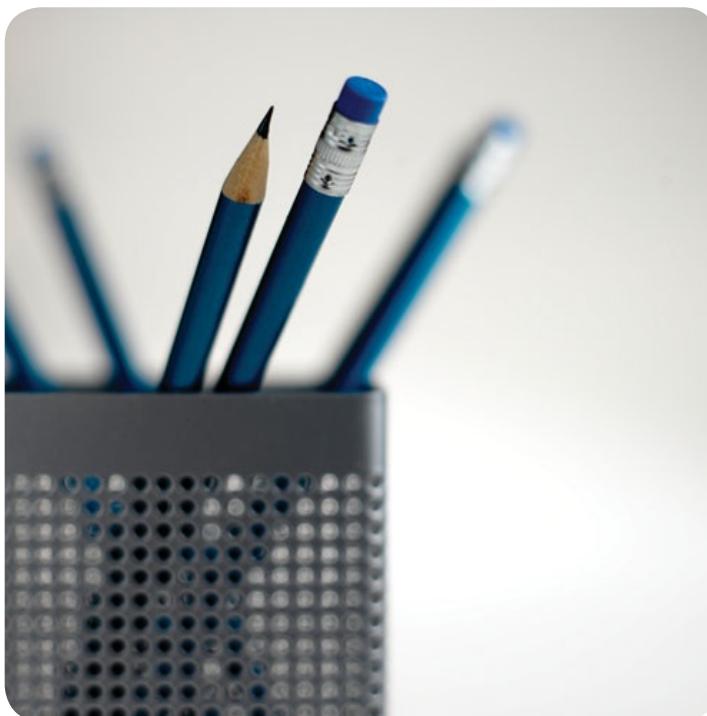
The most important sentence parts are the subject and verb. The *subject* names the person doing the action or the thing being discussed (e.g., *He completed the study/The figure shows that*); the *verb* conveys action or state of being (e.g., *She visited the site/He was the manager*).

Whether they are subjects, verbs, or other parts of sentences, words are grouped into two main units: clauses and phrases. A *clause* has both a subject and a verb. Either it

stands by itself as a *main clause* (e.g., *He talked to the team*), or it relies on another part of the sentence for its meaning and is thus a *dependent clause* (e.g. *After she left the site, she went home*). A *phrase* lacks a subject or verb or both, and thus it must always relate to or modify another part of the sentence (e.g. *She relaxed after finishing her presentation/As project manager, he had to write the report*).

Beyond these basic terms for sentence parts, you also should know the four main types of sentences (main clauses are in boldface; dependent clauses are in italics):

- A *simple sentence* contains one main clause: **He completed his work.**
- A *compound sentence* contains two or more main clauses connected by conjunctions: **He completed his work, but she stayed at the office to begin another job.**



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- A *complex sentence* includes one main clause and at least one dependent clause: *After he finished the project, he headed for home.*
- A *compound-complex sentence* contains at least two main clauses and at least one dependent clause: *After they studied the maps, they left the fault line, but they were unable to travel much farther that night.*

Guidelines for Sentence Style

Knowing the basic terms of sentence structure makes it easier to apply stylistic guidelines. Following are a few fundamental guidelines that form the underpinnings for good technical writing. As you review and edit your own writing or that of others, put these principles into practice.

>> Sentence Guideline 1: Place the Main Point Near the Beginning

One way to satisfy this criterion for good style is to avoid excessive use of the passive voice (see “Using the Active Voice” on pages 644–645); another way is to avoid lengthy phrases or clauses at the beginnings of sentences. Remember that the reader usually wants the most important information first. The following revision moves the actors (the corporate staff) to the subject position and focuses attention on their actions.

Original: “After reviewing the growth of the Cleveland office, it was decided by the corporate staff that an additional lab should be constructed at the Cleveland location.”

Revision: “The corporate staff decided to build a new lab in Cleveland after reviewing the growth of the office there.”

>> Sentence Guideline 2: Focus on One Main Clause in Each Sentence

When you string together too many clauses with *and* or *but*, you dilute the meaning of your text. However, an occasional compound or compound-complex sentence is acceptable, just for variety. The following revision puts the key information (the change in the interview date) in the main clause, with additional information in a dependent clause.

Original: “The M-Global hiring committee planned to interview Jim Steinway today, but bad weather delayed his plane departure, and the committee had to reschedule the interview for tomorrow.”

Revision: “The M-Global hiring committee had to change Jim Steinway’s interview from today to tomorrow because bad weather delayed his flight.”

>> Sentence Guideline 3: Vary Sentence Length, but Seek an Average Length of 15–20 Words

Of course, do not inhibit your writing process by counting words while you write. Instead, analyze one of your previous reports to see how you fare. If your sentences are too long, make an effort to shorten them, such as by making two sentences out of one compound sentence connected by *and* or *but*.

You should also vary the length of sentences. Such variety keeps your reader's attention engaged. Make an effort to place important points in short but emphatic sentences. Reserve longer sentences for supporting main points. In the passage below, information about the armadillo and raccoon populations is placed in shorter sentences, emphasizing the problems caused by these two species.

Original: “Our field trip for the project required that we conduct research on Cumberland Island, a national wilderness area off the Georgia Coast, where we observed a number of species that we had not seen on previous field trips. Armadillos were common in the campgrounds, along with raccoons that were so aggressive that they would come out toward the campfire for a handout while we were still eating. We saw the wild horses, which are fairly common on the island and were introduced there by explorers centuries ago, as well as a few bobcats, which were introduced fairly recently in hopes of checking the expanding population of armadillos.”

Revision: “Our field trip required that we complete research on Cumberland Island, a wilderness area off the Georgia Coast, where we observed many species we had not seen on previous field trips. Both armadillos and raccoons were common in the campgrounds. Although the armadillos were docile, the raccoons were quite aggressive. The raccoons approached the campfire for a handout while we were still eating. We also encountered Cumberland’s famous wild horses, introduced centuries ago by explorers, as well as a pair of bobcats. Bobcats were brought to the island recently to check the expanding armadillo population.”

Sentence Guidelines

- Place the main point near the beginning
- Focus on one main clause in each sentence
- Vary sentence length, but seek an average length of 15–20 words

>> Being Concise

Some experts believe that careful attention to conciseness could shorten technical documents by 10 percent to 15 percent. As a result, reports and proposals would take less time to read and cost less to produce. This section on conciseness offers several techniques for reducing verbiage without changing meaning.

>> Conciseness Guideline 1: Put Actions in Verbs

Concise writing depends more on verbs than it does on nouns. You can shorten sentences that contain abstract nouns that hide actions by putting the action in strong verbs instead. By converting abstract nouns to action verbs, you can eliminate wordiness, as the following sentences illustrate:

Wordy: “The *acquisition* of the property was accomplished through long and hard negotiations.”

Concise: “The property was *acquired* through long and hard negotiations.”

Wordy: “*Confirmation* of the contract occurred yesterday.”

Concise: “The contract was *confirmed* yesterday.”

Wordy: “*Exploration* of the region had to be effected before the end of the year.”

Concise: “The region had to be *explored* before the end of the year.”

Wordy: “*Replacement* of the transmission was achieved only three hours before the race.”

Concise: “The transmission was *replaced* only three hours before the race.”

As the examples show, abstract nouns often end with *-tion* or *-ment* and are often followed by the preposition *of*. These words are not always “bad” words; they cause problems only when they replace the action verbs from which they are derived. The following examples show some noun phrases along with the preferred verb substitutes:

assessment of	assess
classification of	classify
computation of	compute
delegation of	delegate
development of	develop
disbursement of	disburse
documentation of	document
elimination of	eliminate
establishment of	establish
negotiation of	negotiate
observation of	observe
requirement of	require
verification of	verify

>> Conciseness Guideline 2: Shorten Wordy Phrases

Many wordy phrases have become common in business and technical writing. Weighty expressions add unnecessary words and rob prose of clarity. Following are some of the culprits, along with their concise substitutes:

afford an opportunity to	permit
along the lines of	like
an additional	another
at a later date	later
at this point in time	now
by means of	by
come to an end	end
due to the fact that	because
during the course of	during

for the purpose of	for
give consideration to	consider
in advance of	before
in the amount of	of
in the event that	if
in the final analysis	finally
in the proximity of	near
prior to	before
subsequent to	after
with regard to	about

>> Conciseness Guideline 3: Replace Long Words with Short Ones

In grade school, most students are taught to experiment with long words. Although this effort helps build vocabularies, it can also lead to a lifelong tendency to use long words when short ones will do. Of course, sometimes you want to use longer words just for variety—for example, using an occasional *approximately* for the preferred *about*. As a rule, however, the following long words (in the left column) should routinely be replaced by the short words (in the right column):

advantageous	helpful
alleviate	lessen, lighten
approximately	about
cognizant	aware
commence	start, begin
demonstrate	show
discontinue	end, stop
endeavor	try
finalize	end, complete
implement	carry out
initiate	start, begin
inquire	ask
modify	change
prioritize	rank, rate
procure	buy
terminate	end, fire
transport	move
undertake	try, attempt
utilize	use

>> Conciseness Guideline 4: Leave Out Clichés

Clichés are worn-out expressions that add words to your writing. Although they once were fresh phrases, they became clichés when they no longer conveyed their original meaning. You can make writing more concise by replacing clichés with a good adjective or two. Following are some clichés to avoid:

- as plain as day
- ballpark figure
- efficient and effective
- few and far between
- last but not least
- leaps and bounds
- needless to say
- reinvent the wheel
- skyrocketing costs
- step in the right direction

>> Conciseness Guideline 5: Make Writing More Direct by Reading It Aloud

Much wordiness results from talking around a topic. Sometimes called *circumlocution*, this stylistic flaw arises from a tendency to write indirectly. You can avoid it by reading passages aloud. Hearing the sound of the words makes problems of wordiness quite apparent. It helps condense all kinds of inflated language, including the wordy expressions mentioned earlier. Remember, however, that direct writing must also retain a tactful and diplomatic tone when it conveys negative or sensitive information.

Indirect: “We would like to suggest that you consider directing your attention toward completing the project before the commencement of the seasonal monsoon rains in the region of the project area.”

Direct: “We suggest you complete the project before the monsoons begin.”

Indirect: “At the close of the last phase of the project, a bill for your services should be expedited to our central office for payment.”

Direct: “After the project ends, please send your bill immediately to our central office.”

Indirect: “It is possible that the well-water samples collected during our investigation of the well on the site of the subdivision could possibly contain some chemicals in concentrations higher than is allowable according to the state laws now in effect.”

Direct: “Our samples from the subdivision’s well might contain chemical concentrations beyond those permitted by the state.”

>> Conciseness Guideline 6: Avoid *There Are*, *It Is*, and Similar Constructions

There are and *it is* should not be substituted for concrete subjects and action verbs, which are preferable in good writing. Such constructions delay the delivery of information about who or what is doing something, and they tend to make your writing lifeless and abstract. Avoid them by creating (1) main subjects that are concrete nouns and (2) main verbs that are action words. Note that the following revised passages give readers a clear idea of who is doing what in the subject and verb positions.

Original: “There are many M-Global projects that could be considered for design awards.”

Revision: “Many M-Global projects could be considered for design awards.”

Original: “It is clear to the hiring committee that writing skills are an important criterion for every technical position.”

Revision: “The hiring committee believes that writing skills are an important criterion for every technical position.”

Original: “There were 15 people who attended the meeting at the client’s office in Charlotte.”

Revision: “Fifteen people attended the meeting at the client’s office in Charlotte.”

>> Conciseness Guideline 7: Cut Out Extra Words

This guideline covers all wordiness errors not mentioned earlier. You must keep a vigilant eye out for any extra words or redundant phrasing. Sometimes the problem comes in the form of needless connecting words, like *to be* or *that*. Other times it appears as redundant points—that is, points that have been made earlier in a sentence, paragraph, or section and do not need repeating.

Delete extra words when their use (1) does not add a necessary transition between ideas or (2) does not provide new information to the reader. (One important exception is the intentional repetition of main points for emphasis, as in repeating important conclusions in different parts of a report.) A variety of ways exist to shorten and focus sentences.

Original: “Preparing the client’s final bill involves the checking of all invoices for the project.”

Revision: “Preparing the client’s final bill involves checking all project invoices.”

Original: “During the course of its fieldwork, the M-Global team will be engaged in the process of reviewing all of the notes that have been accumulated in previous studies.”

Revision: “During its fieldwork, the M-Global team will review all notes accumulated in previous studies.”

Original: “The department must determine its aims and goals so that they can be included in the annual strategic plan produced by M-Global for the year of 2013.”

Revision: “The department must determine its goals so that they can be included in M-Global’s 2013 annual strategic plan.”

Original: “Most M-Global managers generally agree that all of the company’s employees at all of the offices deserve at least some degree of training each year that they work for the firm.”

Revision: “Most M-Global managers agree that all company employees deserve some training each year.”

Conciseness Guidelines

- Put actions in verbs
- Replace long words with short ones
- Leave out clichés
- Make writing more direct by reading it aloud
- Avoid *there are*, *it is*, and similar constructions
- Cut out extra words

>> Being Accurate in Wording

Good technical writing also demands accuracy in phrasing. Technical professionals place their reputations and financial futures on the line with every document that goes out the door. That fact shows the importance of taking your time on editing that deals with the accuracy of phrasing. Accuracy often demands more words, not fewer.

The main rule is:

Never sacrifice clarity for conciseness.

Careful writing helps to limit liabilities that your organization may incur. Your goal is very simple: Make sure words convey the meaning you intend—no more, no less. Some basic guidelines to follow include:

>> Accuracy Guideline 1: Distinguish Facts From Opinions

In practice, this guideline means you must identify opinions and judgments as such by using phrases like *we recommend*, *we believe*, *we suggest*, or *in our opinion*.

Example: “In our opinion, spread footings would be an acceptable foundation for the building you plan at the site.”

If you want to avoid repetitious use of such phrases, group your opinions into listings or report sections. Thus a single lead-in can show the reader that opinions, not facts, are forthcoming.

Example: “On the basis of our site visit and our experience at similar sites, we believe that (1) _____, (2) _____, and (3) _____.”

>> Accuracy Guideline 2: Include Obvious Qualifying Statements When Needed

This guideline does not mean you must be overly defensive in every part of the report; it means that you must be wary of possible misinterpretations.



Example: “Our summary of soil conditions is based only on information obtained during a brief visit to the site. We did not drill any soil borings.”

>> Accuracy Guideline 3: Use Absolute Words Carefully

Avoid words that convey an absolute meaning or that convey a stronger meaning than you intend. One notable example is *minimize*, which means to reduce to the lowest

possible level or amount. If a report claims that a piece of equipment will *minimize* breakdowns on the assembly line, the passage could be interpreted as an absolute commitment. The reader could consider any breakdown at all to be a violation of the report’s implications. If instead the writer had used the verb *limit* or *reduce*, the wording would have been more accurate and less open to misunderstanding.

Accuracy Guidelines

- Distinguish facts from opinions
- Include obvious qualifying statements when needed
- Use absolute words carefully

>>> Using the Active Voice

Striving to use the active voice can greatly improve your technical writing style. This section defines the active and passive voices and gives examples of each. It also lists some practical guidelines for using both voices.

What Do Active and Passive Mean?

Active-voice sentences emphasize the person (or thing) performing the action—that is, somebody (or something) does something (“Matt completed the field study yesterday”). Passive-voice sentences emphasize the recipient of the action itself—that is, something is being done to something by somebody (“The field study was completed [by Matt] yesterday”). Following are some other examples of the same thoughts being expressed in first the active and then the passive voice:

Active: “We *reviewed* aerial photographs in our initial assessment of possible fault activity at the site.”

Passive: “Aerial photographs *were reviewed* [by us] in our initial assessment of possible fault activity at the site.”

Active: “The study *revealed* that three underground storage tanks had leaked unleaded gasoline into the soil.”

Passive: “The fact that three underground storage tanks had been leaking unleaded gasoline into the soil *was revealed* in the study.”

Active: “We *recommend* that you use a minimum concrete thickness of 6 in. for residential subdivision streets.”

Passive: “*It is recommended* that you use a minimum concrete thickness of 6 in. for residential subdivision streets.”

Reading through these examples gives the sense that passive constructions are wordier than active ones. Also, the passive voice tends to leave out or minimize the person or thing doing the action. Although occasionally this impersonal approach is appropriate, the reader can become frustrated by writing that fails to say who or what is doing something.

When Should Active and Passive Voices Be Used?

Both the active voice and the passive voice have a place in your writing. Knowing when to use each is the key. Following are a few guidelines that will help:

■ Use the active voice when you want to:

1. Emphasize who is responsible for an action (“*We recommend* that you consider...”)
2. Stress the name of a company, whether yours or the reader’s (“*PineBluff Contracting* expressed interest in receiving bids to perform work at...”)
3. Rewrite a top-heavy sentence so that the person or thing doing the action is up front (“*Figure 1 shows* the approximate locations of...”)
4. Pare down the verbiage in your writing; the active voice is usually a shorter construction

■ Use the passive voice when you want to:

1. Emphasize the receiver of the action or the action itself rather than the person performing the action, especially if the actor is unknown or is unimportant to the reader (“*Samples will be sent* directly from the site to our laboratory in Sacramento”)
2. Avoid the kind of egocentric tone that results from repetitious use of *I, we*, and the name of your company (“*The project will be directed* by two programmers from our Boston office”)
3. Break the monotony of writing that relies too heavily on active-voice sentences

Although the passive voice has its place, it is far too common in business and technical writing. This stylistic error results from the common misperception that passive writing is more objective. In fact, excessive use of the passive voice only makes writing more tedious to read. In modern business and technical writing, strive to use the active voice.

>>> Using Unbiased Language

Bias in language is based on stereotypes about gender, ethnicity, religion, sexual orientation, physical or mental disability, or age. Often writers may not even be aware that their language suggests bias that may be offensive to some readers. Race, ethnicity, and religion are not usually relevant to workplace documents, unless sensitivity to a specific cultural context needs to be explained to readers. For example, a guide for employees going to another country might need to include information about how religious practices in that country affect social and business interactions. This information should be treated like any other information about the culture.

Because language usually follows changes in culture rather than anticipating such changes, writers should review their documents to make sure that they reflect current usage. It may be useful to ask someone else to read through your documents to look for biased language that you might have missed. These three rules can help you avoid biased language:

- “Put the person first.” For example, instead of referring to a “visually impaired user,” write about “a user who is visually impaired.”
- Be as specific as possible, for example, referring to “customers over age 70” instead of “the elderly.”
- Pay attention to differences in words that label groups. Notice which have positive or negative implications, and learn which are preferred by specific groups themselves. For example, the words *Mexican*, *Hispanic*, and *Latino* are not interchangeable, nor do they always refer to immigrants to the United States.

Techniques for Avoiding Sexist Language

Many writers have problems with subject–verb agreement when they are trying to avoid sexist language. (The *engineer* recorded *their* data.) The strategies that follow help you avoid this problem. Not all these strategies will suit your taste in writing style; use the ones that work for you.

>> Technique 1: Avoid Personal Pronouns Altogether

One easy way to avoid sexist language is to delete or replace unnecessary pronouns:

Example:

Sexist language: “During *his* first day on the job, any new employee in the toxic waste laboratory must report to the company doctor for *his* employment physical.”

Nonsexist language: “During *the* first day on the job, each new employee in the toxic-waste laboratory must report to the company doctor for *a* physical.”

>> Technique 2: Use Plural Instead of Singular Pronouns

In most contexts you can shift from singular to plural pronouns without altering meaning. The plural usage avoids the problem of using masculine pronouns.

Example:

Sexist language: “*Each* geologist should submit *his* time sheet by noon on the Thursday before checks are issued.”

Nonsexist language: “*All* geologists should submit *their* time sheets on the Thursday before checks are issued.”

Interestingly, you may encounter sexist language that uses generic female pronouns inappropriately. For example, “*Each* nurse should make every effort to complete *her* rounds each hour.” As in the preceding case, a shift to plural pronouns is appropriate: “*Nurses* should make every effort to complete *their* rounds each hour.”

>> Technique 3: Alternate Masculine and Feminine Pronouns

Writers who prefer singular pronouns can avoid sexist use by alternating *he* and *him* with *she* and *her*. When using this technique, writers should avoid the unsettling practice of switching pronoun use within too brief a passage, such as a paragraph or page. Instead, writers may switch every few pages, or every section or chapter.

Although this technique is not yet in common use, its appeal is growing. It gives writers the linguistic flexibility to continue to use singular pronouns generically. However, one problem is that the alternating use of masculine and feminine pronouns tends to draw attention to itself. Also, the writer must work to balance the use of masculine and feminine pronouns, in a sense to give equal treatment.

>> Technique 4: Use Forms Like *He* or *She*, *Hers* or *His*, and *Him* or *Her*

This solution requires the writer to include pronouns for both genders.

Example:

Sexist language: “The president made it clear that each M-Global branch manager will be responsible for the balance sheet of *his* respective office.”

Nonsexist language: “The president made it clear that each M-Global branch manager will be responsible for the balance sheet of *his or her* respective office.”

This stylistic correction of sexist language may bother some readers. They believe that the doublet structure of *her or his* is wordy and awkward. Many readers are bothered even more by the slash formations of *he/she*, *his/her*, and *her/him*. Avoid using these.

>> Technique 5: Shift to Second-Person Pronouns

Consider shifting to the use of *you* and *your*, words without any sexual bias. This technique is effective only with documents in which it is appropriate to use the instruction-related command tone associated with the use of *you*.

Example:

Sexist language: “After selecting *her* insurance option in the benefit plan, each new nurse should submit *her* paperwork to the Human Resources Department.”

Nonsexist language: “Submit *your* paperwork to the Human Resources Department after selecting *your* insurance option in the benefit plan.”

>> Technique 6: Be Especially Careful of Titles and Letter Salutations

Today, most women in business and industry are comfortable being addressed as *Ms.* If you know that the recipient prefers *Miss* or *Mrs.*, use that form in your salutation. If a person’s gender isn’t obvious from the name, call the person’s employer and ask how the person prefers to be addressed. (When calling, also check on the correct spelling of the person’s name and the person’s current job title.) Receptionists and secretaries expect to receive such inquiries.

When you do not know who will read your letter, never use *Dear Sir* or *Gentlemen* as a generic greeting. Such a mistake may offend women reading the letter and may even



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cost you some business. *Dear Sir or Madam* is also inappropriate. It shows you do not know your audience, and it includes the archaic forms *sir* and *madam*. Instead, call the organization for the name of a particular person to whom you can direct your letter. If you must write to a group of people, replace the generic greeting with an *Attention* line that includes the name of the group.

Examples:

Sexist language: Dear Miss Finnegan: [to a single woman for whom you can determine no title preference]

Nonsexist language: Dear Ms. Finnegan:

Sexist Language: Dear Sir: or Gentlemen:

Nonsexist Language: Attention: Admissions Committee

No doubt the coming years will bring additional suggestions for solving the problem of sexist language. Whatever the culture finally settles on, it is clear that good technical writing style no longer tolerates the use of such language.

>>> Plain English and Simplified English

When you are writing technical or business documents, you may be asked to use one of two important styles of workplace writing: Plain English or Simplified English. Both of these styles include specific recommendations about sentence structure and word choice, and each is designed for particular audiences and purposes.

Plain English

Plain English is a specific style recommended for U.S. government documents and for documents such as proposals and reports that are submitted to federal agencies. Although people had been discussing clearer government documents for years, the Plain Language movement gained strong support during the mid-1990s. In 1995, a group of people began creating standards for Plain English in government writing. This group became the Plain Language Action and Information Network (PLAIN).

Plain English guidelines include many of the elements of clear technical communication: audience awareness, good document design, effective use of headings, and clear organization. However, Plain English is most clearly defined by its style recommendations, which include the following:

- Use the active voice.
- Put actions in strong verbs.
- Use *you* to speak directly to the reader.
- Use short sentences (no longer than about 20 words).
- Use concrete words.

- Use simple and compound sentences with a subject–verb structure.
- Make sure that modifiers are clear.
- Use parallel structure for parallel ideas.
- Avoid wordiness.

The Plain Language Web site at <http://www.plainlanguage.gov> includes a complete discussion of Plain English with examples and links to other resources.

Simplified English

Simplified English includes many of the same recommendations as Plain English, and it is sometimes confused with Plain English. However, it serves a different purpose and is designed for a different audience. Simplified English, sometimes called *Controlled English* or *Global English*, is designed for the global economy. It is designed for an audience for whom English is a second language, to be easily translatable from English into other languages. A leading organization for the development of Simplified English is the European Association of Aerospace Manufacturers (AECMA), which created the original standard in the 1980s.

Simplified English is designed to be clear and unambiguous, so it recommends specific sentence structures and limited vocabulary. Simplified English includes the following rules:

- Use only approved words.
- Use one word for each meaning (avoid synonyms).
- Use only one meaning for each word (e.g., *close* is used only as a verb).
- Use the active voice.
- Use strong verbs.
- Use articles (*a*, *an*, *the*) or demonstrative adjectives (*this*, *that*, *these*, *those*) for clarity.
- Avoid strings of more than three nouns.
- Use short sentences (fewer than 20 words).

More information about Simplified English standards is available at <http://www.asdste100.org>, and an overview of Simplified English is available at <http://www.userlab.com/SE.html>, which also includes guidelines and a sample list of approved words at <http://www.userlab.com/Downloads/SE.pdf>. Because the standards were developed for the aerospace industry, some word lists are specialized for that industry. An excellent general guide is John R. Kohl's *The Global English Style Guide*.

>>> Chapter Summary

- Style includes the features of writing that writers choose, rather than the features that are required by rules of grammar and mechanics.
- Technical writing style emphasizes clarity, conciseness, and correctness to create usable documents.

- Clauses include a subject and a verb; phrases lack a subject or a verb or both.
- The four main sentence types are simple sentences (one main clause), compound sentences (two or more main clauses), complex sentences (one main clause and one or more dependent clauses), and compound-complex sentences (more than one main clause and one or more dependent clauses).
- Sentences should be focused on one main clause, usually placed at the beginning of the sentence, and should be varied in length.
- Concise writing puts the action in verbs, avoids unnecessary phrases, chooses shorter words over longer ones, and avoids clichés and constructions with extra words and phrases.
- Accurate writing clearly distinguishes facts from opinions, includes qualifying statements when necessary, and uses absolute words carefully.
- Active-voice sentences emphasize the person or thing performing the action. They are preferred when writers want to emphasize who is responsible for the action, want to stress the name of the company, and want to make sentences more concise.
- Passive-voice sentences emphasize the recipient of the action. They are preferred when writers want to emphasize the recipient of the action, avoid repetition of first-person pronouns, or want to add sentence variety to a document.
- Writers should avoid biased language. Avoiding nonsexist language poses a special problem for writers. Techniques for writing nonsexist language include avoiding singular pronouns, using plural pronouns, alternating masculine and feminine pronouns, using combined terms like *her or she*, and using second-person pronouns. Writers should be especially careful of unintended sexism when addressing correspondence.
- Plain English is a specific style recommended for U.S. government documents and proposals. It emphasizes clear writing with characteristics such as active-voice sentences, strong verbs, and concrete words.
- Simplified English, also known as Controlled English and Global English, is designed for international audiences. It includes some of the characteristics of Plain English, such as active voice and strong verbs, but it also emphasizes controlled vocabulary and short, simple sentences.

>>> Learning Portfolio

Communication Challenge An Editorial Adjustment

M-Global, Inc., hired a technical writer/editor at its Cleveland office, the smallest branch in the company. The office finally generates enough reports and proposals to justify the addition, and Evelyn Tobin started the job a month ago. Some of the Cleveland employees who were comfortable with the old system are now having trouble adjusting to having an editor. This case study reviews some background on the hiring of Evelyn and the changes she is making in office writing. It ends with questions and comments for discussion and an assignment for a written response to the Challenge.

Winds of Change

For years, the staff at M-Global's Cleveland office handled all of its own writing and editing. Managers, engineers, scientists, accountants, trainers, and others had to draft and edit their own copy. Because they could depend on no one else to help, they gave great attention to the process and prided themselves on the quality of their writing. With the aid of several good secretaries, who often corrected grammar while they typed, the documents produced seemed adequate.

The growth of the office, however, increased the number and complexity of the reports and proposals that went out the door. The quality of editing began to decline. Those who observed the trend tied it to the following changes:

- Each writer simply had a higher volume of reports and proposals to complete, to keep the office competitive with similar firms.
- A new mobility in the workforce meant that fewer employees received on-the-job training from old-timers at the office. In fact, more than half the positions requiring a college degree had been filled in the past three years.
- This new workforce came from many different academic backgrounds and from other firms, so it was harder than it had been to impose a set "style" at the office.
- The experienced secretaries, who had been expert editors, retired. Many of them were simply not replaced, because word-processing programs reduced the need for secretarial staff.

The branch manager observed these changes. Perhaps the last straw came when one long-time client returned a report with corrections made in red ink, along with this note: "You guys used to turn out good reports. What's happened?" With that embarrassment, the branch manager quickly hired an in-house technical writer/editor.

New Editor Takes Charge

When Evelyn Tobin started work a month ago, she met with all the staff to discuss her duties. At that meeting, there was general agreement that Evelyn would (1) provide writing advice, (2) perform a style edit for some reports, (3) be the lead writer for key proposals, (4) help with training in the office, and (5) do a quick grammar edit on as many reports as she had time to review.

With a B.S. in technical communication and two years of editing experience with a government agency that emphasized Plain English, Evelyn was used to simplifying writing that was confusing, convoluted, or too technical. Although she had not worked with technical firms like M-Global, she assumed all her experience would translate to the new job. As it happened, most of her initial work involved style edits of reports that were to be sent to a mixed readership—some readers had a technical background, but others did not. Following are several changes Evelyn made in the reports, along with the original passages:

1. **Original:** The purpose of the new well is to allow Tank, Inc., to perform monthly water-level monitoring at three locations at the oil field so that the results can be sent to the Water Quality Control Board.

Evelyn's revision: The new well will allow Tank, Inc., to monitor water levels at the oil field. Then the data will be sent to the Water Quality Control Board.

2. **Original:** During the drilling of the boring, some soil sampling was performed by our technicians for the purpose of determining the exact location of the water table at the site.

Evelyn's revision: While drilling the boring, the technicians sampled soils to locate the water table.

3. **Original:** This letter proposal has been prepared by us for use by whatever attorney you select so that he can present a ballpark figure of costs to the college governing board.

Evelyn's revision: We prepared this proposal for whatever attorney you select. Then she can present a cost estimate to the college governing board.

4. **Original:** At this point in time, it is our belief that you should give equal consideration to both alternatives, for both can afford you the opportunity to complete expansion of the office complex prior to summer.

Evelyn's revision: At this point, we believe you should consider both alternatives. Either one will allow you to expand the office by next summer.

5. **Original:** There are a total of two ways we are recommending that you consider changing the plans in order to minimize the chance for earthquake damage.

Evelyn's revision: We recommend two changes to reduce the chance for earthquake damage.

Questions and Comments for Discussion

1. Study the original and revised versions carefully.
 - Explain the rationale you think Evelyn would have for each of the changes she made.
 - Given the audience for the documents, was she right to make the changes?
 - Can you see changes in content that the original writer might find unacceptable?
 - Are there any cases where you need more context surrounding the passage to provide adequate answers to the two previous questions? Explain.
2. Would your answers to any of the previous questions change if the only audiences for the reports had been teams of technical experts?
3. Are there any alternative revisions that you think would be as effective as, or more effective than, the revisions Evelyn made?

4. Suggest what you think would be the best way for Evelyn to convey her revisions to the writers. Would this method change or stay the same as she gains more experience at the office?
5. One employee came to Evelyn for advice on some grammar-checking software. He noted that his software stopped at every passive-voice sentence and suggested an active-voice replacement, and he wondered if he should always make the change. If you were in Evelyn's position, what answer would you give?
6. Discuss the effect that hiring a technical writer/editor might have on an office like M-Global-Cleveland—that is, how might the change affect the corporate culture of a such a company, where the professional staff spends from 25 to 50 percent of its time writing and editing documents?
7. If you were working at the Cleveland office, how would you feel about having your documents reviewed for style? For grammar?

Write About It

Although M-Global does not often bid on federal projects, it does sometimes write proposals for state or county projects. Assume the role of Evelyn and write a memo that argues for the importance of Plain English and that presents a brief description of Plain English style. Use the resources at <http://www.plainlanguage.gov> for information about Plain English.

Collaboration at Work Describing Style

General Instructions

Each Collaboration at Work exercise applies strategies for working in teams to chapter topics. The exercise assumes you (1) have been divided into teams of about three to six students, (2) will use time inside or outside of class to complete the case, and (3) will produce an oral or written response. For guidelines about writing in teams, refer to Chapter 3.

Background for Assignment

As this chapter points out, the term *style* refers to the way you choose to express an idea, as opposed to the content of the idea itself. The definition of *style* early in this chapter makes it clear that writers adopt particular styles for different contexts. The same is true of organizations. What an organization chooses to include in its style guide, as well as the choices it makes about *style*, can vary widely among industries or even individual organizations within the same industry.

Team Assignment

As a team, search the Internet for a number of style guides that have been developed for specific companies, nonprofit organizations, or government agencies. (Use the search phrase “style guide” or “style manual.”) Each member of your team should choose one style guide and answer the following questions:

1. What organization produced the style guide?
2. What key topics are included in the style guide?
3. How is the style guide organized?
4. Does the style guide include any general discussion of what it includes or how decisions on style were made? If so, what is discussed?
5. Do the contents and organization of the style guide suggest anything about what the sponsoring organization values most? If so, what?

As a team, compare your answers. Also choose a number of style issues and see if any of the style guides specifically address those issues (for example, email or e-mail, Web site or website, preference for *active voice* or *passive voice*, use

of numbers). Do the style guides agree? If not, what do you think might have made the difference? Be prepared to share your team's findings with the class.

Assignments

1. Conciseness: Abstract Words

Make the following sentences more concise by replacing abstract nouns with verbs. Other minor changes in wording may be necessary.

- a. Verification of the agreement was indicated by the signing of the contract by members of the M-Global corporate staff.
- b. The inspectors indicated that observation of the site occurred on July 16, 2005.
- c. Negotiation of the final contract was to happen on the day after their arrival.
- d. After three hours of discussion, the branch managers agreed that establishment of a new M-Global mission statement should take place in the next fiscal year.
- e. Assessment of the firm's progress will happen during the annual meeting of the M-Global Board of Directors.
- f. The entire company agreed that classification of employees according to level of education was inappropriate.
- g. Documentation of the results of the lab test appeared in the final report.
- h. Unlike the previous year, this year the disbursement of stock dividends will occur after the annual meeting.
- i. In analyzing the managerial style of the manager, the outside evaluators determined that delegation of authority appeared to be a problem for her.
- j. The financial statement showed that computation of the annual revenues had been done properly.

2. Conciseness: Wordy Phrases and Long Words

Condense the following sentences by replacing long phrases and words with shorter substitutes.

- a. In the final analysis, we decided to place the new pumping station in proximity to the old one.
- b. Prior to commencing the project, they met to prioritize their objectives.

- c. Endeavoring to complete the study on time, Sheila transported the supplies immediately from the field location to the M-Global lab.
- d. During the course of his career, he planned to utilize the experience he had gained in the ambulance business.
- e. His work with the firm terminated due to the fact that he took a job with another, competing firm.
- f. In the event that two clients need a crew in Austin next week, we can give consideration to using the same crew for both projects and lowering travel costs for both clients.
- g. Jim McDuff was not cognizant of the fact that younger employees felt differently than older employees about the expansion of their office building.
- h. To implement the Phoenix asbestos project, we made adjustments in the workload of two engineers so that they could be available to undertake the project in Phoenix.
- i. Subsequent to the announcement he made, he held a news conference for approximately one hour of time.
- j. At this point in time, she had every hope that her annual bonus would afford her family the opportunity to take an additional family vacation.

3. Conciseness: Clichés and There Are/It Is Constructions

Rewrite the following sentences by eliminating clichés and the wordy constructions *there are* and *it is*.

- a. They all agreed that the issue had been discussed repeatedly for the past 10 years; thus they did not want to reinvent the wheel during the current study.
- b. There are many examples of skyrocketing equipment costs affecting the final budget for a project.
- c. It is a fact that most employees at M-Global believe the company has taken a step in the right direction by adding international offices.
- d. Needless to say, it is clear that Karen is looking forward to the three-week vacation.

- e. She explained to her staff that it was as plain as day that they would have to decrease their labor costs.
- f. The prospective client asked for a ballpark figure of the project costs.
- g. Last but not least, there was the issue of quality control that he wanted to emphasize in his speech.
- h. In these modern times today, there are new approaches that college graduates should take to the job search.
- i. Susan ended the meeting by concluding that there were a number of mutually agreeable solutions that could be explored so that the new departments in conflict could peacefully coexist.
- j. It is a fact that our boss ended the meeting about a loss of profits by noting that we are all in the same boat.

4. Sentence Clarity

Improve the clarity of the following sentences by changing sentence structures or by splitting long sentences into several shorter ones.

- a. Therefore, to collect a sample from above the water table, and thus to follow the directions provided by the client, the initial boring was abandoned and the drill rig was repositioned about two feet away and a new boring was drilled.
- b. After capping the soil sample ring with PVC end caps and then notifying all members of the project team, we placed it in a cooler for storage on-site and transportation later to a chemical analytical laboratory.
- c. Based on the geotechnical data obtained from the sub-surface exploration program, the results of the percolation testing, and the planned plumbing fixtures, the feasibility of installing a leachfield-type on-site sewage-disposal system was evaluated.
- d. Percolation test #1 was performed approximately 40 feet east of the existing pump house and percolation test #2 was performed near the base of the slope approximately 65 feet west of the pump house, and then the results were submitted to the builder.
- e. We appreciate the opportunity to provide our services on this project and look forward to continuing our relationship with XYZ Trading and Transportation Company when we begin the Zanter Project with your Finance Department next spring.
- f. All of the earth materials encountered in our exploration can be used for trench backfill above manhole and pipe

bedding, provided they are free of organic material, debris, and other deleterious materials, and they are screened to remove particles greater than six inches in diameter.

- g. This study was conducted to identify, to the extent possible, based on available information from the city files and the criteria described in our proposal of June 18, 2008, whether activities near the site may have involved the use, storage, disposal, or release of hazardous or potentially hazardous substances to the environment.
- h. The properties consist of approximately 5,000 acres, including those parcels of Heron Ranch owned by American Axis Insurance Company, the unsold Jones Ranch parcels, the village commercial area, the mobile home subdivisions, two condominium complexes, a contractor's storage area, an RV storage area, a sales office, a gatehouse, open space parcels, and the undeveloped areas for future Buildings 1666, 1503, 1990, and 1910.
- i. Having already requested permits for the construction of the bathhouse, medical center, maintenance building, boat dock, swimming pool, community building, and an addition to the community building, we still need to apply for the storeroom permit.
- j. A report dated May 25, 2007, for the ABC Corporation confirmed that the updated business plan had been completed the previous month, but a new plan had to be submitted by May 25, 2008.

5. Active- and Passive-Voice Verbs

Make changes in active- and passive-voice verbs, where appropriate. Refer to the guidelines in the chapter. Be able to supply a rationale for any change you make.

- a. It was recommended by the personnel committee that you consider changing the requirements for promotion.
- b. No formal report about assets was reported by the corporation before it announced the merger.
- c. The graphs showing the differences in depreciation and interest and the net loss on the investment are shown in Appendix A.
- d. It has been noted by the Department of Environmental Services that the laundry business was storing toxic chemicals in an unsafe location.
- e. The samples from the Scottish Highlands will be sent to M-Global's engineering lab in London.
- f. The violation of ethical guidelines was reported by the commissioner to the president of the association.

- g. No complete equipment inventory has been made by M-Global's Boston office.
- h. It was concluded by the employee committee that M-Global's retirement program needed to be revised.
- i. Dirt brought to the site should be evaluated by the engineer on-site before it is placed in the foundation.
- j. Due to the presence of a good deal of sand at the location, excavations are anticipated by us to be relatively unstable.

6. Biased Language

Revise the following sentences to eliminate biased language.

- a. The company decided to create a more diverse workforce by encouraged the disabled to apply for the management training program.
- b. Although each manager was responsible for his own budget, some managers obviously had better accounting skills than others.
- c. The company policy manual states that each secretary should submit her time card twice a month.
- d. All Hispanic employees are encouraged to attend the workshop about legal requirements for immigrants.
- e. Each flight attendant is required to meet special work standards as long as she is employed by an international airline.
- f. Typically, a new engineer at M-Global receives his first promotion after about a year.
- g. Every worker wonders whether he is saving enough for retirement.
- h. Using these methods to improve the user interface will make our product more popular among the elderly.
- i. Upon arriving at the site, an M-Global scientist should make immediate contact with his client representative.
- j. [greeting section of a letter] Gentlemen:

7. Plain English Style

Revise the following sentences by applying all the guidelines mentioned in this chapter. When you change passive verbs to active, it may be necessary to make some assumptions about the agent of the action, because the sentences are taken out of context.

- a. Based on our review of the available records, conversations with the various agencies involved, including the

Fire Department and the Police Department, and a thorough survey of the site where the spill occurred, it was determined that the site contained chemicals that were hazardous to human health.

- b. After seven hours at the negotiation table, the union representatives and management decided that the issues they were discussing could not be resolved that evening, so they met the next day at the hotel complex, at which point they agreed on a new contract that would increase job security and benefits.
- c. It is recommended by us that your mainframe computer system be replaced immediately by a newer, more up-to-date model.
- d. After the study was completed by the research team and the results were published in the company newsletter the following month, the president decided to call a meeting of all senior-level managers to discuss strategies for addressing problems highlighted by the research team.
- e. Our project activities can be generally described in this way. The samples were retrieved from the site and then were transported to the testing lab in the containers made especially for this project, and at the lab they were tested to determine their soil properties; the data were analyzed by all the members of the team before findings and conclusions were arrived at.
- f. The old asbestos tile was removed. The black adhesive was scraped off. The floor was sanded smooth. The wood arrived shortly. The floor was installed.
- g. It was suggested by the team that the company needs to invest in modern equipment.
- h. It is the opinion of this writer that the company's health plan is adequate.
- i. Shortly after the last change in leadership, and during the time that the board of directors was expressing strong views about the direction that the company was taking, it became clear to me and other members of the senior staff that the company was in trouble.
- j. Our weed-spraying procedure will have minimal impact on shrubbery that surrounds the building site.

8. Editing Paper of Classmate

For this assignment, exchange papers with a member of your class. Use either the draft of a current assignment or a paper that was completed earlier in the term. Edit your classmate's work in accordance with this chapter's guidelines on style, and then explain your changes to the writer.

DATE: January 12, 2012
TO: All Employees of Denver Branch
FROM: Leonard Schwartz, Branch Manager
SUBJECT: New Loss-Prevention System

As you may have recently heard, lately we received news from the corporate headquarters of the company that it would be in the best interest of the entire company to pay more attention to matters of preventing accidents and any other safety-related measures that affect the workplace, including both office and field activities related to all types of jobs that we complete. Every single employee in each office at every branch needs to be ever mindful in this regard so that he is most efficient and effective in the daily performance of his everyday tasks that relate to his job responsibilities so that safety is always of paramount concern.

With this goal of safety ever present in our minds, I believe the bottom line of the emphasis on safety could be considered to be the training that each of us receives in his first, initial weeks on the job as well as the training provided on a regular basis throughout each year of our employment with M-Global, so that we are always aware of how to operate in a safe manner. The training vehicle gives the company the mechanism to provide each of you with the means to become aware of the elements of safety that relate to the specific needs and requirements of your own particular job. Therefore, at this point in time I have come to the conclusion in the process of contemplating the relevance of the new corporate emphasis on safety to our particular branch that we need, as a branch, to give much greater scrutiny and analysis to the way we can prevent accidents and emphasize the concern of safety at every stage of our operation for every employee. Toward this end, I have asked the training coordinator, Kendra Jones, to assemble a written training program that will involve every single employee and that can be implemented beginning no later than June of this year. When the plan has been written and approved at the various levels within the office, I will conduct a meeting with every department in order to emphasize the major and minor components of this upcoming safety program.

It is my great pleasure to announce to all of you that effective in the next month (February) I will give a monthly safety award of \$100 to the individual branch employee at any level of the branch who comes up with the best, most useful suggestion related to safety in any part of the branch activities. Today I will take the action of placing a suggestion box on the wall of the lunchroom so that all of you will have easy access to a way to get your suggestions for safety into the pipeline and to be considered. As an attachment to the memo you are now reading from me, I have provided you with a copy of the form that you are to use in making any suggestions that are then to be placed in the suggestion box. On the last business day of each month, the box will be emptied of the completed forms for that month, and before the end of the following week a winner will be selected by me for the previous month's suggestion program, and an announcement will be placed by me to that effect on the bulletin board in the company workroom.

If you have any questions in regard to the corporate safety program as it affects our branch or about the suggestion program that is being implemented here at the Denver office at M-Global, please do not hesitate to make your comments known either in memorandum form or by way of telephonic response to this memorandum.

9. Editing Sample Memo

Using the guidelines in this chapter, edit the above memorandum. The assignment can be completed individually or in teams as a team-editing project.

Two days later the draft appears in your mailbox looking like your first graded paper in English 101 in college. Evelyn has even provided a suggested outline for reorganizing the entire piece. On reading her comments and reviewing the outline, you find that you agree with almost all of her suggestions. You follow her suggestions and proceed to meet with her several times and show her three more drafts, including the final that she edits and proofs.

Feeling that she has done more on your article than she would normally do as part of her job responsibilities, Evelyn diplomatically asks how you plan to acknowledge her work on the final published article. How do you respond to her? Do you list her on the title page as coauthor, do you mention her in a footnote as an editor, or do you adopt some

10. Ethics Assignment

Reread this chapter's "Communication Challenge" concerning Evelyn Tobin, the new editor at M-Global's Cleveland office. Now assume that you, as an electrical engineer at Evelyn's office, have asked for her help in preparing an article for publication in a professional journal. As you hand her the article, you are quick to add you have long-standing problems organizing information and editing well.

other approach? Explain the rationale you give Evelyn after telling her your decision. What are the main ethical considerations in making the decision?

11. International Communication Assignment

One major problem with international communication occurs when product instructions are written (or translated) by individuals who do not have enough familiarity with the language being used. The problem can be solved by localization, or choosing writers or translators who are, in fact, native speakers and writers. For this assignment, locate a set of instructions written in English with stylistic errors that would not have been made by a native speaker/writer. Point out these errors and suggest appropriate revisions.



12. A.C.T. N.O.W. Assignment (Applying Communication To Nurture Our World)

For this assignment, use the same general context as that described in the A.C.T. N.O.W. exercise in Chapter 16 (see page 621). Using just this textbook, prepare a set of style guidelines to submit for consideration to a campus or community publication. The purpose is to assist individuals who may not have the benefit of a technical writing course or may not have access to current publications in the field. You may use any material from this chapter, as long as you list it as a source somewhere in the document you prepare.

Appendix A

Handbook

This handbook includes entries on the basics of writing. It contains three main types of information:

1. **Grammar:** The rules by which we edit sentence elements. Examples include rules for the placement of punctuation, the agreement of subjects and verbs, and the placement of modifiers.
2. **Mechanics:** The rules by which we make final proofreading changes. Examples include the rules for abbreviations and the use of numbers. A list of commonly misspelled words is also included.
3. **Usage:** Information on the correct use of particular words, especially pairs of words that are often confused. Examples include problem words like *affect/effect*, *complement/compliment*, and *who/whom*.

Another editing concern, technical style, is the topic of Chapter 17, including guidelines for sentence structure, conciseness, accuracy of wording, active and passive voice, and unbiased language. Together, Chapter 17 and this handbook will help you turn unedited drafts into final polished documents.

This handbook is alphabetized for easy reference during the editing process.

a/an

A and *an* are different forms of the same article. *A* occurs before words that start with consonants or consonant sounds. EXAMPLES:

- a three-pronged plug
- a once-in-a-lifetime job (*once* begins with the consonant sound of *w*)
- a historic moment (many speakers and some writers mistakenly use *an* before *historic*)

An occurs before words that begin with vowels or vowel sounds. EXAMPLES:

- an eager new employee
- an hour before closing (*hour* begins with the vowel sound of *o*)

a lot/alot

The correct form is the two-word phrase *a lot*. Although acceptable in informal discourse, *a lot* usually should be replaced by more precise diction in technical writing. EXAMPLE: “They retrieved 25 [not *a lot of*] soil samples from the construction site.”

Abbreviations

Technical writing uses many abbreviations. Without this shorthand form, you end up writing much longer reports and proposals without any additional content. Use the following seven basic rules about abbreviations, paying special attention to the first three:

Rule 1: Do Not Use Abbreviations When Confusion May Result

When you want to use a term just once or twice and you are not certain your readers will understand an abbreviation, write out the term rather than abbreviating it. EXAMPLE: “They were required to remove creosote from the site, according to the directive from the Environmental Protection Agency.” Even though *EPA* is the accepted abbreviation for this government agency, you should write out the name in full if you are using the term only once for an audience that may not understand it.

Rule 2: Use Parentheses for Clarity

When you use a term more than twice and are not certain that your readers will understand it, write out the term the first time it is used and place the abbreviation in parentheses, and then use the abbreviation in the rest of the document. In long reports or proposals, however, you may need to repeat the full term in key places. EXAMPLE: “According to the directive from the Environmental Protection Agency (EPA), they were required to remove the creosote from the construction site. Furthermore, the directive indicated that the builders could expect to be visited by EPA inspectors every other week.”

Rule 3: Include a Glossary When There Are Many Abbreviations

When your document contains many abbreviations that may not be understood by all readers, include an easy-to-find glossary at the beginning or end of the document. A glossary simply collects all the terms and abbreviations and places them in one location for easy reference.

Rule 4: Use Abbreviations for Units of Measurement

Most technical documents use abbreviations for units of measurement. Do not include a period unless the abbreviation could be confused with a word. EXAMPLES: mi, ft, oz, gal., in., and lb. Note that units-of-measurement abbreviations have the same form for both singular and plural amounts. EXAMPLES: 1/2 in., 1 in., 5 in.

Rule 5: Avoid Spacing and Periods

Avoid internal spacing and internal periods in most abbreviations that contain all capital letters. EXAMPLES: ASTM, EPA, ASEE. Exceptions include professional titles and degrees such as P.E., B.S., and B.A.

Rule 6: Be Careful With Company Names

Abbreviate a company or other organizational name only when you are sure that officials from the organization consider the abbreviation appropriate. IBM (for the company) and UCLA (for the university) are examples of commonly accepted organizational abbreviations. When in doubt, follow Rule 2—write the name in full the first time it is used, followed by the abbreviation in parentheses.

Rule 7: Common Abbreviations

The following common abbreviations are appropriate for most writing in your technical or business career. They are placed in the three main categories of measurements, locations, and titles.

Measurements. Use these abbreviations only when you place numbers before them.

ac	alternating current	dc	direct current
amp	ampere	dm	decimeter
bbl	barrel	doz or dz	dozen
Btu	British thermal unit	F	Fahrenheit
bu	bushel	f	farad
C	Celsius	fbm	foot board measure
cal	calorie	fig.	figure
cc	cubic centimeter	fl oz	fluid ounce
circ	circumference	FM	frequency modulation
cm	centimeter	fp	foot pound
cos	cosine	ft	foot or feet
cot	cotangent	g	gram
cps	cycles per second	gal.	gallon
cu ft	cubic feet	gpm	gallons per minute
db	decibel	hp	horsepower

hr	hour	ppm	parts per million
Hz	hertz	psf	pounds per square foot
in.	inch	psi	pounds per square inch
j	joule	pt	pint
K	Kelvin	qt	quart
ke	kinetic energy	rev	revolution
kg	kilogram	rpm	revolutions per minute
km	kilometer	sec	second
kw	kilowatt	sq	square
kwh	kilowatt-hour	sq ft	square foot <i>or</i> feet
l	liter	T	ton
lb	pound	tan.	tangent
lin	linear	v	volt
lm	lumen	va	volt-ampere
log.	logarithm	w	watt
m	meter	wk	week
min	minute	wl	wavelength
mm	millimeter	yd	yard
oz	ounce	yr	year

Locations. Use these common abbreviations for addresses (e.g., on envelopes and letters), but write out the words in full in other contexts.

AL	Alabama	ME	Maine
AK	Alaska	MD	Maryland
AS	American Samoa	MA	Massachusetts
AZ	Arizona	MI	Michigan
AR	Arkansas	MN	Minnesota
CA	California	MS	Mississippi
CZ	Canal Zone	MO	Missouri
CO	Colorado	MT	Montana
CT	Connecticut	NE	Nebraska
DE	Delaware	NV	Nevada
DC	District of Columbia	NH	New Hampshire
FL	Florida	NJ	New Jersey
GA	Georgia	NM	New Mexico
GU	Guam	NY	New York
HI	Hawaii	NC	North Carolina
ID	Idaho	ND	North Dakota
IL	Illinois	OH	Ohio
IN	Indiana	OK	Oklahoma
IA	Iowa	OR	Oregon
KS	Kansas	PA	Pennsylvania
KY	Kentucky	PR	Puerto Rico
LA	Louisiana	RI	Rhode Island

SC	South Carolina	Alta.	Alberta
SD	South Dakota	B.C.	British Columbia
TN	Tennessee	Man.	Manitoba
TX	Texas	N.B.	New Brunswick
UT	Utah	Nfld.	Newfoundland
VT	Vermont	N.W.T.	Northwest Territories
VI	Virgin Islands	N.S.	Nova Scotia
VA	Virginia	Ont.	Ontario
WA	Washington	P.E.I.	Prince Edward Island
WV	West Virginia	P.Q.	Quebec
WI	Wisconsin	Sask.	Saskatchewan
WY	Wyoming	Yuk.	Yukon

Titles. Some of the following abbreviations go before the name (e.g., Dr., Ms., Messrs.), whereas others go after the name (e.g., college degrees, Jr., Sr.).

Atty.	Attorney	M.A.	Master of Arts
B.A.	Bachelor of Arts	M.S.	Master of Science
B.S.	Bachelor of Science	M.D.	Doctor of Medicine
D.D.	Doctor of Divinity	Messrs.	Plural of Mr.
Dr.	Doctor (used mainly with medical and dental degrees but also with other doctorates)	Mr.	Mister
Drs.	Plural of Dr.	Mrs.	Used to designate married, widowed, or divorced women
D.V.M.	Doctor of Veterinary Medicine	Ms.	Used increasingly for all women, especially when one is uncertain about a woman's marital status
Hon.	Honorable	Ph.D.	Doctor of Philosophy
Jr	Junior	Sr.	Senior
LL.D.	Doctor of Laws		

accept/except

Accept and *except* have different meanings and often are different parts of speech. *Accept* is a verb that means “to receive.” *Except* is a preposition or verb and means “to make an exception or special case of.” EXAMPLES:

- I *accepted* the service award from my office manager.
- Everyone *except* Jonah attended the marine science lecture.
- The company president *excepted* me from the meeting because I had an important sales call to make the same day.

advice/advise/inform

Advice is a noun that means “suggestions or recommendations.” *Advise* is a verb that means “to suggest or recommend.” Do not use the verb *advise* as a substitute for *inform*, which means simply “to provide information.” EXAMPLES:

- The consultant gave us *advice* on starting a new retirement plan for our employees.
- She *advised* us that a 401k plan would be useful for all our employees.
- She *informed* [not *advised*] her clients that they would receive her final report by March 15.

affect/effect

Affect and *effect* generate untold grief among many writers. The key to using them correctly is remembering two simple sentences: (1) *affect* with an *a* is a verb meaning “to influence”; (2) *effect* with an *e* is a noun meaning “result.” There are

some exceptions, however, such as when *effect* is used as a verb that means “to bring about,” as in, “He effected considerable change when he became a manager.” EXAMPLES:

- His progressive leadership greatly *affected* the company’s future.
- One *effect* of securing the large government contract was the hiring of several more accountants.
- The president’s belief in the future of microcomputers *effected* change in the company’s approach to office management. (For a less wordy alternative, substitute *changed* for *effected change in*.)

agree to/agree with

In correct usage, *agree to* means that you have *consented* to an arrangement, an offer, a proposal, and so on. *Agree with* is less constraining and only suggests that you are *in harmony with* a certain statement, idea, person, and the like. EXAMPLES:

- Representatives from M-Global *agreed to* the contract changes that reflect the new scope of work.
- We *agree with* you that more study may be needed before the nuclear power plant is built.

all right/alright

All right is the correct spelling; *alright* is not. *All right* is an adjective that means “acceptable,” an exclamation that means “outstanding,” or a phrase that means “correct.” EXAMPLES:

- Sharon suggested that the advertising copy was *all right* for now but that she would want changes next month.
- Upon seeing his article in print, Zach exclaimed, “*All right!*”
- The five classmates were *all right* in their response to the trick questions on the quiz.

all together/altogether

All together is used when items or people are being considered in a group or are working in concert. *Altogether* is a synonym for “utterly” or “completely.” EXAMPLES:

- The three firms were *all together* in their support of the agency’s plan.
- There were *altogether* too many pedestrians walking near the dangerous intersection.

allusion/illusion/delusion/elusion

These similar sounding words have distinct meanings. Following is a summary of the differences:

1. **allusion:** A noun meaning “reference,” as in “You are making an allusion to your vacation in a speech.” The related verb is *allude*.
2. **illusion:** A noun meaning “misunderstanding or false perception.” It can be physical (as in seeing a mirage) or mental (as in having the false impression that your hair is not thinning when it is).
3. **delusion:** A noun meaning “a belief based on self-deception.” Unlike *illusion*, the word conveys a much stronger sense that someone is out of touch with reality, as in having “delusions of grandeur.”
4. **elusion:** A noun meaning “the act of escaping or avoiding.” The more common form is the verb, *elude*, meaning “to escape or avoid.”

EXAMPLES:

- His report included an *allusion* to the upcoming visit by the government agency in charge of accreditation.
- She harbored an *illusion* that she was certain to receive the promotion. In fact, her supervisor preferred another department member with more experience.
- He had *delusions* that he soon would become company president, even though he had started just last week in the mailroom.
- The main point of the report *eluded* him because there was no executive summary.

already/all ready

All ready is a phrase that means “everyone is prepared,” whereas *already* is an adverb that means something is finished or completed. EXAMPLES:

- They were *all ready* for the presentation to the client.
- George had *already* arrived at the office before the rest of his proposal team members had even left their homes.

alternately/alternatively

Because many readers are aware of the distinction between these two words, any misuse can cause embarrassment or even misunderstanding. Follow these guidelines for correct use.

Alternately. As a derivative of *alternate*, *alternately* is best reserved for events or actions that occur “in turns.”

EXAMPLE:

- While digging the trench, he used a backhoe and a hand shovel *alternately* throughout the day.

Alternatively. A derivative of *alternative*, *alternatively* should be used in contexts where two or more choices are being considered. EXAMPLE:

- We suggest that you use deep foundations at the site. *Alternatively*, you could consider spread footings that are carefully installed.

amount/number

Amount is used in reference to items that *cannot* be counted, whereas *number* is used to indicate items that *can* be counted.

EXAMPLES:

- In the last year, we have greatly increased the *amount* of computer paper ordered for the Boston office.
- The last year has seen a huge increase in the *number* [not *amount*] of boxes of computer paper ordered for the Boston office.

and/or

This awkward expression probably has its origins in legal writing. It means that there are three separate options to be considered: the item before *and/or*, the item after *and/or*, or both items.

Avoid *and/or* because readers may find it confusing, visually awkward, or both. Instead, replace it with the structure used in the previous sentence; that is, write “A, B, or both,” *not* “A and/or B.” EXAMPLE: The management trainee was permitted to select two seminars from the areas of computer hardware, communication skills, or both [not *computer hardware and/or communication skills*].

anticipate/expect

Anticipate and *expect* are not synonyms. In fact, their meanings are distinctly different. *Anticipate* is used when you mean to suggest or state that steps have been taken beforehand to prepare for a situation. *Expect* only means you consider something likely to occur. EXAMPLES:

- *Anticipating* that the contract will be successfully negotiated, Jones Engineering is hiring three new hydrologists.
- We *expect* [not *anticipate*] that you will encounter semicohesive and cohesive soils in your excavations at the Park Avenue site.

apt/liable/likely

Maintain the distinctions in these three similar words.

1. *Apt* is an adjective that means “appropriate,” “suitable,” or “has an aptitude for.”
2. *Liable* is an adjective that means “legally obligated” or “subject to.”
3. *Likely* is either an adjective that means “probable” or “promising” or an adverb that means “probably.” As an adverb, it should be preceded by a qualifier such as *quite*.

EXAMPLES:

- The successful advertising campaign showed that she could select an *apt* phrase for selling products.
- Jonathan is *apt* at running good meetings. He always hands out an agenda and always ends on time.
- The contract makes clear who is *liable* for any on-site damage.
- Completing the warehouse without an inspection will make the contractor *liable* to lawsuits from the owner.
- A *likely* result of the investigation will be a change in the law. [*likely* as an adjective]
- The investigation will quite *likely* result in a change in the law. [*likely* as an adverb]

assure/ensure/insure

Assure is a verb that means “to promise.” It is used in reference to people, as in, “We want to *assure* you that our crews will strive to complete the project on time.” In fact, *assure* and its derivatives (like *assurance*) should be used with care in technical contexts, because these words can be viewed as a guarantee.

The synonyms *ensure* and *insure* are verbs meaning “to make certain.” Like *assure*, they imply a level of certainty that is not always appropriate in engineering or the sciences. When their use is deemed appropriate, the preferred word is *ensure*; reserve *insure* for sentences in which the context is insurance. EXAMPLES:

- Be *assured* that our representatives will be on-site to answer questions that the subcontractor may have.
- To *ensure* that the project stays within schedule, we are building in 10 extra days for bad weather. (An alternative: “So that the project stays within schedule, we are building in 10 extra days for bad weather.”)

augment/supplement

Augment is a verb that means to increase in size, weight, number, or importance. *Supplement* is either (1) a verb that means “to add to” something to make it complete or to make up for a deficiency or (2) a noun that means “the thing that has been added.” EXAMPLES:

- The power company supervisor decided to *augment* the line crews in five counties.
- He *supplemented* the audit report by adding the three accounting statements.
- The three accounting *supplements* helped support the conclusions of the audit report.

awhile/a while

Though similar in meaning, this pair is used differently. *Awhile* means “for a short time.” Because “for” is already a part of its definition, it cannot be preceded by the preposition “for.” The noun *while*, however, can be preceded by the two words “for a,” giving it essentially the same meaning as *awhile*. EXAMPLES:

- Kirk waited *awhile* before trying to restart the generator.
- Kirk *waited for a while* before trying to restart the generator.

balance/remainder/rest

Balance should be used as a synonym for *remainder* only in the context of financial affairs. *Remainder* and *rest* are synonyms to be used in other, nonfinancial contexts. EXAMPLES:

- The account had a *balance* of \$500, which was enough to avoid a service charge.
- The *remainder* [or *rest*, but not *balance*] of the day will be spent on training in oral presentations for proposals.
- During the *rest* [not *balance*] of the session, we learned about the new office equipment.

because/since

Maintain the distinction between these two words. *Because* establishes a cause–effect relationship, whereas *since* is associated with time. EXAMPLES:

- *Because* he left at 3 p.m., he was able to avoid rush hour.
- *Since* last week, her manufacturing team completed 3,000 units.

between/among

The distinction between these two words has become somewhat blurred. However, many readers still prefer to see *between* used with reference to only two items, reserving *among* for three or more items. EXAMPLES:

- The agreement was just *between* my supervisor and me. No one else in the group knew about it.
- The proposal was circulated *among* all members of the writing team.
- *Among* Sallie, Todd, and Fran, there was little agreement about the long-term benefits of the project.

bi-/semi-/biannual/biennial

The prefixes *bi* and *semi* can cause confusion. Generally, *bi* means “every two years, months, weeks, etc.”, whereas *semi* means “twice a year, month, week, etc.” Yet many readers get confused by the difference, especially when they are confronted with a notable exception such as *biannual* (which means twice a year) and *biennial* (which means every two years).

Your goal, as always, is clarity for the reader. Therefore, it is best to write out meanings in clear prose, rather than relying on prefixes that may not be understood. EXAMPLES:

- We get paid twice a month [preferable to *semimonthly* or *biweekly*].
- The part-time editor submits articles every other month [preferable to *bimonthly*].
- We hold a company social gathering twice a year [preferable to *biannually* or *semi-annually*].
- The auditor inspects our safety files every two years [preferable to *biennially*].

capital/capitol

Capital is a noun whose main meanings are (1) a city or town that is a government center, (2) wealth or resources, or (3) net worth of a business or the investment that has been made in the business by owners. *Capital* can also be an adjective meaning (1) “excellent,” (2) “primary,” or (3) “related to the death penalty.” Finally, *capital* can be a noun or an adjective referring to uppercase letters.

Capitol is a noun or an adjective that refers to a building where a legislature meets. With a capital letter, it refers exclusively to the building in Washington, D.C., where the U.S. Congress meets. EXAMPLES:

- The *capital* of Pickens County is Jasper, Georgia.
- Our family *capital* was reduced by the tornado and hurricane.
- She had invested significant *capital* in the carpet factory.
- Their proposal contained some *capital* ideas that would open new opportunities for our firm.
- In some countries, armed robbery is a *capital* offense.
- The students visited the *capitol* building in Atlanta. Next year they will visit the *Capitol* in Washington, D.C., where they will meet several members of Congress.

Capitalization

As a rule, you should capitalize names of *specific* people, places, and things—sometimes called *proper nouns*. For example, capitalize specific streets, towns, trademarks, geologic eras, planets, groups of stars, days of the week, months of the year, names of organizations, holidays, and colleges. However, remember that excessive capitalization—as in titles of positions in a company—is inappropriate in technical writing and can appear somewhat pompous.

The following rules cover some frequent uses of capitals:

1. Major words in titles of books and articles. Capitalize prepositions and articles only when they appear as the first word or last word in a title. EXAMPLES:
 - *For Whom the Bell Tolls*
 - *In Search of Excellence*
 - *The Power of Positive Thinking*
2. Names of places and geographic locations. EXAMPLES:
 - Washington Monument
 - Cleveland Stadium

- Dallas, Texas
- Cobb County

3. Names of aircraft and ships. EXAMPLES:

- *Air Force One*
- *SS Arizona*
- *Nina, Pinta, and Santa Maria*

4. Names of specific departments and offices within an organization. EXAMPLES:

- Humanities Department
- Personnel Department
- International Division

5. Political, corporate, and other titles that come before names. EXAMPLES:

- Chancellor Hairston
- Councilwoman Jones
- Professor Gainesberg
- Congressman Buffett

Note, however, that general practice does not call for capitalizing most titles when they are used by themselves.

EXAMPLES:

- Jane Cannon, a professor in the Business Department,
- secretary of the Oil Rig Division

center on/revolve around

The key to using these phrases correctly is to think about their literal meaning. For example, you center *on* (not around) a goal, just as you would center on a target with a gun or bow and arrow. Likewise, your hobbies revolve *around* your early interest in water sports, just as the planets revolve around the sun in our solar system. EXAMPLES:

- All her selling points in the proposal *centered on* the need for greater productivity in the factory.
- At the latest annual meeting, some stockholders argued that most of the company's recent projects *revolved around* the CEO's interest in attracting attention from the media.

cite/site/sight

1. *Cite* is a verb meaning “to quote as an example, authority, or proof.” It can also mean “to commend” or “to bring before a court of law” (as in receiving a traffic ticket).
2. *Site* usually is a noun that means “a particular location.” It can also be a verb that means “to place at a location,” as with a new school being sited by the town square, but this usage is not preferred. Instead use a more conventional verb, such as *built*.
3. *Sight* is a noun meaning “the act of seeing” or “something that is seen,” or it can be a verb meaning “to see or observe.”

EXAMPLES:

- We *cited* a famous geologist in our report on the earthquake.
- René was *cited* during the ceremony for her exemplary service to the city of Roswell.
- The officer will *cite* the partygoers for disturbing the peace.
- Although five possible dorm *sites* were considered last year, the college administrators decided to build [preferred over *site*] the dorm at a different location.
- The *sight* of the flock of whooping cranes excited the visitors.
- Yesterday we *sighted* five whooping cranes at the marsh.

Cohesion

A texts is *cohesive* when it gives the reader a sense that it is a unified whole, with a consistent voice and tone and with clear connections between ideas. Cohesion may not seem important for documents like instructions that simply list

information. However, cohesion is especially important in these documents to help readers see connections between ideas. Important cohesive techniques include the following:

- Keyword repetition: Use the same word to refer to the same concept, action, or object. This repetition helps the reader identify important topics in the text.
- Transitions: Transition words help readers see the connection between sentences and sections of a document, or between items in a numbered list of actions. Transitions showing time and location are especially common in technical writing.
- Pointing words: Words like *this*, *that*, *these*, and *those* point readers to related information in earlier sentences (*this process*, *those users*).
- Parallel structure: Parallel sentence structure and parallel word choice can help emphasize related sentences, especially in lists or steps in a process.

complement/compliment

Both words can be either nouns or verbs, and both have adjective forms (*complementary*, *complimentary*).

complement. *Complement* is used as a noun to mean “that which has made something whole or complete,” as a verb to mean “to make whole, to make complete,” or as an adjective. You may find it easier to remember the word by recalling its mathematical definition: Two *complementary* angles must always equal 90 degrees. EXAMPLES:

- As a noun: The *complement* of five technicians brought our crew strength up to 100 percent.
- As a verb: The firm in Canada served to *complement* ours in that together we won a joint contract.
- As an adjective: Seeing that project manager and her secretary work so well together made clear their *complementary* relationship in getting the office work done.

compliment. *Compliment* is used as a noun to mean “an act of praise, flattery, or admiration,” as a verb to mean “to praise, to flatter,” or as an adjective to mean “related to praise or flattery, or without charge.” EXAMPLES:

- As a noun: He appreciated the verbal *compliments*, but he also hoped they would result in a substantial raise.
- As a verb: Howard *complimented* the crew for finishing the job on time and within budget.
- As an adjective: We were fortunate to receive several *complimentary* copies of the new software from the publisher.

compose/comprise

These are both acceptable words, with an inverse relationship to each other. *Compose* means “to make up or be included in,” whereas *comprise* means “to include or consist of.” The easiest way to remember this relationship is to memorize one sentence: “The parts compose the whole, but the whole comprises the parts.” One more point to remember: The common phrase *is comprised of* is a substandard, unacceptable replacement for *comprise* or *is composed of*. Careful writers do not use it. EXAMPLES:

- Seven quite discrete layers *compose* the soils that were uncovered at the site.
- The borings revealed a stratigraphy that *comprises* [not *is comprised of*] seven quite discrete layers.

consul/council/counsel

Consul, *council*, and *counsel* can be distinguished by meaning and, in part, by their use within a sentence.

consul: A noun meaning an official of a country who is sent to represent that country’s interests in a foreign land.

council: A noun meaning an official group or committee.

counsel: A noun meaning an adviser or advice given, or a verb meaning to produce advice.

EXAMPLES:

- (Consul) The Brazilian *consul* met with consular officials from three other countries.
- (Council) The Human Resources *Council* of our company recommended a new retirement plan to the company president.

- (Counsel—as noun) After the tragedy, they received legal *counsel* from their family attorney and spiritual *counsel* from their minister.
- (Counsel—as verb) As a communications specialist, Roberta helps *counsel* employees who are involved in various types of disputes.

continuous/continual

The technical accuracy of some reports may depend on your understanding of the difference between *continuous* and *continual*. *Continuous* and *continuously* should be used in reference to uninterrupted, unceasing activities. However, *continual* and *continually* should be used with activities that are intermittent, or repeated at intervals. If you think your reader may not understand the difference, you should either (1) use synonyms that are clearer (such as *uninterrupted* for *continuous*, and *intermittent* for *continual*) or (2) define each word at the point you first use it in the document. EXAMPLES:

- We *continually* checked the water pressure for three hours before the equipment arrived, while also using the time to set up the next day's tests.
- Because it rained *continuously* from 10:00 a.m. until noon, we were unable to move our equipment onto the utility easement.

criterion/criteria

Coming from the Greek language, *criterion* and *criteria* are the singular and plural forms of a word that means “rationale or reasons for selecting a person, place, thing, or idea.” A common error is to use *criteria* as both a singular and plural form, but such misuse disregards a distinction recognized by many readers. Maintain the distinction in your writing. EXAMPLES:

- Among all the qualifications we established for the new position, the most important *criterion* for success is good communication skills.
- She had to satisfy many *criteria* before being accepted into the honorary society of her profession.

data/datum

Coming as it does from the Latin, the word *data* is the plural form of *datum*. Although many writers now accept *data* as singular or plural, traditionalists in the technical and scientific community still consider *data* exclusively a plural form. Therefore, you should maintain the plural usage. EXAMPLES:

- These *data* show that there is a strong case for building the dam at the other location.
- This particular *datum* shows that we need to reconsider recommendations put forth in the original report.

If you consider the traditional singular form of *datum* to be awkward, use substitutes such as, “This item in the data shows...” or “One of the data shows that...” Singular subjects like *one* or *item* allow you to keep your original meaning without using the word *datum*.

definite/definitive

Although similar in meaning, these words have slightly different contexts. *Definite* refers to that which is precise, explicit, or final. *Definitive* has the more restrictive meaning of “authoritative” or “final.” EXAMPLES:

- It is now *definite* that he will be assigned to the London office for six months.
- He received the *definitive* study on the effect of the oil spill on the marine ecology.

discrete/discreet/discretion

The adjective *discrete* suggests something that is separate or made up of many separate parts. The adjective *discreet* is associated with actions that require caution, modesty, or reserve. The noun *discretion* refers to the quality of being “discreet,” or the freedom a person has to act on her or his own. EXAMPLES:

- The orientation program at M-Global includes a writing seminar, which is a *discrete* training unit offered for one full day.

- The orientation program at M-Global includes five *discrete* units.
- As a counselor in M-Global's Human Resources Office, Sharon was *discreet* in her handling of personal information about employees.
- Every employee in the Human Resources Office was instructed to show *discretion* in handling personal information about employees.
- By starting a flextime program, M-Global, Inc., will give employees a good deal of *discretion* in selecting the time to start and end their workday.

disinterested/uninterested

In contemporary business use, *disinterested* and *uninterested* have quite different meanings. Because errors can cause confusion for the reader, make sure not to use the words as synonyms. *Disinterested* means "without prejudice or bias," whereas *uninterested* means "showing no interest." EXAMPLES:

- The agency sought a *disinterested* observer who had no stake in the outcome of the trial.
- They spent several days talking to officials from Iceland, but they still remain *uninterested* in performing work in that country.

Documentation Styles

APA Parenthetical References and Work-cited Examples

The American Psychological Association (APA) uses the parenthetical author and year system in the text that leads the reader to an alphabetically arranged works-cited page at the end of the text. Anonymous works are cited with the first few title words and the year.

In-text Reference

1. **Book, one author**
(Wakefield, 1998, p. 138)
2. **Book, two or more authors**
(Hodkinson & Fenton, 2001, p. 93)
3. **Edited book**
(Johnson, 1993, p. 123)
4. **Work in an anthology**
(Seal, 1993, p. 330)
5. **Encyclopedia article (unsigned)**
(Alternative, 2003)
6. **Newspaper**
(Kiley & Healey, 2004)
7. **Magazine article**
(Wouk, 1997, p. 71)
8. **Journal article**
(Kim, Jung, & Nam, 2004, p. 312)
9. **Article from an electronic database**
(Einstein, 1999, para. 1)

Entry in Works-cited List

- Wakefield, E. (1998). *History of the electric automobile: Hybrid electric vehicles*. Warrendale, PA: Society of Automotive Engineers.
- Hodkinson, R., & Fenton, J. (2001). *Lightweight electric/hybrid vehicle design*. Woburn, MA: Butterworth-Heinemann.
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- Alternative automobiles. (2003). In K. Kramer (Ed.), *Encyclopedia of automotive history* (3rd ed., Vol. 2, pp. 235–239). New York: Harper.
- Kiley, D., & Healey, J. R. (2004, May 14). Hybrid SUV getting big response; Ford says 30,000 want to buy one. *USA Today*, p. 1A.
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- Einstein, P. (1999). The benefits of insight. *Professional Engineering*, 12(19), 23. Retrieved from Academic Search Premier database at EBSCOhost.

10. World Wide Web site (no author)

(Toyota Prius, 2001)

Toyota Prius. (2001). Cartalk.com. Retrieved from <http://cartalk.cars.com/Info/Testdrive/Reviews/toyota-prius-2001.html>.

MLA Parenthetical References and Work-cited Examples

The Modern Language Association (MLA) uses an author and page reference system. The author and the number of the specific page where the fact, quote, or reference can be located are referenced in the text, either in parentheses or as part of the text. The works-cited page is arranged alphabetically by author. Title words are capitalized.

In-text Reference**1. Book, one author**

(Wakefield 125)

Entry in Works-cited List

Wakefield, Earl. *History of the Electric Automobile: Hybrid Electric Vehicles*. Warrendale, PA: Society of Automotive Engineers, 1998. Print.

2. Book, two or more authors

Hodkinson and Fenton in their 2001 book (311)

Hodkinson, Richard, and John Fenton. *Lightweight Electric/Hybrid Vehicle Design*. Woburn, MA: Butterworth-Heinemann, 2001. Print.

3. Edited book

Johnson argues (225)

Johnson, Arthur, ed. *Future of Vehicle Transportation*. London: Sage, 1993. Print.

4. Work in an anthology

(Seal 321)

Seal, Martin. "Feasibility Studies of Solar Electric Hybrids." *Future of Vehicle Transportation*. Ed. Arthur Johnson. London: Sage, 1993. 321–32. Print.

5. Encyclopedia article (lesser known encyclopedia)

(Murray 325)

Murray, Kim L. "Alternative Automobiles." *Encyclopedia of Automotive History*. Eds. David Jones and Jack Smith. 3rd ed. 2 vol. New York: Harper, 2003. Print.

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Wouk, V. "Hybrid Electric Vehicles." *Scientific American* Oct. 1997: 70–74. Print.

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9. Article from an electronic database

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10. World Wide Web site

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"Toyota Prius." *Cartalk.com*. 2001. 19 Aug. 2001.

CSE References and Work-cited Examples

The CSE *Manual for Authors, Editors, and Publishers* (7th edition), prepared by the Council of Science Editors Style Manual Committee, offers a choice in citation systems—by name (for the name–year system) or by reference number (for the citation–sequence system or citation–name system). You must decide from the beginning which CSE system to use. Ask your instructor or the editor. Each system is demonstrated here.

In the citation–sequence system, sources are listed in the order in which they appear in the paper. The sources in the list are then numbered, and the numbers are used in the references in the text.

CSE's Citation–Sequence and Citation–Name Examples**In-text Reference****1. Book, one author**As Wakefield¹ claims**Entry in Works Cited List**

1. Wakefield E. History of the electric automobile: hybrid electric vehicles. Warrendale, PA: Society of Automotive Engineers; 1998.

- 2. Book, two or more authors**
Hodkinson and Fenton²
- 3. Edited book**
As described by Johnson³
- 4. Work in an anthology**
Early experiments demonstrated⁴
- 5. Encyclopedia article (unsigned)**
Alternatives⁵
- 6. Newspaper** Kiley and Healey⁶
- 7. Magazine article**
Wouk⁷
- 8. Journal article**
The breakthrough in the power system⁸
- 9. Article from an electronic database |**
Einstein⁹
- 10. World Wide Web site (no author)**
The performance of the Toyota Prius¹⁰
2. Hodkinson R, Fenton J. Lightweight electric/hybrid vehicle design. Woburn, MA: Butterworth-Heinemann; 2001.
3. Johnson AE, editor. Future of vehicle transportation. London: Sage; 1993.
4. Seal M. Feasibility studies of solar electric hybrids. In: Johnson A, editor. Transportation. London: Sage; 1993. p. 321–332.
5. Alternative automobiles. Encyclopedia of automotive history. 3rd ed. vol. 1. New York: Harper; 2003; 2: 235–239.
6. Kiley D, Healey JR. Hybrid SUV getting big response Ford says 30,000 want to buy one. USA Today. 2004 May 14; Section A:1 (col. 1).
7. Wouk V. Hybrid electric vehicles. Scientific American. 1997 Oct: 70–74.
8. Kim J, Jung J, Nam, K. Dual-inverter control strategy for high-speed operation of EV induction motors. IEEE Transactions on Industrial Electronics. 2004; 51(2): 312–321.
9. Einstein P. The benefits of Insight. Professional Engineering [Internet], 1999 Oct; 12: 23(19). [cited 2008 Apr 30]. Available from: <http://web.ebscohost.com> Document No.: 2479269.
10. Toyota Prius. Cartalk [Internet]. c2001 [cited 2001 Aug 19]. Available from: <http://cartalk.cars.com/Info/Testdrive/Reviews/toyota-prius-2001.html>

In the name–year system, sources are listed alphabetically by the author’s last name. Parenthetical citations are used in the paper. Note that in the name–year system, the date of publication is placed after the last author’s name in works-cited entries.

CSE’s Name–Year System

Parenthetical Reference

- 1. Book, one author**
As demonstrated by Wakefield (1998)
- 2. Book, two or more authors**
(Hodkinson and Fenton 2001)
- 3. Edited book**
(Johnson 1993)
- 4. Work in an anthology**
Seal argues (1993)
- 5. Encyclopedia article (unsigned)**
HEV are defined as (Alternative 2003)
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| 8. Journal article
(Kim and others 2004) | Kim J, Jung J, Nam, K. 2004. Dual-inverter control strategy for high-speed operation of EV induction motors. <i>IEEE Transactions on Industrial Electronics</i> . 51(2): 312–321. |
| 9. Article from an electronic database
(Einstein 1999) | Einstein P. The benefits of Insight. <i>Professional Engineering</i> [Internet].1999 Oct. [cited 2008 Apr 30]. Available from: http://web.ebscohost.com Document No.: 2479269. |
| 10. WWW site (no author)
(Toyota Prius, 2001) | Toyota Prius. Cartalk [Internet]. c2001 [cited 2001 Aug 19]. Available from: http://cartalk.cars.com/Info/Testdrive/Reviews/toyota-prius-2001.html |

due to/because of

Besides irritating those who expect proper English, mixing these two phrases can also cause confusion. *Due to* is an adjective phrase meaning “attributable to” and almost always follows a “to be” verb (such as *is*, *was*, or *were*). It should not be used in place of prepositional phrases such as “because of,” “owing to,” or “as a result of.” EXAMPLES:

- The cracked walls were *due to* the lack of proper foundation fill being used during construction.
- We won the contract *because of* [not *due to*] our thorough understanding of the client’s needs.

each other/one another

Each other occurs in contexts that include only two persons, whereas *one another* occurs in contexts that include three or more persons. EXAMPLES:

- Shana and Katie worked closely with *each other* during the project.
- All six members of the team conversed with *one another* regularly through e-mail.

e.g./i.e.

The abbreviation *e.g.* means “for example,” whereas *i.e.* means “that is.” These two Latin abbreviations are often confused, a fact that should give you pause before using them. Many writers prefer to write them out, rather than risk confusion on the part of the reader. EXAMPLES:

- During the trip, he visited 12 cities where M-Global is considering opening offices—*e.g.*, [or “for example”] Kansas City, New Orleans, and Seattle.
- A spot along the Zayante Fault was the earthquake’s epicenter—*i.e.*, [or “that is”] the focal point for seismic activity.

farther/further

Although similar in meaning, these two words are used differently. *Farther* refers to actual physical distance, whereas *further* refers to nonphysical distance or can mean “additional.” EXAMPLES:

- The overhead projector was moved *farther* from the screen so that the print would be easier to see.
- *Farther* up the old lumber road, they found footprints of an unidentified mammal.
- As he read *further* along in the report, he began to understand the complexity of the project.
- She gave *further* instructions after they arrived at the site.

fewer/less

The adjective *fewer* is used before items that can be counted, whereas the adjective *less* is used before mass quantities. When errors occur, they usually result from *less* being used with countable items, as in this *incorrect* sentence: “We can complete the job with less men at the site.” EXAMPLES:

- The newly certified industrial hygienist signed with us because the other firm in which he was interested offered *fewer* [not *less*] benefits.
- There was *less* sand in the sample taken from 15 ft than in the one taken from 10 ft.

flammable/inflammable/nonflammable

Given the importance of these words in preventing injury and death, make sure to use them correctly—especially in instructions. *Flammable* means “capable of burning quickly” and is acceptable usage. *Inflammable* has the same meaning, but it is not acceptable usage for this reason: Some readers confuse it with *nonflammable*. The word *nonflammable*, then, means “not capable of burning” and is accepted usage. EXAMPLES:

- They marked the package *flammable* because its contents could be easily ignited by a spark. (Note that *flammable* is preferred here over its synonym, *inflammable*.)
- The foreman felt comfortable placing the crates near the heating unit, because all the crates’ contents were *nonflammable*.

former/latter

These two words direct the reader’s attention to previous points or items. *Former* refers to what came first, whereas *latter* refers to what came last. Note that the words are used together when there are only two items or points—not with three or more. Also, you should know that some readers may prefer you avoid *former* and *latter* altogether, because the construction may force them to look back to previous sentences to understand your meaning. The second example gives an alternative. EXAMPLES:

- (with former/latter) The airline’s machinists and flight attendants went on strike yesterday. The *former* left work in the morning, whereas the *latter* left work in the afternoon.
- (without former/latter) The airline’s machinists and flight attendants went on strike yesterday. The machinists left work in the morning, whereas the flight attendants left work in the afternoon.

fortuitous/fortunate

The word *fortuitous* is an adjective that refers to an unexpected action, without regard to whether it is desirable. The word *fortunate* is an adjective that indicates an action that is clearly desired. The common usage error with this pair is the wrong assumption that *fortuitous* events must also be *fortunate*. EXAMPLES:

- Seeing M-Global’s London manager at the conference was quite *fortuitous*, because I had not been told that he also was attending.
- It was indeed *fortunate* that I encountered the London manager, for it gave us the chance to talk about an upcoming project involving both our offices.

generally/typically/usually

Words like *generally*, *typically*, and *usually* can be useful qualifiers in your reports. They indicate to the reader that what you have stated is often, but not always, the case. Make certain to place these adverb modifiers as close as possible to the words they modify. In the first example, it would be inaccurate to write *were typically sampled*, because the adverb modifies the entire verb phrase *were sampled*. EXAMPLES:

- Cohesionless soils *typically* were sampled by driving a 2-in.-diameter, split-barrel sampler. (Active-voice alternative: *Typically*, we sampled cohesionless soils by driving a 2-in.-diameter, split-barrel sampler.)
- For projects like the one you propose, the technician *usually* cleans the equipment before returning to the office.
- It is *generally* known that sites for dumping waste should be equipped with appropriate liners.

good/well

Although similar in meaning, *good* is used as an adjective and *well* is used as an adverb. A common usage error occurs when writers use the adjective when the adverb is required. EXAMPLES:

- It is *good* practice to submit three-year plans on time.
- He did *well* to complete the three-year plan on time, considering the many reports he had to finish that same week.

imply/infer

Remember that the person doing the speaking or writing implies, whereas the person hearing or reading the words infers. In other words, the word *imply* requires an active role; the word *infer* requires a passive role. When you *imply* a

point, your words suggest rather than state a point. When you *infer* a point, you form a conclusion or deduce meaning from someone else's words or actions. EXAMPLES:

- The contracts officer *implied* that there would be stiff competition for that \$20-million waste-treatment project.
- We *inferred* from her remarks that any firm hoping to secure the work must have completed similar projects recently.

its/it's

Its and *it's* are often confused. You can avoid error by remembering that *it's* with the apostrophe is used *only* as a contraction for *it is* or *it has*. The other form—*its*—is a possessive pronoun. You can remember this by remembering that other possessive pronouns (mine, his) do not have apostrophes. EXAMPLES:

- Because of the rain, *it's* [or *it is*] going to be difficult to move the equipment to the site.
- *It's* [or *it has*] been a long time since we submitted the proposal.
- The company completed *its* part of the agreement on time.

lay/lie

Lay and *lie* are troublesome verbs, and you must know some basic grammar to use them correctly.

1. *Lay* means “to place.” It is a transitive verb; thus it takes a direct object to which it conveys action. (“She laid down the printout before starting the meeting.”) Its main forms are *lay* (present), *laid* (past), *laid* (past participle), and *laying* (present participle).
2. *Lie* means “to be in a reclining position.” It is an intransitive verb; thus it does not take a direct object. (“In some countries, it is acceptable for workers to lie down for a midday nap.”) Its main forms are *lie* (present), *lay* (past), *lain* (past participle), and *lying* (present participle).

If you want to use these words with confidence, remember the transitive/intransitive distinction and memorize the principal parts. EXAMPLES:

- (lay) I will *lay* the notebook on the lab desk before noon.
- (lay) I have *laid* the notebook there before.
- (lay) I was *laying* the notebook down when the phone rang.
- (lie) The watchdog *lies* motionless at the warehouse gate.
- (lie) The dog *lay* there yesterday, too.
- (lie) The dog has *lain* there for three hours today and no doubt will be *lying* there when I return from lunch.

lead/led

Lead is either a noun that names the metallic element or a verb that means “to direct or show the way.” *Led* is only a verb form, the past tense of the verb *lead*. EXAMPLES:

- The company bought rights to mine *lead* on the land.
- They chose a new president to *lead* the firm into the 21st century.
- They were *led* to believe that salary raises would be high this year.

like/as

Like and *as* are different parts of speech and thus are used differently in sentences. *Like* is a preposition and therefore is followed by an object—not an entire clause. *As* is a conjunction and thus is followed by a group of words that includes a verb. *As if* and *as though* are related conjunctions. EXAMPLES:

- Gary looks *like* his father.
- Managers *like* John will be promoted quickly.
- If Teresa writes this report *as* she wrote the last one, our clients will be pleased.

- Our proposals are brief, *as* they should be.
- Our branch manager talks *as though* [or *as if*] the merger will take place soon.

loose/lose

Loose, which rhymes with “goose,” is an adjective that means “unfastened, flexible, or unconfined.” *Lose*, which rhymes with “ooze,” is a verb that means “to misplace.” EXAMPLES:

- The power failure was linked to a *loose* connection at the switchbox.
- Because of poor service, the photocopy machine company may *lose* its contract with M-Global’s San Francisco office.

Modifiers: Dangling and Misplaced

This section includes guidelines for avoiding the most common modification errors—dangling modifiers and misplaced modifiers. First, however, we must define the term *modifier*. Words, phrases, and even dependent clauses can serve as modifiers. They serve to qualify, or add meaning to, other elements in the sentence. For our purposes here, the most important point is that modifiers must be connected clearly to what they modify.

Modification errors occur most often with verbal phrases. A phrase is a group of words that lacks either a subject or a predicate. The term *verbal* refers to (1) gerunds (*-ing* form of verbs used as nouns, such as, “He likes skiing”), (2) participles (*-ing* form of verbs used as adjectives, such as, “Skiing down the hill, he lost a glove”), or (3) infinitives (the word *to* plus the verb root, such as, “To attend the opera was his favorite pastime”). Now let’s look at the two main modification errors.

Dangling modifiers. When a verbal phrase “dangles,” the sentence in which it is used contains no specific word for the phrase to modify. As a result, the meaning of the sentence can be confusing to the reader. For example, “In designing the foundation, several alternatives were discussed.” It is not at all clear exactly who is doing the “designing.” The phrase dangles because it does not modify a specific word. The modifier does not dangle in this version of the sentence: “In designing the foundation, we discussed several alternatives.”

Misplaced modifiers. When a verbal phrase is misplaced, it may appear to refer to a word that it, in fact, does not modify. EXAMPLE: “Floating peacefully near the oil rig, we saw two humpback whales.” Obviously, the whales are doing the floating, and the rig workers are doing the seeing here. Yet because the verbal phrase is placed at the beginning of the sentence, rather than at the end immediately after the word it modifies, the sentence presents some momentary confusion.

Misplaced modifiers can lead to confusion about the agent of action in technical tasks. EXAMPLE: “Before beginning to dig the observation trenches, we recommend that the contractors submit their proposed excavation program for our review.” On quick reading, the reader is not certain about who will be “beginning to dig”—the contractors or the “we” in the sentence. The answer is the contractors. Thus a correct placement of the modifier should be “We recommend the following: Before the contractors begin digging observation trenches, they should submit their proposed excavation for our review.”

Solving modifier problems. At best, dangling and misplaced modifiers produce a momentary misreading by the audience. At worst, they can lead to confusion that results in disgruntled readers, lost customers, or liability problems. To prevent modification problems, place all verbal phrases—indeed, all modifiers—as close as possible to the word they modify. If you spot a modification error while you are editing, correct it in one of two ways:

1. Leave the modifier as it is and rework the rest of the sentence. Thus you would change “Using an angle of friction of 20 degrees and a vertical weight of 300 tons, the sliding resistance would be...” to the following: “Using an angle of friction of 20 degrees and a vertical weight of 300 tons, we computed a sliding resistance of....”
2. Rephrase the modifier as a complete clause. Thus you would change the previous original sentence to, “If the angle of friction is 20 degrees and the vertical weight is 300 tons, the sliding resistance should be....”

In either case, your goal is to link the modifier clearly and smoothly with the word or phrase it modifies.

number of/total of

These two phrases can take singular or plural verbs, depending on the context. Following are two simple rules for correct usage:

1. If the phrase is preceded by *the*, it takes a singular verb because emphasis is placed on the group.
2. If the phrase is preceded by *a*, it takes a plural verb because emphasis is placed on the many individual items.

EXAMPLES:

- *The number* of projects going over budget *has* decreased dramatically.
- *The total* of 90 lawyers *believes* the courtroom guidelines should be changed.
- *A number* of projects *have* stayed within budget recently.
- *A total* of 90 lawyers *believe* the courtroom guidelines should be changed.

Numbers

Like rules for abbreviations, those for numbers vary from profession to profession and even from company to company. Most technical writing subscribes to the approach that numbers are best expressed in figures (45) rather than words (forty-five). Note that this style may differ from that used in other types of writing. Unless the preferences of a particular reader suggest that you do otherwise, follow these common rules for use of numbers in writing your technical documents:

Rule 1: Follow the 10-or-Over Rule

In general, use figures for numbers of 10 or more, words for numbers under 10. EXAMPLES: Three technicians at the site/15 reports submitted last month/one rig contracted for the job.

Rule 2: Do Not Start Sentences With Figures

Begin sentences with the word form of numbers, not with figures. EXAMPLE: “Forty-five containers were shipped back to the lab.”

Rule 3: Use Figures as Modifiers

Whether higher or lower than 10, numbers are usually expressed as figures when used as modifiers with units of measurement, time, and money, especially when these units are abbreviated. EXAMPLES: 4 in., 7 hr, 17 ft, \$5 per hr. Exceptions can be made when the unit is not abbreviated. EXAMPLE: five years.

Rule 4: Use Figures in a Group of Mixed Numbers

Use only figures when the numbers grouped together in a passage (usually *one* sentence) are both higher and lower than 10. EXAMPLE: “For that project they assembled 15 samplers, 4 rigs, and 25 containers.” In other words, this rule argues for consistency within a writing unit.

Rule 5: Use the Figure Form in Illustration Titles

Use the numeric form when labeling specific tables and figures in your reports. EXAMPLES: Figure 3, Table 14–B.

Rule 6: Be Careful With Fractions

Express fractions as words when they stand alone, but as figures when they are used as a modifier or are joined to whole numbers. EXAMPLE: “We have completed two-thirds of the project using the 2½-in. pipe.”

Rule 7: Use Figures and Words With Numbers in Succession

When two numbers appear in succession in the same unit, write the first as a word and the second as a figure. EXAMPLE: “We found fifteen 2-ft pieces of pipe in the machinery.”

Rule 8: Only Rarely Use Numbers in Parentheses

Except in legal documents, avoid the practice of placing figures in parentheses after their word equivalents. EXAMPLE: “The second party will send the first party forty-five (45) barrels on or before the first of each month.” Note that the parenthetical amount is placed immediately after the figure, not after the unit of measurement.

Rule 9: Use Figures With Dollars

Use figures with all dollar amounts, with the exception of the context noted in Rule 8. Avoid cents columns unless exactness to the penny is necessary.

Rule 10: Use Commas in Four-Digit Figures

To prevent possible misreading, use commas in figures of four digits or more. EXAMPLES: 15,000; 1,247; 6,003.

Rule 11: Use Words for Ordinals

Usually spell out the ordinal form of numbers one through nine. EXAMPLE: “The government informed all parties of the *first*, *second*, and *third* [not *1st*, *2nd*, and *3rd*] choices in the design competition.” A notable exception is tables and figures, where space limitations could argue for the abbreviated form.

oral/verbal

Oral refers to words that are spoken, as in “*oral presentation*.” The term *verbal* refers to spoken or written language. To prevent confusion, avoid the word *verbal* and instead specify your meaning with the words *oral* and *written*. EXAMPLES:

- In its international operations, M-Global, Inc., has learned that some countries still rely on *oral* [not *verbal*] contracts.
- Their *oral* agreement last month was followed by a *written* [not *verbal*] contract this month.

Parts of Speech

The term *parts of speech* refers to the eight main groups of words in English grammar. A word’s placement in one of these groups is based on its function within the sentence.

Noun. Words in this group name persons, places, objects, or ideas. The two major categories are (1) proper nouns and (2) common nouns. Proper nouns name specific persons, places, objects, or ideas, and they are capitalized. EXAMPLES: *Cleveland*; *Mississippi River*; *M-Global, Inc.*; *Student Government Association*; *Susan Jones*; Existentialism. Common nouns name general groups of persons, places, objects, and ideas, and they are not capitalized. EXAMPLES: *trucks*, *farmers*, *engineers*, *assembly lines*, *philosophy*.

Verb. A verb expresses action or state of being. Verbs give movement to sentences and form the core of meaning in your writing. EXAMPLES: *explore*, *grasp*, *write*, *develop*, *is*, *has*.

Pronoun. A pronoun is a substitute for a noun. Some sample pronoun categories are (1) personal pronouns (*I*, *we*, *you*, *she*, *he*), (2) relative pronouns (*who*, *whom*, *that*, *which*), (3) reflexive and intensive pronouns (*myself*, *yourself*, *itself*), (4) demonstrative pronouns (*this*, *that*, *these*, *those*), and (5) indefinite pronouns (*all*, *any*, *each*, *anyone*).

Adjective. An adjective modifies a noun. EXAMPLES: *horizontal*, *stationary*, *green*, *large*, *simple*.

Adverb. An adverb modifies a verb, an adjective, another adverb, or a whole statement. EXAMPLES: *soon*, *generally*, *well*, *very*, *too*, *greatly*.

Preposition. A preposition shows the relationship between a noun or pronoun (the object of a preposition) and another element of the sentence. Forming a prepositional phrase, the preposition and its object can reveal relationships such as location (“They went *over the hill*”), time (“He left *after the meeting*”), and direction (“She walked *toward the office*”).

Conjunction. A conjunction is a connecting word that links words, phrases, or clauses. EXAMPLES: *and*, *but*, *for*, *nor*, *although*, *after*, *because*, *since*.

Interjection. As an expression of emotion, an interjection can stand alone (“Look out!”) or can be inserted into another sentence.

passed/past

Passed is the past tense of the verb *pass*, whereas *past* is an adjective, a preposition, or a noun that means “previous” or “beyond” or “a time before the present.” EXAMPLES:

- He *passed* the survey marker on his way to the construction site.
- The *past* president attended last night’s meeting. [adjective]

- He worked *past* midnight on the project. [preposition]
- In the distant *past*, the valley was a tribal hunting ground. [noun]

per

Coming from the Latin, *per* should be reserved for business and technical expressions that involve statistics or measurement—such as *per annum* or *per mile*. It should not be used as a stuffy substitute for “in accordance with.” EXAMPLES:

- Her *per diem* travel allowance of \$90 covered hotels and motels.
- During the oil crisis years ago, gasoline prices increased by more than 50 cents *per gallon*.
- *As you requested* [not *per your request*], we have enclosed brochures on our products.

per cent/percent/percentage

Per cent and *percent* have basically the same usage and are used with exact numbers. The one word *percent* is preferred. Even more common in technical writing, however, is the use of the percent sign (%) after numbers. The word *percentage* is used only to express general amounts, not exact numbers. EXAMPLES:

- After completing a marketing survey, M-Global, Inc., discovered that 83 *percent* [or 83%] of its current clients have hired M-Global for previous projects.
- A large *percentage* of the defects can be linked to the loss of two experienced quality-control inspectors.

practical/practicable

Although close in meaning, these two words have quite different implications. *Practical* refers to an action that is known to be effective. *Practicable* refers to an action that can be accomplished or put into practice, without regard for its effectiveness or practicality. EXAMPLES:

- His *practical* solution to the underemployment problem led to a 30 percent increase in employment last year.
- The department head presented a *practicable* response, because it had already been put into practice in another branch.

principal/principle

When these two words are misused, the careful reader notices. Keep them straight by remembering this simple distinction: *Principle* is always a noun that means “basic truth, belief, or theorem.” EXAMPLE: “He believed in the principle of free speech.” *Principal* can be either a noun or an adjective and has three basic uses:

- **As a noun meaning “head official” or “person who plays a major role.”** EXAMPLE: We asked that a *principal* in the firm sign the contract.
- **As a noun meaning “the main portion of a financial account upon which interest is paid.”** EXAMPLE: If we deposit \$5,000 in *principal*, we will earn 9 percent interest.
- **As an adjective meaning “main or primary.”** EXAMPLE: We believe that the *principal* reason for contamination at the site is the leaky underground storage tank.

Pronouns: Agreement and Reference

A pronoun is a word that replaces a noun, which is called the *antecedent* of the pronoun. EXAMPLES: *this*, *it*, *he*, *she*, *they*. Pronouns provide you with a useful strategy for varying your style by avoiding repetition of nouns. Following are some rules to prevent pronoun errors:

Rule 1: Make Pronouns Agree With Antecedents

Check every pronoun to make certain it agrees with its antecedent in number—that is, both noun and pronoun must be singular, or both must be plural. Of special concern are the pronouns *it* and *they*. EXAMPLES:

- Change “M-Global, Inc., plans to complete their Argentina project next month” to this sentence: “M-Global, Inc., plans to complete its Argentina project next month.”

- Change “The committee released their recommendations to all departments” to this sentence: “The committee released its recommendations to all departments.”

Rule 2: Be Clear About the Antecedent of Every Pronoun

There must be no question about what noun a pronoun replaces. Any confusion about the antecedent of a pronoun can change the entire meaning of a sentence. To avoid such reference problems, it may be necessary to rewrite a sentence or even use a noun rather than a pronoun. Do whatever is necessary to prevent misunderstanding by your reader. EXAMPLE: Change “The gas filters for these tanks are so dirty that they should not be used” to this sentence: “These filters are so dirty that they should not be used.”

Rule 3: Avoid Using This as the Subject Unless a Noun Follows It

A common stylistic error is the vague use of *this*, especially as the subject of a sentence. Sometimes the reference is not clear at all; sometimes the reference may be clear after several readings. In almost all cases, however, the use of *this* as a pronoun reflects poor technical style and tends to make the reader want to ask, “This what?” Instead, make the subject of your sentences concrete, either by adding a noun after the *this* or by recasting the sentence. EXAMPLE: Change “He talked constantly about the project to be completed at the Olympics. This made his office-mates irritable” to the following: “His constant talk about the Olympics project irritated his office-mates.”

Punctuation: General

Commas. Most writers struggle with commas, so you are not alone. The problem is basically threefold. First, the teaching of punctuation has been approached in different, and sometimes quite contradictory, ways. Second, comma rules themselves are subject to various interpretations. And third, problems with comma placement often mask more fundamental problems with the structure of a sentence itself.

Start by knowing the basic rules of comma use. The rules that follow are fairly simple. If you learn them now, you will save yourself a good deal of time later because you will not be questioning usage constantly. In other words, the main benefit of learning the basics of comma use is increased confidence in your own ability to handle the mechanics of editing. (If you do not understand some of the grammatical terms that follow, such as *compound sentence*, refer to the section on sentence structure.)

Rule 1: Commas in a Series

Use commas to separate words, phrases, and short clauses written in a series of three or more items. EXAMPLE: “The samples contained gray sand, sandy clay, and silty sand.” According to current U.S. usage, a comma always comes before the “and” in a series. (In the United Kingdom, the comma is left out.)

Rule 2: Commas in Compound Sentences

Use a comma before the conjunction that joins main clauses in a compound sentence. EXAMPLE: “We completed the drilling at the Smith Industries location, and then we grouted the holes with Sakrete.” The comma is needed here because it separates two complete clauses, each with its own subject and verb (*we completed* and *we grouted*). If the second *we* had been deleted, there would be only one clause containing one subject and two verbs (“*we completed* and *grouted*”). Thus no comma would be needed. Of course, it may be that a sentence following this comma rule is far too long; do not use the rule to string together intolerably long sentences.

Rule 3: Commas With Nonessential Modifiers

Set off nonessential modifiers with commas at the beginning, middle, or end of sentences. *Nonessential modifiers* are usually phrases that add more information to a sentence, rather than greatly changing its meaning. When you speak, there is often a pause between this kind of modifier and the main part of the sentence, giving you a clue that a comma break is needed. EXAMPLE: “The report, which we submitted three weeks ago, indicated that the company would not be responsible for transporting hazardous wastes.” But—“The report that we submitted three weeks ago indicated that the company would not be responsible for transporting hazardous wastes.” The first example includes a nonessential modifier, would be spoken with pauses, and therefore uses separating commas. The second example includes an essential modifier, would be spoken without pauses, and therefore includes no separating commas.

Rule 4: Commas With Adjectives in a Series

Use a comma to separate two or more adjectives that modify the same noun at the same level of detail. To help you decide if adjectives modify the same noun equally, use this test: If you can reverse their positions and still retain the same meaning, then the adjectives modify the same word and should be separated by a comma. EXAMPLE: “Jason found the old, rotted gaskets.”

Rule 5: Commas With Introductory Elements

Use a comma after introductory phrases or clauses of five words or more. EXAMPLE: “After completing the topographic survey of the area, the crew returned to headquarters for its weekly project meeting.” Commas like the one after *area* help readers separate secondary or modifying points from your main idea, which of course should be in the main clause. Without these commas, there may be difficulty reading such sentences properly.

Rule 6: Commas in Dates, Titles, and So On

Abide by the conventions of comma usage in punctuating dates, titles, geographic place names, and addresses. EXAMPLES:

- May 3, 2006, is the projected date of completion. (However, note the change in the military form of dates: We will complete the project on 3 May 2006.)
- John F. Dunwoody, Ph.D., has been hired to assist on the project.
- M-Global, Inc., has been selected for the project.
- He listed Dayton, Ohio, as his permanent residence.

Note the need for commas after the year 2006, the title *Ph.D.*, the designation *Inc.*, and the state name *Ohio*. Also note that if the day had not been in the first example, there would be no comma between the month and year and no comma after the year.

Semicolons. The semicolon is easy to use if you remember that it, like a period, indicates the end of a complete thought. Its most frequent use is in situations where grammar rules would allow you to use a period but where your stylistic preference is for a less abrupt connector. EXAMPLE: “Five engineers left the convention hotel after dinner; only two returned by midnight.”

One of the most common punctuation errors, the comma splice, occurs when a comma is used instead of a semicolon or period in compound sentences connected by words such as *however*, *therefore*, *thus*, and *then*. When you see that these connectors separate two main clauses, make sure either to use a semicolon or to start a new sentence. EXAMPLE: “We made it to the project site by the agreed-on time; however, [or “...time. However, ...”] the rain forced us to stay in our trucks for two hours.”

As noted in the “Punctuation: Lists” entry, there is another instance in which you might use semicolons. Place them after the items in a list when you are treating the list like a sentence and when any one of the items contains internal commas.

Colons. As mentioned in the “Punctuation: Lists” entry, you should place a colon immediately after the last word in the lead-in before a formal list of bulleted or numbered items. EXAMPLE: “Our field study involved these three steps;” or “In our field study, we were asked to.” The colon may come after a complete clause, as in the first example, or it may split a grammatical construction, as in the second example. However, it is preferable to use a complete clause before a formal list.

The colon can also be used in sentences in which you want a formal break before a point of clarification or elaboration. EXAMPLE: “They were interested in just one result: quality construction.” In addition, use the colon in sentences in which you want a formal break before a series that is not part of a listing. EXAMPLE: “They agreed to perform all on-site work required in these four cities: Houston, Austin, Laredo, and Abilene.” However, note that there is no colon before a sentence series without a break in thought. EXAMPLE: “They agreed to perform all the on-site work required in Houston, Austin, Laredo, and Abilene.”

Apostrophes. The apostrophe can be used for contractions, for some plurals, and for possessives. Only the last two uses cause confusion. Use an apostrophe to indicate the plural form of a word as a word. EXAMPLE: “That redundant paragraph contained seven *area’s* and three *factor’s* in only five sentences.” Although some writers also use apostrophes to form the plurals of numbers and full-cap abbreviations, the current tendency is to include only the *s*. EXAMPLES: 7*s*, ABC*s*, PCB*s*, P.E.*s*.

As for possessives, you probably already know that the grammar rules seem to vary, depending on the reference book you are reading. Following are some simple guidelines:

Possessive Rule 1

Form the possessive of multisyllabic nouns that end in *s* by adding just an apostrophe, whether the nouns are singular or plural. EXAMPLES: actress' costume, genius' test score, the three technicians' samples, Jesus' parables, the companies' joint project.

Possessive Rule 2

Form the possessive of one-syllable, singular nouns ending in *s* or an *s* sound by adding an apostrophe plus *s*. EXAMPLES: Hoss's horse, Tex's song, the boss's progress report.

Possessive Rule 3

Form the possessive of all plural nouns ending in *s* or an *s* sound by adding just an apostrophe. EXAMPLES: the cars' engines, the ducks' flight path, the trees' roots.

Possessive Rule 4

Form the possessive of all singular and plural nouns not ending in *s* by adding an apostrophe plus *s*. EXAMPLES: the man's hat, the men's team, the company's policy.

Possessive Rule 5

Form the possessive of paired nouns by first determining whether there is joint ownership or individual ownership. For joint ownership, make only the last noun possessive. For individual ownership, make both nouns possessive. EXAMPLE: "Susan and Terry's project was entered in the science fair; but Tom's and Scott's projects were not."

Quotation marks. In technical writing, you may want to use this form of punctuation to draw attention to particular words, to indicate passages taken directly from another source, or to enclose the titles of short documents such as reports or book chapters. The rule to remember is this: Periods and commas go inside quotation marks; exclamation marks, question marks, semicolons, and colons go outside quotation marks.

Parentheses. Use parentheses carefully because long parenthetical expressions can cause the reader to lose the train of thought. This form of punctuation can be used when you (1) place an abbreviation after a complete term, (2) add a brief explanation within the text, or (3) include reference citations within the document text (as explained in Chapter 9). The period goes after the closing parenthesis when the parenthetical information is part of the sentence, as in the previous sentence. (However, it goes inside the closing parenthesis when the parenthetical information forms its own sentence, as in the sentence you are reading.)

Brackets. Use a pair of brackets for the following purposes: (1) to set off parenthetical material already contained within another parenthetical statement and (2) to draw attention to a comment you are making within a quoted passage. EXAMPLE: Two M-Global studies have shown that the Colony Dam is up to safety standards. (See Figure 4-3 [Dam Safety Record] for a complete record of our findings.) In addition, the county engineer has a letter on file that will give further assurance to prospective homeowners on the lake. His letter notes that "After finishing my three-month study [he completed the study in July 2007], I conclude that the Colony Dam meets all safety standards set by the county and state governments."

Hyphens. The hyphen is used to form certain word compounds in English. Although the rules for its use sometimes seem to change from handbook to handbook, those that follow are the most common:

Hyphen Rule 1

Use hyphens with compound numerals. EXAMPLE: twenty-one through ninety-nine.

Hyphen Rule 2

Use hyphens with most compounds that begin with *self*. EXAMPLES: self-defense, self-image, self-pity. Other *self* compounds, like *selfhood* and *selfsame*, are written as unhyphenated words.

Hyphen Rule 3

Use hyphens with group modifiers when they precede the noun but not when they follow the noun. EXAMPLES: A well-organized paper, a paper that was well organized, twentieth-century geotechnical technology, bluish-gray shale, fire-tested material, thin-bedded limestone

However, remember that when the first word of the modifier is an adverb ending in *-ly*, place no hyphen between the words. EXAMPLES: carefully drawn plate, frightfully ignorant teacher

Hyphen Rule 4

Place hyphens between prefixes and root words in the following cases: (1) between a prefix and a proper name (ex-Republican, pre-Sputnik); (2) between some prefixes that end with a vowel and root words beginning with a vowel, particularly if the use of a hyphen would prevent an odd spelling (semi-independent, re-enter, re-elect); and (3) between a prefix and a root when the hyphen helps to prevent confusion (re-sent, not resent; re-form, not reform; re-cover, not recover).

Punctuation: Lists

As noted in Chapter 5, listings draw attention to parallel pieces of information whose importance would be harder to grasp in paragraph format. In other words, use lists as an attention-getting strategy. Following are some general pointers for punctuating lists. (See pages 128–130 in Chapter 5 for other rules for lists.)

You have three main options for punctuating a listing. The common denominators for all three are that you (1) always place a colon after the last word of the lead-in and (2) always capitalize the first letter of the first word of each listed item.

Option A: Place no punctuation after listed items. This style is appropriate when the list includes only short phrases. More and more writers are choosing this option, as opposed to option B. EXAMPLE:

In this study, we will develop recommendations that address these six concerns in your project:

- Site preparation
- Foundation design
- Sanitary-sewer design
- Storm-sewer design
- Geologic surface faulting
- Projections for regional land subsidence

Option B: Treat the list like a sentence series. In this case, you place commas or semicolons between items and a period at the end of the series. Whether you choose Option A or B largely depends on your own style or that of your employer. EXAMPLE:

In this study, we developed recommendations that dealt with four topics:

- Site preparation,
- Foundation design,
- Sewer construction, and
- Geologic faulting.

Note that this option requires you to place an *and* after the comma that appears before the last item. Another variation of Option B occurs when you have internal commas within one or more of the items. In this case, you must change the commas that follow the listed items into semicolons. Yet you still keep the *and* before the last item. EXAMPLE:

Last month we completed environmental assessments at three locations:

- A gas refinery in Dallas, Texas;
- The site of a former chemical plant in Little Rock, Arkansas; and
- A waste pit outside of Baton Rouge, Louisiana.

Option C: Treat each item like a separate sentence. When items in a list are complete sentences, you may want to punctuate each one like a separate sentence, placing a period at the end of each. You *must* choose this option when one or more of your listed items contain more than one sentence. EXAMPLE:

The main conclusions of our preliminary assessment are summarized here:

- At five of the six borehole locations, petroleum hydrocarbons were detected at concentrations greater than a background concentration of 10 mg/kg.
- No PCB concentrations were detected in the subsurface soils we analyzed. We will continue the testing, as discussed in our proposal.
- Sampling and testing should be restarted three weeks from the date of this report.

regrettably/regretfully

Regrettably means “unfortunately,” whereas *regretfully* means “with regret.” When you are unsure of which word to use, substitute the definitions to determine correct usage. EXAMPLES:

- *Regrettably*, the team members omitted their résumés from the proposal.
- Hank submitted his résumé to the investment firm, but *regrettably*, he forgot to include a cover letter.
- I *regretfully* climbed on the plane to return home from Hawaii.

respectively

Some good writers may use *respectively* to connect sets of related information. Yet such usage creates extra work for readers by making them reread previous passages. It is best to avoid *respectively* by rewriting the sentence, as shown in the several following options. EXAMPLES:

Original: Appendixes A, G, H, and R contain the topographical maps for Sites 6, 7, 8, and 10, respectively.

Revision—Option 1: Appendix A contains the topographical map for Site 6; Appendix G contains the map for Site 7; Appendix H contains the map for Site 8; and Appendix R contains the map for Site 10.

Revision—Option 2: Appendix A contains the topographical map for Site 6; Appendix G for Site 7; Appendix H for Site 8; and Appendix R for Site 10.

Revision—Option 3: Topographic maps are contained in the appendixes, as shown in the following list:

Appendix	Site
A	6
G	7
H	8
R	10

set/sit

Like *lie* and *lay*, *sit* and *set* are verbs distinguished by form and use. Following are the basic differences:

1. *Set* means “to place in a particular spot” or “to adjust.” It is a transitive verb and thus takes a direct object to which it conveys action. Its main parts are *set* (present), *set* (past tense), *set* (past participle), and *setting* (present participle).
2. *Sit* means “to be seated.” It is usually an intransitive verb and thus does not take a direct object. Its main parts are *sit* (present), *sat* (past), *sat* (past participle), and *sitting* (present participle). It can be transitive when used casually as instructions. (“Sit yourself down and take a break.”)

EXAMPLES:

- He *set* the computer on the table yesterday.
- While *setting* the computer on the table, he sprained his back.
- The technician had *set* the thermostat at 75 degrees.

- She plans to *sit* exactly where she sat last year.
- While *sitting* at her desk, she saw the computer.

sic

Latin for “thus,” *sic* is most often used when a quoted passage contains an error or other point that might be questioned by the reader. Inserted within brackets, *sic* shows the reader that the error was included in the original passage and that it was not introduced by you. EXAMPLE: The customer’s letter to our sales department claimed that “there are too [sic] or three main flaws in the product.”

Spelling

All writers find at least some words difficult to spell, and some writers have major problems with spelling. Automatic spell-checking software helps solve the problem, but you must still remain vigilant during the proofreading stage. One or more misspelled words in an otherwise well-written document may cause readers to question professionalism in other areas.

However, you should keep your own list of words you most frequently have trouble spelling. Like most writers, you probably have a relatively short list of words that give you repeated difficulty.

stationary/stationery

Stationary means “fixed” or “unchanging,” whereas *stationery* refers to paper and envelopes used in writing or typing letters. EXAMPLES:

- To perform the test correctly, one of the workers had to remain *stationary* while the other one moved around the job site.
- When she began her own business, Julie purchased *stationery* with her new logo on each envelope and piece of paper.

Subject–Verb Agreement

Subject–verb agreement errors are quite common in technical writing. They occur when writers fail to make the subject of a clause agree in number with the verb. EXAMPLE: The nature of the diverse geologic deposits are explained in the report. (The verb should be *is*, because the singular subject is *nature*.)

Writers who tend to make these errors should devote special attention to them. Specifically, isolate the subjects and verbs of all the clauses in a document and make certain that they agree. Following are seven specific rules for making subjects agree with verbs:

Rule 1: Subjects Connected by and Take Plural Verbs

This rule applies to two or more words or phrases that, together, form one subject phrase. EXAMPLE: “The site preparation section and the foundation design portion of the report are to be written by the same person.”

Rule 2: Verbs After Either/or or Neither/nor Agree With the Nearest Subject

Subject words connected by *either* and *or* (or *neither* and *nor*) confuse many writers, but the rule is very clear. Your verb choice depends on the subject nearest the verb. EXAMPLE: He told his group that neither the three reports nor the proposal was to be sent to the client that week.

Rule 3: Verbs Agree With the Subject, Not With the Subjective Complement

Sometimes called a *predicate noun* or *adjective*, a subjective complement renames the subject and occurs after verbs such as *is*, *was*, *are*, and *were*. EXAMPLE: The theme of our proposal is our successful projects in that region of the state. However, the same rule would permit this usage: “Successful projects in that part of the state are the theme we intend to emphasize in the proposal.”

Rule 4: Prepositional Phrases Do Not Affect Matters of Agreement

As long as, *in addition to*, *as well as*, and *along with* are prepositions, not conjunctions. A verb agrees with its subject, not with the object of a prepositional phrase. EXAMPLE: The manager of human resources, along with the personnel director, is supposed to meet with the three applicants.

Rule 5: Collective Nouns Usually Take Singular Verbs

Collective nouns have singular form but usually refer to a group of persons or things (e.g., *team*, *committee*, *crew*). When a collective noun refers to a group as a whole, use a singular verb. EXAMPLE: The project crew was ready to complete the assignment. Occasionally, a collective noun refers to the members of the group acting in their separate capacities. In this case, either use a plural verb or, to avoid awkwardness, reword the sentence. EXAMPLE: The crew were not in agreement about the site locations or Members of the crew were not in agreement about the site locations.

Rule 6: Foreign Plurals Usually Take Plural Verbs

Although usage is gradually changing, most careful writers still use plural verbs with *data*, *strata*, *phenomena*, *media*, and other irregular plurals. EXAMPLE: The data he asked for in the request for proposal are incorporated into the three tables.

Rule 7: Indefinite Pronouns Like Each and Anyone Take Singular Verbs

Writers often fail to follow this rule when they make the verb agree with the object of a prepositional phrase instead of with the subject. EXAMPLE: Each of the committee members are ready to adjourn (incorrect). Each of the committee members is ready to adjourn (correct).

to/too/two

To is part of the infinitive verb form or is a preposition. *Too* is an adverb that suggests an excessive amount or that means “also.” *Two* is a noun or an adjective that stands for the numeral “2.” EXAMPLES:

- He volunteered *to* go [infinitive verb] *to* Alaska [prepositional phrase] *to* work [another infinitive verb] on the project.
- Stephanie explained that the proposed hazardous-waste dump would pose *too* many risks *to* the water supply. Scott made this point, *too*.

Transitions

Transitions connect sentences, paragraphs, and document sections. Lists of transitions are available in most handbooks and on many Web sites. Transitions communicate meaning, indicating the logic that connects the two elements.

Addition: *again, also, besides, in addition, furthermore, moreover*

Comparison: *analogous to, in comparison, likewise, moreover, similarly*

Contrast: *although, despite, even so, however, instead, nevertheless, on the other hand, regardless*

Example: *even, for example, for instance, in fact, in other words, specifically, such as, to illustrate*

Location/Spatial relationship: *above, adjacent to, below, beyond, farther on, here, inside, nearby, opposite to, outside, there, to the left, under*

Time/Sequence: *after, before, earlier, finally, first, later, meanwhile, next, now, second, subsequently, then*

utilize/use

Utilize is simply a long form of the preferred verb *use*. Although some verbs that end in *-ize* are useful words, most are simply wordy substitutes for shorter forms. As some writing teachers say, “Why use *utilize* when you can use *use*?”

which/that

Which is used to introduce nonrestrictive clauses, which are defined as clauses not essential to meaning (as in this sentence). Note that such clauses require a comma before the *which* and a slight pause in speech. *That* is used to introduce restrictive clauses, which are essential to the meaning of the sentence (as in this sentence). Note that such clauses have no comma before the *that* and are read without a pause. *Which* and *that* can produce different meanings, as in the following examples:

- Our benefits package, *which* is the best in our industry, includes several options for medical care.
- The benefits package *that* our firm provides includes several options for medical care.

- My daughter's school, *which* is in Cobb County, has an excellent math program.
- The school *that* my daughter attends is in Cobb County and has an excellent math program.

Note that the preceding examples with *that* might be considered wordy by some readers. Indeed, the writer can often make such sentences more concise by deleting the *that* introducing the restrictive clause. However, delete *that* only if you can do so without creating an awkward and choppy sentence.

who/whom

Who and *whom* give writers (and speakers) fits, but the importance of their correct use probably has been exaggerated. If you want to be one who uses them properly, remember this basic point: *Who* is a subjective form that can be used only in the subject slot of a clause; *whom* is an objective form that can be used only as a direct object or other nonsubject in a sentence. You can check which word you should use by substituting *he* and *him*. Use *who* when you would use *he* and use *whom* when you would use *him*. EXAMPLES:

- The man *who* you said called me yesterday is a good customer of the firm. (The clause “*who* … called me yesterday” modifies *man*. Within this clause, *who* is the subject of the verb *called*. Note that the subject role of *who* is not affected by the phrase “you said,” which interrupt the clause.)
- They could not remember the name of the person *whom* they interviewed. (The clause “*whom* they interviewed” modifies *person*. Within this clause, *whom* is the direct object of the verb *interviewed*.)

who's/whose

Who's is a contraction that replaces *who is*, whereas *whose* is a possessive adjective. EXAMPLES:

- *Who's* planning to attend the annual meeting?
- Susan is the manager *who's* responsible for training.
- *Whose* budget includes training?
- Susan is the manager *whose* budget includes training.

your/you're

Your is an adjective that shows ownership, whereas *you're* is a contraction for *you are*. EXAMPLES:

- *Your* office will be remodeled next week.
- *You're* responsible for giving performance appraisals.

Exercise 1: Grammar and Mechanics

The following passages contain a variety of grammatical and mechanical errors covered in the handbook. The major focus is punctuation. Rewrite each passage.

1. Some concerns regarding plumbing design are mentioned in our report, however, no unusual design problems are expected.
2. An estimate of the total charges for an audit and for three site visits are based on our standard fee schedules.
3. The drill bit was efficient cheap and available.
4. The plan unless we have completely misjudged it, will increase sales markedly.
5. Our proposal contains design information for these two parts of the project; Phase 1 (evaluating the 3 computers) and Phase 2 (installing the computer selected).
6. If conditions require the use of all-terrain equipment to reach the construction locations, this will increase the cost of the project slightly.
7. An asbestos survey was beyond the scope of this project, if you want one, we would be happy to submit a proposal.
8. Jones-Simon Company, the owners of the new building, were informed of the problem with the foundation.
9. Also provided is the number and type of tests to be given at the office.
10. Calculating the standard usages by the current purchase order prices result in a downward adjustment of \$.065.

11. Data showing the standard uses of the steel, including allowances for scrap, waste and end pieces of the tube rolls, are included for your convenience at the end of this report in Table 7.
12. This equipment has not been in operation for 3 months, and therefore, its condition could not be determined by a quick visual inspection.
13. Arthur Jones Manager of the Atlanta branch wrote that three proposals had been accepted.
14. The generator that broke yesterday has been shipped to Tampa already by Harry Thompson.
15. The first computer lasted eight years the second two years.
16. He wants one thing out of their work speed.
17. On 25 September 2008 the papers were signed.
18. On March 23 2009 the proposal was accepted.
19. The meeting was held in Columbus the Capital of Ohio.
20. M-Global, Inc. completed its Indonesia project in record time.
21. He decided to write for the brochure then he changed his mind.
22. Interest by the Kettering Hospital staff in the development of a master plan for the new building wings have been expressed.
23. However much he wants to work for Gasion engineering he will turn the job down if he has to move to another state.
24. 35 computer scientists attended the convention, but only eleven of them were from private industry.
25. Working at a high salary gives him some satisfaction still he would like more emotional satisfaction from his job.
26. His handwriting is almost unreadable therefore his secretary asked him to dictate letters.
27. Any major city especially one that is as large as Chicago is bound to have problems with mass transit.
28. He ended his speech by citing the company motto; "Quality first, last, and always".
29. Houston situated on the Gulf of Mexico is an important international port.
30. The word *effect* is in that student's opinion a difficult one to use.
31. All persons who showed up for the retirement party, told stories about their association with Charlie over the years.
32. The data that was included in the study seems inconclusive.
33. My colleague John handled the presentation for me.
34. Before he arrived failure seemed certain.
35. While evaluating the quality of her job performance a study was made of her writing skills by her supervisor.
36. I shall contribute to the fund for I feel that the cause is worthwhile.
37. James visited the site however he found little work finished.
38. There are three stages cutting grinding and polishing.
39. The three stages are cutting grinding and polishing.
40. Writers occasionally create awkward verbs *prioritize* and *terminate* for example.
41. Either the project engineers or the consulting chemist are planning to visit with the client next week.
42. Besides Gerry Dave worked on the Peru project.
43. The corporation made a large unexpected gift to the university.
44. The reason for his early retirement are the financial incentives given by his employer.
45. Profit, safety and innovation are the factors that affect the design of many foundations.
46. No later than May 2012 the building will be finished.
47. Each of the committee members complete a review of the file submitted by the applicant.
48. The team completed their collaborative writing project on schedule.
49. Both the personnel officers and the one member of the quality team is going to attend the conference in Fargo.
50. He presented a well organized presentation but unfortunately the other speakers on the panel were not well-prepared.

Exercise 2: Usage

For each of the following passages, select the correct word or phrase from the choices within the parentheses. Be ready to explain the rationale for your choice.

1. John (implied, inferred) in his report that TransAm Oil should reject the bid.
2. Before leaving on vacation, the company president left instructions for the manner in which responsibilities should be split (among, between) the three vice presidents.
3. Harold became (uninterested, disinterested) in the accounting problem after working on it for 18 straight hours.
4. A large (percent, percentage) of the tellers is dissatisfied with the revised work schedule.
5. The typist responded that he would make (less, fewer) errors if the partner would spell words correctly in the draft.
6. From her reading of the annual report, Ms. Jones (inferred, implied) that the company might expand its operations.
7. The president's decision concerning flextime will be (effected, affected) by the many conversations he is having with employees about scheduling difficulties.
8. His (principal, principle) concern was that the loan's interest and (principle, principal) remain under \$500.
9. Throughout the day, his concentration was interrupted (continuously, continually) by phone calls.
10. He jogged (continuously, continually) for 20 minutes.
11. Five thousand books (compose, comprise) his personal library.
12. The clients (who, whom) he considered most important received Christmas gifts from the company.
13. The company decided to expand (its, it's) operations in the hope that (its, it's) the right time to do so.
14. The (nonflammable, flammable, inflammable) liquids were kept in a separate room because of their danger.
15. They waited for (awhile, a while) before calling the subcontractor.
16. Caution should be taken to (ensure, insure) that the alarm system will not go off accidentally.
17. The new floors (are comprised of, are composed of, comprise) a thick concrete mixture.
18. He (expects, anticipates) that 15 new employees will be hired this year.
19. The main office offered to (augment, supplement) the annual operating budget of the Boston office with an additional \$100,000 in funds.
20. It was (all together, altogether) too late to make changes in the proposal.
21. The arbitrator made sure that both parties (agreed to, agreed with) the terms and conditions of the contract before it was submitted to the board.
22. Option 1 calls for complete removal of the asbestos. (Alternately, Alternatively), Option 2 would require only that the asbestos material be thoroughly covered.
23. They had not considered the (amount, number) of cement blocks needed for the new addition.
24. (Due to, Because of) the change in weather, they had to reschedule the trip to the project site.
25. The health inspector found (too, to) many violations in that room, (to, too).
26. They claimed that the old equipment (used, utilized) too much fuel.
27. Gone are the days when a major construction job gets started with a handshake and (a verbal, an oral) agreement.
28. The complex project has 18 (discreet, discrete) phases; each part deals with confidential information that must be handled (discretely, discreetly).
29. He was (definitive, definite) about the fact that he would not be able to complete the proposal by next Tuesday.
30. He usually received (complementary, complimentary) samples from his main suppliers.
31. To (lose, loose) a client for whom they had worked so hard was devastating.
32. It was (fortunate, fortuitous) he was there at the exact moment the customer needed to order a year's worth of supplies, for the sales commission was huge.
33. Among all the information on the graph, he located the one (data, datum) that shows the price of tuna on the Seattle market at 5 p.m. on August 7.
34. Each (principle, principal) of the corporation was required to buy stock.
35. He returned to the office to (assure, ensure) that the safe was locked.

Appendix B

English as a Second Language (ESL)

Technical writing challenges native English speakers and nonnative English speakers alike. The purpose of this appendix is to present a basic description of three grammatical forms: articles, verbs, and prepositions. These forms may require more intense consideration from international students when they complete technical writing assignments. Each form is described by means of the ease-of-operation section from a memo about a fax machine. The passage, descriptions, and charts work together to show how these grammar forms function collectively to create meaning.

Ease of Operation: Article Usage

The AIM 500 is so easy to operate that a novice can learn to transmit a document to another location in about two minutes. Here's the basic procedure:

1. Press the button marked TEL on the face of the fax machine. You then hear a dial tone.
2. Press the telephone number of the person receiving the fax on the number pad on the face of the machine.
3. Lay the document face down on the tray at the back of the machine.

At this point, just wait for the document to be transmitted—about 18 seconds per page. The fax machine will even signal the user with a beep and a message on its LCD display when the document has been transmitted. Other more advanced operations are equally simple to use and require little training. Provided with the machine are two different charts that illustrate the machine's main functions.

The size of the AIM 500 makes it easy to set up almost anywhere in an office. The dimensions are 13 inches in width, 15 inches in length, and 9.5 inches in height. The narrow width, in particular, allows the machine to fit on most desks, file cabinets, or shelves.

Articles. Articles are one of the most difficult forms of English grammar for nonnative English speakers, mainly because some language systems do not use them. Thus speakers of particular languages may have to work hard to incorporate the English article system into their language proficiency.

The English articles are *a*, *an*, and *the*.

- *A* and *an* express indefinite meaning when they refer to nouns or pronouns that are not specific. The writer believes the reader does not know the noun or pronoun.
- *The* expresses definite meaning when it refers to a specific noun or pronoun. The writer believes the reader knows the specific noun or pronoun.

ESL writers choose the correct article only when they (1) know the context or meaning, (2) determine whether they share information about the noun with the reader, and (3) consider the type of noun following the article.

The ease-of-operation passage includes 31 articles that represent the two types—definite and indefinite. When a writer and a reader share knowledge of a noun, the definite article should be used. On 25 occasions the articles in the passage suggest the writer and reader share some knowledge of a count noun. *Count nouns* are nouns that can be counted (pen, cloud, memo). Examples of noncount nouns are sugar, air, and beef.

For example, the memo writer and the memo recipient share knowledge of the particular model fax machine—the AIM 500. Thus, *the* is definite when it refers to “the fax machine” in the memo. Notice, however, that *document* becomes definite only after the second time it is mentioned (“Lay the document face down”). In the first reference to *document*, *a document* refers to a document about which the writer and reader share no knowledge. The memo writer cannot know which document the reader will fax. Only in the second reference do the writer and reader know the document to be the one the reader will fax.

The indefinite article *a* occurs five times, and *an* occurs once. Each occurrence signals a singular count noun. The reader and the writer share no knowledge of the nouns that follow the *a* or *an*, so an indefinite article is appropriate. *A* precedes nouns beginning with consonant sounds. *An* precedes nouns beginning with vowel sounds. Indefinite articles seldom precede noncount nouns unless a noncount functions as a modifier (a beef shortage).

Definite and indefinite articles are used more frequently than other articles; however, other articles do exist. The “generic” article refers to classes or groups of people, objects, and ideas. If the fax machine is thought of in a general sense, the meaning changes. For example, “The fax machine increased office productivity by 33 percent.” *The* now has a generic meaning representing fax machines in general. The same generic meaning can apply to the plural noun, but such generic use requires no article: “Fax machines increased office productivity by 33 percent.” *The* in this instance is a generic article.

Articles from “Ease of Operation” Excerpt

<i>Article</i>	<i>Noun</i>	<i>Type</i>	<i>Comment</i>
The	AIM 500	definite	
a	novice	indefinite	first mention—no shared knowledge
a	document	indefinite	first mention—no shared knowledge
the	basic procedure	definite	
the	button	definite	
the	face	definite	
the	fax machine	definite	first mention without proper name, with reader/writer shared knowledge
a	dial tone	indefinite	first mention—no shared knowledge
the	telephone number	definite	
the	person	definite	
the	fax	definite	
the	number pad	definite	
the	face	definite	
the	machine	definite	
the	document	definite	
the	tray	definite	
the	back	definite	
the	machine	definite	
the	document	definite	second mention
the	fax machine	definite	
the	user	definite	
a	beep	indefinite	first mention—no shared knowledge
a	message	indefinite	first mention—no shared knowledge
the	document	definite	
the	machine	definite	
the	machine’s main	definite	functions
The	size	definite	
the	AIM 500	definite	
an	office	indefinite	first mention—preceding vowel sound—no shared knowledge
The	dimensions	definite	
The	narrow width	definite	
the	machine	definite	

Ease of Operation: Verb Usage

The AIM 500 is so easy to operate that a novice **can learn** to transmit a document to another location in about two minutes. Here’s the basic procedure:

1. **Press** the button marked TEL on the face of the fax machine. You then **hear** a dial tone.
2. **Press** the telephone number of the person receiving the fax on the number pad on the face of the machine.
3. **Lay** the document face down on the tray at the back of the machine.

At this point, just **wait** for the document to be transmitted—about 18 seconds per page. The fax machine **will** even **signal** the user with a beep and a message on its LCD display when the document **has been transmitted**. Other more advanced operations **are** equally simple to use and **require** little training. **Provided** with the machine **are** two different charts that **illustrate** the machine’s main functions.

The size of the AIM 500 **makes** it easy to set up almost anywhere in an office. The dimensions **are** 13 inches in width, 15 inches in length, and 9.5 inches in height. The narrow width, in particular, **allows** the machine to fit on most desks, file cabinets, or shelves.

Verbs. Verbs express time in three ways—simple present, simple past, and future. *Wait*, *waited*, and *will wait*, and *lay* (“to put”), *laid*, and *will lay*, are examples of simple present, simple past, and future tense verbs. Verbs in the English language system have either regular or irregular forms.

Regular Verbs—Simple Tense. Regular verbs follow a predictable pattern. The form of the simple present tense verbs (*walk*) changes to the simple past tense with the addition of *-ed* (*walked*) and changes to the simple future with the addition of a special auxiliary (helping) verb called a *modal* (*will walk*).

Present	Past	Future
learn	learned	will learn
wait	waited	will wait
press	pressed	will press
signal	signaled	will signal
require	required	will require
provide	provided	will provide
illustrate	illustrated	will illustrate
allow	allowed	will allow

Irregular Verbs—Simple Tense. Irregular verbs do not follow a predictable pattern. Most important, the past tense is not created by adding *-ed*. The simple present tense of *lay* (“to put”) changes completely in the simple past (*laid*).

Present	Past	Future
is	was	will be
are	were	will be
hear	heard	will hear
do	did	will do
get	got	will get
see	saw	will see
write	wrote	will write
speak	spoke	will speak

Unfortunately, the English verb system is more complicated than that. Verbs express more than time; they can also express *aspect*, or whether an action was completed. The perfect aspect indicates that an action was completed (perfected), and the progressive aspect indicates that an action is incomplete (in progress).

Regular Verbs: Aspect. In regular verbs, the perfect aspect is indicated with the addition of a form of the auxiliary (helping) word *to have* to the simple past tense form. In verb phrases that indicate aspect, tense is always found in the first verb in the verb phrase. For example, “I have walked” is present perfect, and “I had walked” is past perfect. The progressive aspect is indicated with the addition of a form of the auxiliary word *to be* and an *-ing* form of the main verb. The progressive aspect is always regular.

Present Perfect	Past Perfect	Future Perfect
have learned	had learned	will have learned
have waited	had waited	will have waited
have pressed	had pressed	will have pressed
have signaled	had signaled	will have signaled
have required	had required	will have required
have provided	had provided	will have provided
have illustrated	had illustrated	will have illustrated
have allowed	had allowed	will have allowed

Present Progressive	Past Progressive	Future Progressive
is learning	was learning	will be learning
is waiting	was waiting	will be waiting
is pressing	was pressing	will be pressing
is signaling	was signaling	will be signaling
is requiring	was requiring	will be requiring
is providing	was providing	will be providing
is illustrating	was illustrating	will be illustrating
is allowing	was allowing	will be allowing

Irregular Verbs: Aspect. The irregular forms of the perfect aspect can be confusing. The auxiliary verbs are the same as for the regular verb phrases, but the main verb can be inflected in a number of ways. Most dictionaries list this form of the verb after the present and past forms of the verb.

Present Perfect	Past Perfect	Future Perfect
have been	had been	will have been
have heard	had heard	will have heard
have done	had done	will have done
have got	had got	will have got
have seen	had seen	will have seen
have written	had written	will have written
have spoken	had spoken	will have spoken

Let's examine four specific verb forms in the ease-of-operation passage.

1. *Is* represents a being or linking verb in the passage. Being verbs suggest an aspect of an experience or being (existence); for example, "He is still here," and "The fax is broken." Linking verbs connect a subject to a complement (completer), for example, "The fax machine is inexpensive."
2. *Can learn* is the present tense verb *learn* preceded by a modal. Modals assist verbs to convey meaning. *Can* suggests ability or possibility. Other modals and their meanings appear next.

Will	Would	Could	Shall	Should	Might	Must
scientific	hypothetical	hypothetical	formal	expectation	possibility	necessity
fact						
possibility			will	obligation		
determination						

3. *Here's* shows a linking verb (*is*) connected to its complement (*here*). The sentence in its usual order—subject first followed by the verb—appears as, "The basic procedure is here." Article—adjective—noun—linking verb—complement.

Verbs from Ease-of-Operation Excerpt

Verb	Tense	Number	Other Details
is	present	singular	linking/being (<i>is, was, been</i>)
can learn	present	singular	<i>can</i> is a modal auxiliary implying "possibility"
Here's (<i>is</i>)	present	singular	linking/being
Press	present	singular	understood <i>you</i> as subject
hear	present	singular	action/transitive
Press	present	singular	understood <i>you</i> as subject
Lay	present	singular	irregular (<i>lay, laid, laid</i>) singular—understood <i>you</i> as subject
wait	present	singular	understood <i>you</i> as subject
will signal	future	singular	action to happen or condition to experience

Verb	Tense	Number	Other Details
has been transmitted	present perfect	singular	action that began in the past and continues to the present
are	present	plural	linking/being
require	present	plural	action/transitive
Provided are	present perfect	plural	action that began in the past and continues to the present
illustrate	present	plural	action/transitive
makes	present	singular	action/transitive
are	present	plural	linking/being
allows	present	singular	action/transitive

4. *Press, Lay, and wait (for)* share at least four common traits: present tense, singular number, transitive action, and understood subject of *you*. Although *you* does not appear in the text, the procedure clearly instructs the person operating the fax machine—that is, *you*. Action or transitive verbs express movement, activity, and momentum and require objects. Objects answer the questions “Who?” “What?” “Whom?” and “To whom” or “For whom?” in relation to transitive verbs. For example, “Press the button,” “Hear a dial tone,” “Press the telephone number,” “Lay the document face down.” Press what? Hear what? Lay what?

Ease of Operation: Preposition Usage

The AIM 500 is so easy to operate that a novice can learn to transmit a document **to** another location **in** about two minutes. Here's the basic procedure:

1. Press the button marked TEL **on** the face **of** the fax machine. You then hear a dial tone.
2. Press the telephone number **of** the person receiving the fax **on** the number pad **on** the face **of** the machine.
3. Lay the document face down **on** the tray **at** the back **of** the machine.

At this point, just wait **for** the document to be transmitted—**about**

18 seconds **per** page. The fax machine will even signal the user **with** a beep and a message **on** its LCD display when the document has been transmitted. Other more advanced operations are equally simple to use and require little training. Provided **with** the machine are two different charts that illustrate the machine's main functions.

The size **of** the AIM 500 makes it easy to set up almost anywhere **in** an office. The dimensions are 13 inches **in** width, 15 inches **in** length, and 9.5 inches **in** height. The narrow width, **in** particular, allows the machine to fit **on** most desks, file cabinets, or shelves.

Prepositions. Prepositions are words that become a part of a phrase composed of the preposition, a noun or pronoun, and any modifiers. Notice the relationships expressed within the prepositional phrases and the ways they affect meaning in the sentences. In the ease-of-operation passage, about half the prepositional phrases function as adverbs noting place or time; the other half function as adjectives.

Place	Location	Time
at	on	before
in	above	after
below	around	since
beneath	out	during
over	underneath	
within	under	
outside	near	
into	inside	

One important exception to the rule that prepositions introduce phrases is when a preposition connects to a verb to make a *prepositional verb*—*wait for*. Another interesting quality of prepositions is that sometimes two or more may express a similar meaning. In the ease-of-operation passage, for example, both “*on* the tray” and “*at* the back” indicate position. Another way to state the same information is “*on* the tray *on* the back.”

Prepositions from Ease-of-Operation Excerpt

<i>Preposition</i>	<i>Noun Phrase</i>	<i>Comment</i>
to	another location	direction toward
in	about two minutes	approximation of time
on	the face	position
of	the fax machine	originating at or from
of	the person	associated with
on	the number pad	position
on	the face	position
of	the machine	originating at
on	the tray	position
at	the back	position
of	the machine	originating at
At	this point	on or near the time
for	the document	indication of object of desire
about	18 seconds	adverb = approximation
per	page	for every
with	a beep and a message	accompanying
on	its LCD display	position
with	the machine	accompanying
of	the AIM 500	originating at or from
in	an office	within the area
in	width	with reference to
in	length	with reference to
in	height	with reference to
in	particular	with reference to
on	most desks, file cabinets, or shelves	position

Appendix C

Further Reading

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PLANNING FORM

Name: _____ Assignment _____

I. Purpose: Answer each question in one or two sentences.

- A. Why are you writing this document?
- B. What response do you want from readers?

II. Audience

- A. Reader Matrix: Fill in names and positions of people who may read the document

	Decision Makers	Advisers	Receivers
Managers			
Experts			
Operators			
General Readers			

- B. Information on individual readers: Answer these questions about the primary audience for this document. If the primary audience includes more than one reader (or type of reader) and there are significant differences between the readers, answer the questions for each (type of) reader. Attach additional sheets as necessary.

C. Primary audience

1. What is this reader's technical or educational background?
2. What main question does this person need answered?
3. What main action do you want this person to take?
4. What features of this person's personality might affect his or her reading?

III. Document

- A. What information do I need to include in the

1. Abstract?
2. Body?
3. Conclusion?

- B. What organizational patterns are appropriate to the subject and purpose?

- C. What style choices will present a professional image for me and the organization I represent?