

CHAPTER 3

The Technical Communication Process

CHAPTER CONTENTS

Chapter 3 in a Nutshell

- An Overview of the Process
- Planning Your Document
- Drafting and Revising Your Document
- Editing or Finishing
- Focus on Groups

CHAPTER 3 IN A NUTSHELL

You have to plan, draft, revise, and finish your document, either by yourself or in a group.

Plan by establishing your relationship with your audience and your document. Situate yourself by determining your knowledge of the topic and your goal for the audience. Also determine whether legal, ethical, or global issues are involved. Create a clean document design, both for physical appearance and for content strategy. Develop a realistic production schedule. You want your audience to accept what you tell them. They have to accept you as credible—because they know “who you are” or because you have performed the “right action” to familiarize yourself with the topic.

Draft by carrying out your plan. Find your best production method. Some people write a draft quickly, focusing on “getting it out,” whereas others write a draft slowly, focusing on producing one good sentence after another. Keep basic strategies—for instance, the top-down method of first announcing

the topic and then filling in the details—in mind as you write. Almost no one gets the draft “right” on the first iteration. Think of it as your “alpha” version. Build in time to create a “beta” version. If you do so, review your draft on different levels—look at whether the topics are in the most helpful order, consider whether examples or visual aids should be deleted or added, keep asking “Does this help the reader understand?” If the review causes you to see a new, better way to present the material, change it.

Edit by making the document consistent. Look for surface problems, such as spelling, grammar, and punctuation. Make sure all the presentation elements—heads, captions, margins—are the same. Set and meet quality benchmarks.

Work in a group by expanding your methodology. For groups, add into your planning a method to handle group dynamics—set up a schedule, assign responsibilities, and, most important, select a method for resolving differences.

Like all processes, document production proceeds in stages. This chapter explains each of these stages and introduces you to writing as a member of a group, a practice common in industry and business.

An Overview of the Process

The goal of technical communication is to enable readers to act. To do so, you need to create a document that is helpful and appropriate, one in which the audience can find what they need, understand what they find, and use what they understand appropriately (Redish). In addition, you need to create a document that engages readers so that they focus their attention on the patterns in the document. In order to achieve these goals, you need to follow a process. This chapter explains that process, including special items you need to consider if you are composing a document as part of a group.

Many technical writers have discussed the process that they use to produce documents. These discussions have a remarkable consistency. Almost all writers feel that the process is both linear (following the sequence step by step) and recursive (returning to previous steps or skipping ahead as necessary).

Almost all use some version of this sequence:

- ▶ Plan by discovering and collecting all relevant information about the communication situation.
- ▶ Draft, test, and revise by selecting and arranging the elements in the document.
- ▶ Finish by editing into final form.

Figure 3.1, a flow chart of the process (adapted from Goswami et al. 38; Redish 164), indicates the steps and nature of the process. The blue arrows indicate the linear sequence: first plan, then write, and then edit. This path is the standard logical sequence that most people try to follow in any project. The black arrows, however, indicate the recursive nature of this process—you must be ready to return to a previous stage or temporarily advance to a subsequent stage to generate a clear document.

Planning Your Document

During the planning stage, you answer a set of questions concerning your audience, your message, your document's format, and the time available for the project. The answers to those questions will give you important information about your audience and a general idea of the document you will create.

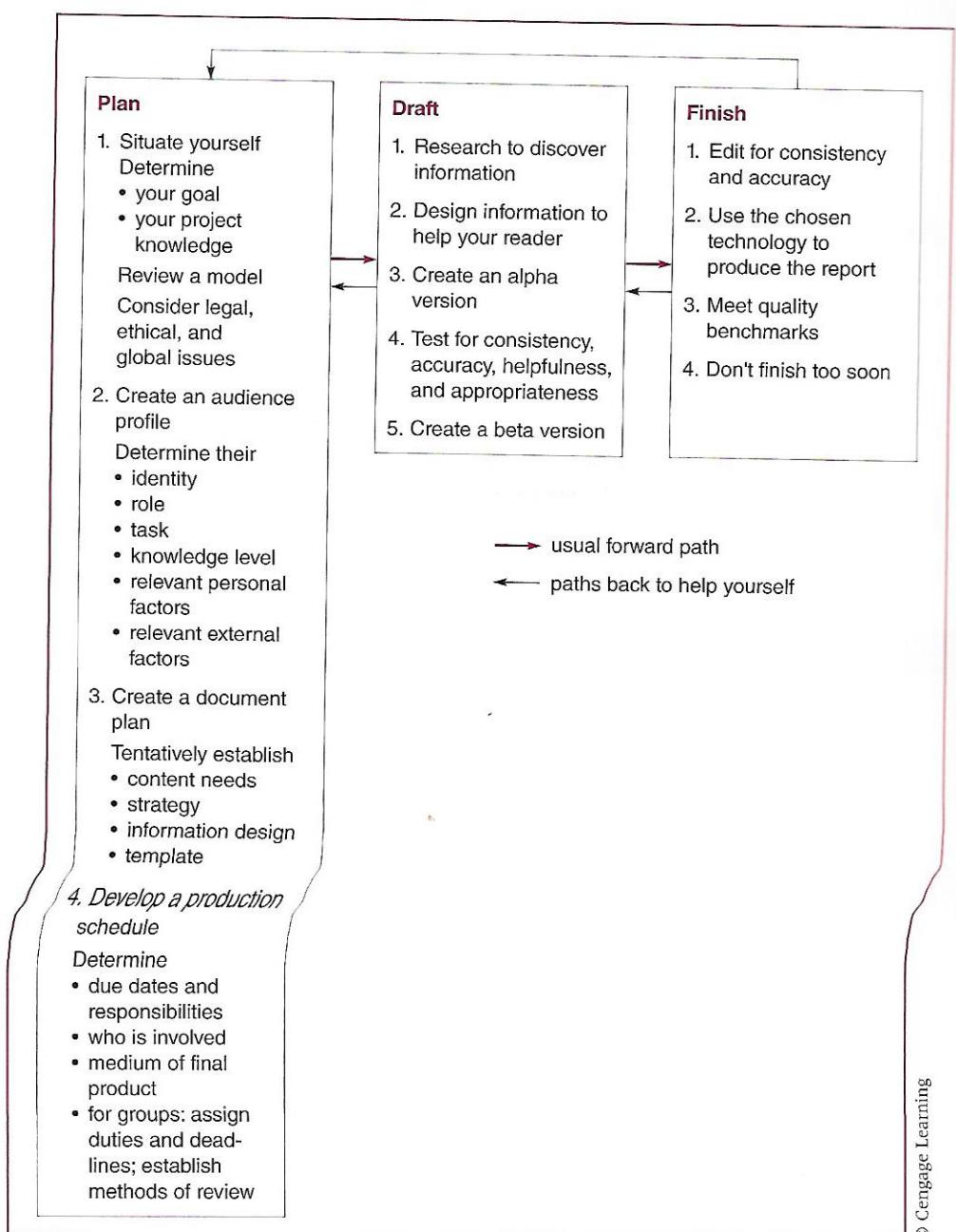


Figure 3.1 Writing Process Chart

Depending on the situation, planning can be either brief or lengthy. For a short report or e-mail, the planning step might be just making a few mental notes that guide you as you compose. For instance, to send out a routine meeting announcement via e-mail, you might only have to select the recipients from your address list; confirm the date, place, and agenda; and review previous routine announcements to get the correct page design. But for a lengthy proposal or manual, the planning sessions could yield a written document that specifies the audience and explains the way they will use the planned document, a detailed style sheet for format, and a realistic production schedule.

Regardless of the amount of time spent on this step, planning is a key activity in writing any document. Better writing results from better planning (Dorff and Duin; Flower).

To plan effectively, situate yourself, create an audience profile, create a document plan, design your information, design your template, and create a production schedule.

Situate Yourself

To situate yourself, you need to determine what you are trying to do. Take a moment (or several) to think through your answers to the questions discussed next.

What Is Your Goal?

Your goal is to direct the audience to a specific experience after reading your document. What should they know or be able to do after reading your document, and how should they be helped to that new condition (see Screven; Shedroff)? The answer depends on the situation, and often seems obvious, but specifically stating your goal will give you a mission statement that will guide your work. Examples include, "Through reading this document the audience will assemble the tricycle." "Through reading this document the audience will find compelling reasons to fund my research project." "Through reading this document the audience will understand the results and implications of this experiment" (see Horton, Chapter 1).

How Much Project Knowledge Do You Have?

You need to decide how much you know. The answer to this question depends on the relation of the project and the document. If the project is completed, you have the knowledge and need to perform little if any research. You know what happened in the experiment; you know what you found out when you investigated sites for a new retail store. On the other hand, in many situations you are handed an assignment that results in a document, but concerns a topic about which you know nothing. In this case, you need to plan how you will discover all the relevant information.

If you are assigned to create a set of instructions for software that you are unfamiliar with, then you will have to undergo some kind of training and perform research to find the information. If you have to write a proposal for funding a program, you will have to research all the information that the granting agency requires.

This information will eventually find its way into your production schedule, discussed later in this chapter.

Is There a Model to Help You Focus Your Thinking?

Most people find a document easier to create if they have some idea of what it ought to look like. As a college student, you no doubt have asked a teacher for specifications on a research paper's length and whether you need to include formal footnotes so you know how to shape the material. To find a model, consider any of these methods. Is there a look imposed by a genre? Many technical documents belong to a *genre*, a formalized way of handling recurring writing tasks. For instance, sets of instructions are a genre; most of them look roughly alike, with a title, introduction, and chronologically sequenced steps. Is there a company style sheet? Many companies have style guidelines to follow when creating a report—the title page, for instance, must contain specified information such as title, author, recipient, date, and project number; chapters must begin on a new page, using a font of a certain size. Look for an earlier document of the same kind to serve as a model. Many times, authors who have to write a report, say, a personnel evaluation or committee minutes, will find an example of previous work done acceptably, and use that approach.

All these are examples of the author finding out in the planning stage the “vessel” into which he or she will “pour” his or her ideas. Having this look in mind allows you to plan other elements effectively.

Are Global Issues Involved?

If the document will be translated for or used by people in other countries, there are global issues to be dealt with. In that case, you need to review the type of localization (as explained in Chapter 1, pp. 19–26) you will use—radical or general. You will then have to adjust the document’s form and wording to include the audience who does not share your cultural background.

Are Legal or Ethical Issues Involved?

Ethical issues, as discussed in Chapter 1, deal with doing the right thing for the stakeholders involved. These issues can be very important, such as whether this project and the report that supports it actually break the law, or they can deal with issues of treating information clearly for all stakeholders. At times, issues may need to be reviewed by legal counsel, for instance, phrasing sentences so that you remain in compliance with terms of a contract.

Create an Audience Profile

To create an audience profile you need to answer the audience questions listed in Chapter 2. Rephrased slightly, those questions are

- Who is the audience?
- What is their role?
- What is their task?
- What is their knowledge level?
- What personal factors influence the situation (feelings about subject, sender, expected form of communication)?
- What external factors influence the situation?

As was explained in Chapter 2, planning for your audience is a key method for writing helpful and appropriate documents. Since these questions have all been dealt with there, they will not be discussed here. If the audience is located in another country, use ideas from Chapter 1 (see section “Technical Communication Is Global”) in your planning.

Create a Document Plan

To create a document plan, establish your content needs, establish your strategy, decide whether to use a genre, decide whether to use an established pattern, and consider using a metaphor.

Establish Your Content Needs

To establish your content needs you must determine what you know about the topic and what the audience knows and needs to learn. If you know quite a bit, then you understand the content and have little need for more research. If you know little or nothing about the topic, then you have to set up a plan to discover all the information before you can decide what the audience needs.

To deal with the audience knowledge and needs, refer again to the schemata discussion (Chapter 2, pp. 42–45), where you will find the basic principle: Add to what the audience knows and don’t belabor the obvious. If they know a lot, then you can assume that they know broad terminology and implications of actions (e.g., if you say, “Open a Word file,” they will perform all the actions necessary to open a new file on the screen without further instruction). If they do not know a lot, then build on what they do know (if your audience is composed of computer novices, you would instruct them to turn on the computer, find the Word icon, double-click on it, and choose New from the File menu).

Establish Your Strategy

To establish your strategy, you determine how to carry out your goal. Strategy is your “creative concept,” the way you present the material so that your reader can easily grasp and act upon it. What design will help the reader to do that? Essentially, you must create an experience for your reader, helping him

or her to build a unique model of the information (Albers). In order to build the model, the reader must be able to see all the parts and then work to join them together into a final product. It is as if every writing situation were a box filled with parts that have to be assembled. As the writer, you have to lay out those parts and then give the reader what is needed to assemble them. For instance, you lay out the problem and then help the reader understand (and agree to) your solution. Or, you lay out the goal and then take the reader step by step through a process that leads to the goal. While establishing a strategy and building a model are often difficult to do, they are also a fun way to think about relating to your topic (Garret 40–59).

The idea of strategy is to help readers grasp the big picture so that they can interrelate all the details that you present to them. The organization of your document helps them find that big picture. Three common ways to organize are to follow a genre, to use established patterns, and to use a metaphor.

Decide Whether to Use a Genre

A genre is a standardized way to present information (Carliner 49). Various genres include documents such as sets of instructions, proposals, trip reports, or meeting agendas, documents so common that just by looking at them the reader knows what to expect. He or she understands what they are, what they are likely to include, and how they are likely to be structured. In other words, they know what experience they will have as they read the document. For instance, in instructions, lists of necessary materials appear in the introduction, and the steps appear in the body in sequential order. Readers know that they have to find the parts and then follow the steps to reach the goal.

Decide Whether to Use an Established Pattern

If no genre exists, you could try several other options. You could use a common rhetorical sequence: for instance, definition followed by example and analogy. You could establish an organizational progression, such as most vital to least important or top to bottom. To treat the components of a computer system from most to least important, you might start with the central processing unit and end with the electrical cord. To discuss it from top to bottom, you might start with the screen and end with the keyboard.

Design Your Information

In addition to choosing an overall organization, plan how you will present information within that organization. Several methods will help you. The key items are choosing an arrangement and using various cueing devices to help the reader pick out what is important and to “assemble” relationships. Since many of these devices become clearer to a writer as he or she actually writes, they are discussed at length in the sections on drafting, testing, and finishing your document.

Design Your Template

A *template* is a general guide for the look of your page. It is closely related to a style sheet, a list of specifications for the design of the page. The goal of a style sheet is to create a visual logic—a consistent way to visually identify parts of a paper. The parts of a style sheet are the width of margins, the appearance of several layers of heads, the treatment of visuals and lists, the position of page numbers, and the typeface. These items are described in detail in Chapter 6. Most sophisticated word processing programs (e.g., Microsoft Word) allow you to set these formats before you begin.

Figure 3.2 Shows a Sample Template.

Title—24 point bold Arial, set up and down (i.e., capitalize all important words)

Level 1 Heading—12 point Arial bold, set flush left, up and down

Level 2 Heading—12 point Arial bold, set flush left, up and down, followed by a period

Text font—12 point Arial

Spacing—single-space within paragraphs and double-space between

Visual aids—set flush left

Caption—10 point Arial italicized, set flush left, up and down; include the word Figure followed by a period, then the title and no period

Sample Report Template

Level 1 Heading

This is text font. It is Arial 12 point.

Level 2 Heading. This is more text font. Below is a visual aid with its caption.



Figure 1.

Caption

Figure 3.2 Sample Template

An Example of Developing a Style Sheet

Let's return again to the report (Figure 2.1, pp. 36–38) to see how the author developed a style sheet. He used headings to make the three sections of the report easy to locate, and he used numbering to set off each item. His lists use the "hanging indent" method, the second line starting under the first word of the first line. The visual aid is set at the left margin with the caption above it.

Create a Production Schedule

A production schedule is a chronological list of the activities required to generate the document and the time they will consume. Your goal is to create a realistic *schedule, taking into consideration the time available and the complexity of the document*. You need to answer these questions: How much time do I have? Who is involved in producing the document? What constraints affect production?

How Much Time Do I Have?

You have from the present to the deadline, be it one hour, two weeks, or four months. Determine the end point and then work backward, considering how long it will take to perform each activity. How long will it take to print the final document? How much time must you allot to the revision and review stage? How long will it take to draft the document? How much time do you need to discover the "gist" of your document?

A major problem with time management is "finishing too soon." Many people bring hidden time agendas to projects. They decide at the beginning that they have only so many hours or days to devote to a particular project. When that time is up, they must be finished. They do not want to hear any suggestions for change, even though these suggestions are often useful and, if acted upon, could produce a much better document. Another time management problem often occurs in research projects. A fascinated researcher continually insists on reading "just one more" article or book, consuming valuable time. When he or she begins to write the report, there is not enough time left to do the topic justice. The result is a bad report.

As your ability to generate good documents increases, you will get better at estimating the time it will take to finish a writing project. You will also develop a willingness to change the document as much as necessary to get it right. Developing these two skills is a sure sign that you are maturing as a writer. The worksheet on page 77 provides a useful editing checklist.

Also consider the time it will take to produce the final document. Who will type it? What kind of system will you use? Word processor? Professional typesetter and printer? E-mail? How well do you know the system? The less familiar you are with your production tools, the more time you are likely to spend.

For a short document, of a type you have created before, the answers are obvious. But for long, complex documents, these questions are critical. The creation of such a document is far easier if you answer these questions realistically and accurately in the planning stage.

Who Is Involved in Producing the Document?

The number of people involved in the procedure varies from one (you) to many especially if there is a review process. If it is only you who is involved, you need to consider only your own work habits as you schedule time to work through the document. If many people are involved—such as reviewers for technical accuracy, legality, and internal consistency—you will have to schedule deadlines for them to receive and return your document.

What Constraints Affect Production?

Constraints are factors that affect production of the document. They include time, length, budget, method of production, method of distribution, and place of use (Goswami et al.).

- ▶ *Time* is the number of hours or weeks until the date the document is due.
- ▶ *Length* is the number of pages in the final document.
- ▶ The *budget* specifies the amount of money available to produce the document. A negligible concern in most brief documents (those one to three pages in length), the budget can greatly influence a large, complex document. For instance, a plastic spiral binding could increase costs slightly but a glued, professional-type binding could be prohibitively expensive.
- ▶ *Method of production* is the type of equipment used to compose the document. If you plan to use two word processors, one in a public lab and one at home, both must run the same software so that you can use your disk in either system.

Worksheet for Planning—Short Version

What is the situation?

- a. Who will do what? When? Where?
- b. Are there any special issues to be aware of? History? Personal ties? Physical limitations?
- c. Do you need to do any work to be comfortable with the topic?

Who is the audience?

- a. How much do they know about the topic?
- b. What is their goal in reading your document?
- c. What do they need in order to accomplish their goal?

What will the final document look like?

- How will you present the information?
- How will you design your template?
- What is a realistic schedule for completing the document?

Worksheet for Planning—Long Version

What is true of my audience?

- a. Who will read this document?
- b. Why do they need the document?
- c. What will they do with it or because of it?
- d. How much do they know about the topic?
- e. What is their personal history with the topic?
- f. What expectations exist for this kind of document's appearance or structure?
- g. Will other people read this document? What do they need to know?
- h. What tone do they expect? Should I use personal pronouns and active voice?

What is true of me?

- a. Why am I credible? Because of my role? Because of my actions? Do I need to tell the reader that role or those actions?
- b. What authority do I feel I have? Do I believe that I have the right to speak expertly and be taken seriously?
- c. What should I sound like? How formal or informal should I make myself appear?

What is my goal in this writing situation?

- a. What basic message do I want to tell my audience?
- b. Why do I need to convey that message? To inform? To instruct? To persuade?

What constraints affect this situation?

- a. How much time do I have?
- b. How long should the document be?
- c. Is budget an issue? If so, how much money is available? Can I produce the document for that amount?
- d. How will I produce the document? Hard copy? Web document? Do I really understand the potential problems with that process? (e.g., will the library printers be working that day?)
- e. Is distributing the document an issue? If so, do I understand the process?
- f. Where will the reader read the document? Does that affect the way I create the document?

What are the basic facts?

- a. What do I already know?
- b. Could a visual aid clarify essential information?

- c. Where can I read more?
- d. With whom can I discuss the matter further?
- e. Where can I observe actions that will reveal facts?

What is an effective strategy?

- a. Should I choose a standard genre (set of instructions, technical report)?
- b. Should I follow one example throughout the document, or should I use many examples?
- c. Should I develop a central metaphor?
- d. Should I use definition followed by example and analogy?
- e. Which organizational principle (e.g., top to bottom) is best?

What format should I use?

- a. What margins, heads, and fonts do I want?
- b. What will my template for the document look like?

What is my production schedule?

- a. What is the due date of the document?
- b. By what date can I complete each of the stages (research, alpha version, review, beta version—see p. 58)?

- *Method of distribution* is the manner in which the document is delivered to the reader. If it is to be mailed, for instance, it must fit into an envelope of a certain size.
- *Place of use* is the physical surroundings in which the audience reads the document. Many manuals are used in confined—even dirty—spaces that could require smaller paper sizes and bindings that can withstand heavy use.

Drafting and Revising Your Document

Drafting and *revising* are the actions you take as you create the document. This stage is concerned with “getting it down” and “making it easy for your reader to grasp.” It is not the same as checking closely for spelling and other types of “surface” consistency. That stage is editing or finishing, discussed in a later section. As you draft you implement your plan, choosing words, paragraphs, examples, explanations that convey your topic to your reader. In this stage, you often have “discovery” moments in which you realize more about the topic and how to present it. You may suddenly think of new ideas or new ways to present your examples. Or you may discover an entirely new way to organize and approach the whole topic, and so you discard much of your tentative plan. This section explains strategies for drafting and revising.

Research to Discover Information

If you do not know the topic, obviously you must learn about it. To do so requires time spent researching. The basic methods used are keyword searching in a library or on the Web, interviewing users, and interviewing experts. These topics are covered in depth in Chapter 5.

Design Your Information to Help Your Reader

To design your information, remember that you are creating an experience for your readers. You are helping them build a model. An easy way to envision this concept is to think about how information is given along the interstate highway system. Large green signs, placed at crucial junctures, indicate such information as exit numbers and distances between points. You receive the information you need at the point where you have to act: Signage tells you where to exit, or enter, the system. As a result of the placement of the information, you perform the correct action. Your information design should accomplish the same thing for your readers because you engineer an experience for them (Shedroff).

The following sections contain many hints for engineering interactions and experiences. All of them are ways to design the kinds of “signs” needed to arrive at the “final destination.” However, you must place them at the key points, depending on what you know about the audience and their goal in the situation.

General Principles

Researchers (Duin; Huckin; Slater; Spyridakis) have developed some specific guidelines to help you create the kind of interactive document your reader needs. For more detailed information on these topics, see Chapter 4.

1. For an audience with little prior knowledge about a topic, use the familiar to explain the unfamiliar. Provide examples, operational definitions, analogies, and illustrations. These devices invite your reader to become imaginatively involved with the topic and make it interesting.
2. For readers familiar with a topic, don't belabor the basics. Use accepted terminology.
3. For all readers, do the following:
 - State your purpose explicitly. Researchers have found that most readers want a broad, general statement that helps them comprehend the details.
 - Make the topic of each section and paragraph clear. Use heads. Put topic sentences at the beginning of paragraphs. This top-down method is very effective.
 - Use the same terminology throughout. Do not confuse the reader by changing names. If you call it *registration packet* the first time, don't switch to *sign-up brochure* later.

Hierarchy	List
Site A has two basic problems.	Site A has these problems.
Terrain	Water drains into the basement
Water in the basement	Hills block solar heating
Hills block solar heating	Roof leaks
Disrepair	Windows are broken
Roof leaks	Air conditioning system is
Windows are broken	broken
Air conditioning system is	
broken	

© Cengage Learning

Figure 3.3 Hierarchical and List Formats

- Choose a structuring method that achieves your goal. If you want your readers to remember main ideas, structure your document hierarchically; if you want them to remember details, use a list format. Figure 3.3 shows the same section of a report arranged both as a hierarchy and as a list. Writers typically combine both methods to structure an entire document or smaller units such as paragraphs (see Spyridakis). The list provides the details that fill out the hierarchy.
- Write clear sentences. You should try to write shorter sentences (under 25 words), rely on the active voice, employ parallelism, and use words the reader understands.
- Make your writing interesting (Duin; Slater). Use devices that help readers picture the topic. Include helpful comparisons, common examples, brief scenarios, and narratives. Include any graphics that might help, such as photographs, drawings, tables, or graphs.

Use Context-Setting Introductions

Your introduction should supply an overall framework so that the reader can grasp the details that later explain and develop it. You can use an introduction to orient readers in one of three ways: to define terms, to tell what caused you to write, and to explain the document's purpose.

Define Terms

You can include definitions of key terms and concepts, especially if you are describing a machine or a process.

A closed-loop process is a system that uses feedback to control the movement of hydraulic actuators. The four stages of this process are position sensing, error detecting, controlling the flow rate, and moving the actuator.

Tell What Caused You to Write

Although you know why you are writing, the reader often does not. To orient the reader to your topic, mention the reason you are writing. This method works well in e-mails and business letters.

In response to your request at the June 21 action group meeting, I have written a brief description of the closed-loop process. The process has four stages: position sensing, error detecting, controlling the flow rate, and moving the actuator.

State the Purpose of the Document

The purpose of the document refers to what the document will accomplish for the reader.

This report defines the basic concepts related to the closed-loop system used in the tanks that we manufacture. Those terms are position sensing, error detecting, controlling the flow rate, and moving the actuator.

Place Important Material at the Top

Placing important material at the top—the beginning of a section or a paragraph—emphasizes its importance. This strategy gives readers the context so that they know what to look for as they read further. Put statements of significance, definitions, and key terms at the beginning.

The following two sentences, taken from the beginning of a paragraph, illustrate how a writer used a statement of significance followed by a list of key terms.

A bill of materials (BOM) is an essential part of every MRP plan. For each product, the BOM lists each assembly, subassembly, nut, and bolt.

The next two sentences, also from the beginning of a paragraph, illustrate how a writer used a definition followed by a list of key terms.

The assets of a business are the economic resources that it uses. These resources include cash, accounts receivable, equipment, buildings, land, supplies, and the merchandise held for sale.

Use Preview Lists

Preview lists contain the keywords to be used in the document. They also give a sense of the document's organization. You can use lists in any written communication. Lists vary in format. The basic list has three components: an introductory sentence that ends in a "control word," a colon, and a series of items. The *control word* (*parts* in the sample that follows) names the items in the list and is followed by a colon. The series of items is the list itself (italicized in this sample).

A test package includes three parts: *test plans*, *test specifications*, and *tests*.

A more informal variation of the basic list has no colon, and the control word is the subject of the sentence. The list itself still appears at the end of the sentence.

The three parts of a test are *test plans*, *test specifications*, and *tests*.

Lists can appear either horizontally or vertically. In a horizontal list, the items follow the introductory sentence as part of the text. In a vertical list, the items appear in a column, which gives them more emphasis.

A test package includes three parts:

- Test plans
- Test specifications
- Tests

Use Repetition and Sequencing

Repetition means restating key subject words or phrases from the previous list; *sequencing* means placing the keywords in the same order in the text as in the list. The author of the following paragraph first lists the three key terms: *test plans*, *test specifications*, and *tests*. She repeats them at the start of each sentence in the same sequence as in the list.

A test package includes three parts: test plans, test specifications, and tests. *Test plans* specify cases that technicians must test. *Test specifications* are the algorithmic description of the tests. The *tests* are programs that the technicians run.

Use Coordinate Structure

Coordinate structure means that each section of a document follows the same organizational pattern. Readers react positively once they realize the logic of the structure you are presenting. The following paragraphs have the same structure: first a definition, followed by details that explain the term.

CUTTING PHASE

The cutting phase is the process of cutting the aluminum stock to length. The aluminum stock comes to the cutoff saw in 10-foot lengths and the saw cuts off 6-inch lengths.

MILLING PHASE

The milling phase is the process of shaving off excess aluminum from the stock. The stock comes to the milling machine from the cutoff saw in exact lengths. The milling machine shaves the stock down to exact height and width specifications of 5 inches.

DRILLING/THREADING PHASE

The drilling/threading phase has two steps: drilling and threading. The drilling phase is the process of boring holes into the aluminum stock in specified positions. After the

stock comes from milling, the drilling machine bores a hole in each of the four sides, creating tunnels. These tunnels serve as passageways for oil to flow through the valve.

The threading phase is the process of putting threads into the tunnels. After a tool change to enable threading, the drilling machine cuts threads into the tunnels. The threads allow valve inlets and outlets to be screwed into the finished stock.

Testing

Testing is asking other people to interact with your document in order to discover where it is effective and where it needs revision. The goal is to turn your alpha version into a finished, smooth beta version. There are two types of testing—formal and informal.

Formal Testing

Formal testing is conducted in a Usability Lab, which contains enough technology (e.g., one-way mirrors, video cameras, scan converters, banks of monitors) to allow an empirical rendering of what occurred as the reader interacted with the document (Barnum 14–15). This type of testing can occur only in a formal laboratory setting and is usually beyond the normal resources of a writer.

Informal Testing

Informal testing involves the writer asking members of the target audience, or sometimes people familiar with the target audience, to review the document (Barnum 14–15; Lazzaro; Schriver). Methods for performing informal tests vary, ranging from the author creating various questions for the tester, to the author simply getting from a tester feedback on what is effective. Two common methods of testing are soliciting opinions of quality (Schriver) and soliciting comments about the five dimensions of usability (the 5 e's) (Quesenberry).

The quality information that the writer hopes to find often falls into two broad areas: information on the quality of the written prose and on the quality of the page design and use of visual aids. Questions on quality can generate opinions on such items as weak sentence structure, poorly designed tables, and use of jargon. Questions on page design can generate comments on whether the design is consistent, whether the information is easy to scan, and whether text and visual aids act together to send meaning (Schriver 448–449).

The 5 e questions generate a slightly different kind of information. These questions ask, Is the document

effective? Does it help readers achieve their goals?

efficient? Can users complete their tasks (including understanding the concepts or information presented) with speed and accuracy?

engaging? Is the document pleasant to use?

easy to learn? How well does the document facilitate the readers' interaction with the process? (This question and the following are often used with sets of instructions.)

error tolerant? How well does the document help the reader avoid or recover from mistakes (Quesenberry 83–89)?

Worksheet for Drafting

Choose strategies that help your readers.

- a. For unspecialized readers, use comparison, example, and brief narrative to make the unfamiliar familiar.
- b. For specialized readers, do not overexplain.
- c. For all readers:
 - State your purpose.
 - Make topic sentences and headings clear.
 - Use consistent terminology.
 - Organize material hierarchically to emphasize main ideas.
 - Use a list format to emphasize details.
 - Write clear sentences by employing the active voice and parallelism.

Note: If these strategies inhibit your flow of ideas, ignore them in the first draft and use them later.

Be sure your introductory material accomplishes one of these three purposes:

- a. Defines terms.
- b. Tells why you are writing.
- c. States the purpose of the document.

Use preview lists as appropriate in the body.

Repeat keywords from the preview list in the body.

Use coordinate structure to develop the paragraphs in the body.

Test your draft.

- a. Ask a member of the target audience or of people familiar with the target audience to read your draft.
- b. Give them a list of specific items to check (from spelling to legal, contextual considerations)
- c. Have them "talk through" the document with you. Record each time they have a question or comment. Revise those spots.

While these questions tend to refer to instructions, you should be able to adapt them to any document. If, for instance, the last two are not applicable to your document, delete them.

You can easily create a test by creating key questions, either of quality or related to the 5 e's, and asking one or several members of the target audience to read the document. After you receive the results, you need to revise your document. If you have time, you could ask for a second round of tests before you finalize the document.

Editing or Finishing

Editing (or *finishing*) means developing a consistent, accurate text. In this stage, you refine your document until everything is correct. You are looking for surface, consistency problems. You check spelling, punctuation, basic grammar, format of the page, and accuracy of facts. You make the text agree with various rules of presentation. When you edit, ask, Is this correct? Is this consistent? In general, you edit by constructing checklists.

Create a set of quality benchmarks. Widely used in industry, benchmarks are quality standards used to judge a product. In order to edit effectively, you must set similar benchmarks for your work. Typically, benchmarks are divided into categories with statements of quality levels. The following is a simple benchmark set for a Web document created early in a college technical writing course.

STYLE DESIGN

- No spelling or grammar errors.

INFORMATION DESIGN

- Title appears.
- Introduction appears. Introduction tells point of document and, if it is long, sections of the document.
- Body sections are structured similarly in type and depth of points.

PAGE DESIGN

- Fonts are standard roman, and large enough to be easily readable.
- Heads appear and indicate subject of their section.

VISUAL DESIGN

- Visuals appear to support a point in the text or provide a place for the text to begin.
- Visuals are effectively sized, captioned, and referenced.

NAVIGATION DESIGN

- Every link works.
- Link size and placement indicate the type of content (e.g., return to homepage or major section of document) that it connects to.
- Links provide helpful paths through the work.

Constructing checklists of typical problems is a helpful strategy. The key is to work on only one type of problem at a time. For example, first read for apostrophes, then for spelling errors, then for heading consistency, then for consistency in format, and so forth. Typical areas to review include paragraph indicators (indented? space above?); heads (every one of each level treated the same?); figure captions (all treated the same?); and punctuation (e.g., the handling of dashes).

Figures 3.4 and 3.5 demonstrate the types of decisions that you make when you edit. The goal is to correct errors in spelling, punctuation, grammar, and consistency of presentation. Figure 3.4 is the original; Figure 3.5 is edited.

Unclear topic sentence
Mixed verb tense
List elements are inconsistent
Lengthy list emphasizes content
Sentence fragment
"See" indicates example, rather than reader
Unclear conclusion

Version 1

TECHNICAL REPORTS

The detailed technical report to upper management will be submitted at the end of the project. It must explain;

1. the purpose of the machine,
2. its operation,
3. and the operation of its sub systems.
4. Assembly methods will also be presented.

It will also include all design calculations for loads, stresses, velocities, and accelerations. Justification for the choice of materials of subsystems. An example might be; the rationale for using plastic rather than steel and using a mechanical linkage as compared to a hydraulic circuit. The report also details the cost of material and parts.

© Cengage Learning

Figure 3.4 Technical Report: Original

Clear topic sentence
Inconsistent
Two examples repeated
Complete sentence
Unclear conclusion

Version 2

TECHNICAL REPORTS

The technical report to upper management, submitted at the end of the project, contains several sections. The report explains

1. the machine's purpose and operation.
2. the operation of its subsystems and methods to assemble it.

It also includes all design calculations for loads, stresses, velocities, and accelerations, as well as justification for the choice of materials in subsystems. Examples of this justification include the rationale for using plastic rather than steel and a comparison between a mechanical linkage and a hydraulic circuit. The report also details the cost of material and parts.

© Cengage Learning

Figure 3.5 Technical Report: Edited

TIP

Editing with a Word Processor

As you work to achieve the consistency that is the goal of the finishing stage, you can use style aids, in particular, spell checker and grammar checker. A spell checker indicates any words in your document that are not in its dictionary. If you have made a typo, such as typing *wth*, the checker highlights the word and allows you to retype it. Most spell checkers have an autocorrect feature. Once you engage it (check your program's instructions), it will automatically change every mistake, such as *teh* to *the*. However, these programs have problems. If your typo happens to be another word—such as *fist* for *first*—the program does not highlight it. Also, if you misuse a word—such as *to* instead of *too*—the program does not detect the error.

Grammar checkers detect such problems as subject–verb disagreement, fragments, and comma splices. Checkers also can detect features of your writing. For instance, the checker might highlight all the forms of *to be* in your paper, thus pointing out all the places where you may have used the passive voice. Checkers can also highlight words that could be interpreted as sexist or racist, that are overused, or that are easily confused. Thus the checker will highlight every *your* and *you're*, but you must decide whether you have used the correct form.

Follow these guidelines:

Use your spell checker.

Set your spell checker to "AutoCorrect."

Use your grammar checker for your key problems. (If you have trouble, for example, with fragments or passive voice, set the checker to find only those items.)

After using the spelling and grammar checkers, proofread to find any "OK, but wrong" words, for example, *their* used for *there* or *luck* used for *link*.

Producing the Document

Producing a document involves the physical completion—the typing or printing—of the final document. This stage takes energy and time. Failure to plan enough time for physical completion and its inevitable problems will certainly cause frustration. Many people have discovered the difficulties that can plague this stage when their hard drive crashes or their printer fails. Although physical completion is usually a minor factor in brief papers, in longer documents it often takes more time than the drafting stage.