Five Traits of Technical Writing

In this Chapter...

Students are not familiar with technical writing. Unless we teach them what this different type of communication entails, they will continue to write essays (the writing skill they have practiced since grade school).

This chapter provides specific criteria to give students before asking them to write technical documents. The five traits of technical writing are:

- clarity
- conciseness
- accessible document design
- audience recognition
- accuracy

1. Clarity

Clarity in technical writing is mandatory

The most important criteria for effective technical writing is clarity. If the audience responds to a memo, letter, report, or manual with, "Huh?" what has the writer accomplished? If the correspondence is not clearly understood, the reader will either call the writer for further clarification, or just ignore the information. In either case, the writer's time is wasted; the reader's time is wasted; the message is lost.
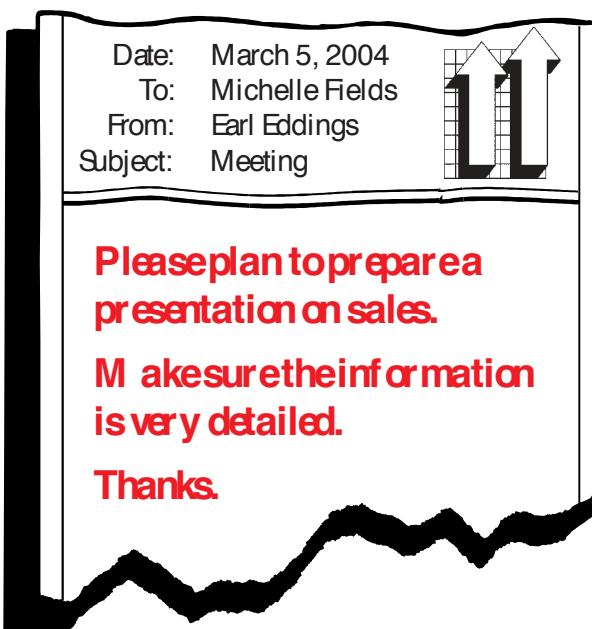
Clarity, however, is not just a time concern. Think of it from this perspective: your company has written an installation manual for a product. The manual, unfortunately, is not clear. When the reader fails to understand the content, three negatives can occur:

- **BAD**—The equipment is damaged. This requires the owner to ship the equipment back. The company will replace the equipment, costs accrue, and public relations have been frayed.
- **WORSE**—The owner is hurt, leading to pain, anxiety, doctor's bills, and bad public relations.
- **EVEN WORSE**—The company is sued. The company loses money, the writer of the manual loses a job, and public relations are severed.

If a student fails to clearly understand a poem, a short story, a play, or a novel, that is unfortunate; however, equipment is not damaged, no one is physically hurt, and no one is sued.

Clarity achieved through reporter's questions

This flawed memo, written by a manager to a newly hired employee, highlights the importance of clarity.

Nothing is clear in this memo, and the reasons are obvious. The manager has failed to answer Reporter's Questions: who, what, when, where, why, how.

> Date: March 5, 2004
> To: Michelle Fields
> From: Earl Eddings
> Subject: Meeting
>
> **Please plan to prepare a presentation on sales.**
>
> **Make sure the information is very detailed.**
>
> **Thanks.**

Reporter's Questions Checklist

Who is the audience? Who will know what? Will the audience know a great deal (High Tech)? Will the audience know a little about the topic (Low Tech)? Will the audience know nothing about the topic (Lay)?
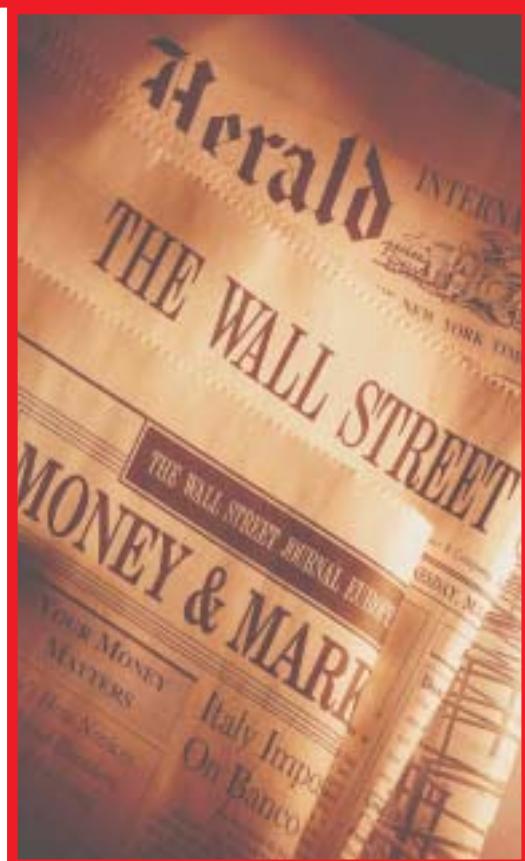
What do you plan to do? What do you want the audience to do? What do you want to know?

When should the job be completed? What's the turnaround time? What's the timetable? What's the desired schedule? When do you need an answer?

Where will the work take place?

Why is the task being undertaken (the rationale, motivation, goal)? Why is the desired date important?

How should the task be performed? What's the preferred procedure?

Using the Reporter's Questions Checklist as a prewriting tool, the previous memo could be revised to achieve greater clarity. Here is an example of a revised memo.

Date: March 5, 2004
   To: Michelle Fields
From: Earl Eddings
Subject: Sales Staff Meeting

_____

Please make a presentation on improved sales techniques for our sales staff. This meeting is planned for March 18, 2004, in Conference Room C, from 8:00 a.m. - 5:00 p.m.

Our quarterly sales are down 27%. Thus, we need to help our staff accomplish the following:
 1. Make new contacts.
 2. Close deals more effectively.
 3. Earn a 40% profit margin on all sales.

Use our new multimedia presentation system to make your presentation. With your help, I know our company can get back on track.

Thanks.

Clarity achieved through specificity

In contrast to mystery stories which seek to create suspense, technical writing must be clear.

The ultimate goal of effective technical writing is to say the same thing to multiple readers!

When a student answers reporter's questions, he or she has filled a page with words. But all words are not equal. Words like *some, several, many, few, frequently, often, substantial,* or *recently* will take up space on the page and convey an impression. These connotative words will not mean the same thing to everyone.

If a memo sent to six employees states that the company has lost a **substantial** amount of business, will all employees acquire the same knowledge? One might assume that a **substantial** loss equals $1,000; another might assume that a **substantial** loss equals twelve clients. In each case, the employees are guessing, and that is not the goal of successful technical writing.

(The previous memo using the phrase *very detailed* would be more clear if the writer had said he needed an eight hour presentation. Everyone receiving the memo then would know exactly how much time they needed to set aside to attend the meeting.)

2. Conciseness

"In order to facilitate an efficient meeting and fuel thought processes prior to June 25, I want to provide you with a brief overview of discussions recently carried out at the director and manager level within the process. These discussions involved personnel from Accounts Payable, Information Services, Procurement/ Materials Management, Financial Systems, and Property Accounting, centering on a proposed framework for managing process improvement moving forward."

**Do you understand this letter?
Do you remember what you read?
Did you even finish reading it?**

Successful technical writing should help the reader understand the text, not present challenges to understanding

No one curls up in bed at night and for pleasure reads manuals about installing computer printers.

The above paragraph is not successful writing. It fails to communicate clearly because it is too long-winded. In this case, conciseness actually would aid clarity.

Isn't it the responsibility of the reader to figure it out? No. The responsibility is with the writer. Here is why.

If an individual reads literature, it is his or her responsibility to understand the writing. Creative writers seek to challenge us. However, technical writing, as noted in Chapter 1, is not literature. We read technical writing because it is a job requirement.

Good technical writing is concise. It is a tool for the readers to use to accomplish whatever job they are doing. In contrast to traditional essays, effective technical writing uses short words and short sentences.

Technical Writing Must Fit in the Box

Conciseness has unique importance in technical writing

Where's the user manual for your car? It's inside the glove compartment. In other words, that piece of very complex technical writing had to be written concisely enough to fit inside a specific-sized box. The content took a backseat, so to speak, to the user manual's predetermined location within the car.

Here's another example: what's the perfect length of a resumé? One page, of course! Guess what? That's a box. We have decided that a great resumé should fit inside a typical, 8" X 11" piece of paper.

Now, think about the size of an e-mail screen. Yes, the "box" is shrinking. A typical e-mail screen measures about 3" X 6". A Palm Pilot monitor is about 2" X 2". Your cell phone monitor is about 1" X 1", and a pager's monitor is closer to ¼" X 1½". In each instance, the writer has less and less room to write.

Successful technical writing tries to avoid multisyllabic words such as "mul-ti-syl-lab-ic."

Conciseness achieved through short words

Teach students to use one and two syllable words. Of course, some multisyllabic words can not be changed. We can not replace *engineer, telecommunications,* or *Internet.* Other words, however, can be avoided. Look at these, for example.

Changing Long Words to Short Words	
Long Words	Short Words
cognizant	know
endeavor	try
domicile	home
morbidity	death
terminate	end

Conciseness achieved through short sentences

You can shorten a sentence by avoiding:
- redundancy
- prepositional phrases
- passive voice

Here is an unsuccessful example of technical writing:

"In order to successfully accomplish their job functions, the team has been needing more work space for some time now."

An improved sentence would read,

"The team needs more work space to do its jobs."

The first sentence contains 20 words and 28 syllables; the second sentence contains ten words and ten syllables.

Avoiding redundancy

Why say, "The used car will cost the sum of $1,000.00"? It is more concise to say, "The used car will cost $1,000.00." In this instance, "the sum of" is redundant. The following examples replace redundancy with concise revisions:

Wordy Sentence	Less Wordy Sentence
We collaborated *together* on the projects.	We collaborated on the project.
This is a *brand new* innovation.	This is an innovation.
The *other* alternative is to eat soup.	The alternative is to eat soup.

Avoiding prepositional phrases

Prepositional phrases create wordy sentences. Consider the following examples (note that the prepositional phrase is in **bold type**):

Wordy Sentence	Concise Sentence
He drove **at a rapid rate.**	He drove rapidly.
I will see you **in the near future.**	I will see you soon.
I am **in receipt of** your e-mail message requesting an increase **in pay.**	I received your e-mail message requesting a pay raise.

Avoiding passive voice

Passive voice constructions are weak for at least two reasons. They are wordy, and they replace strong verbs with weak verbs. Example:

"The window was broken by the boys."
versus
"The boys broke the window."

The first sentence contains seven words and the weak verb *was*. In contrast, the second sentence contains five words and the strong verb *broke*. The emphasis is placed on the individuals (*boys*) rather than on an inanimate object (*window*). Other examples follow:

Passive Voice	Active Voice
It is my decision to run for office.	I decided to run for office.
There are sixteen people who tried out for the basketball team.	Sixteen people tried out for the basketball team.
The computer was purchased by Tom.	Tom purchased the computer.
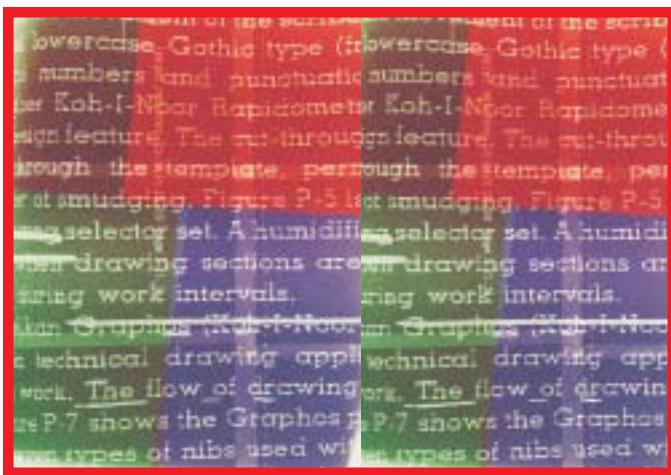
3. Accessible Document Design

In addition to clarity and conciseness, a third trait of effective technical writing is accessibility (page layout—the way the text looks on the page). Look at the following paragraph:

Regarding part number 315564-000, we received 541 units of wafer #3206-2. These were rejected. For the same part number, we received 643 units of wafer #3206-4. These were accepted. Three hundred and twenty-nine units of wafer #3206-5 from the same part number. These were accepted. Next, 344 of part number 315564-000's wafer #3206-6 were accepted. However, the 143 units of wafer #3206-7 (same part number) were rejected. Finally, all 906 units of wafer #3206-8 were rejected. These also were from part number 315564-00.

Wall-to-wall words turn off readers. **Highlighting techniques** make the text open, airy, and inviting!

The paragraph on the bottom of page 16 consists of 84 words and ten sentences. The average number of words per sentence is only 8.4. Because the sentences are not too long, the writing is concise. Next, the text is clear, due to specificity of detail. **However,** despite the clarity and conciseness, this writing fails. Why? Essentially, this paragraph is unintelligible. **The page layout makes it nearly impossible for the reader to understand the text.**
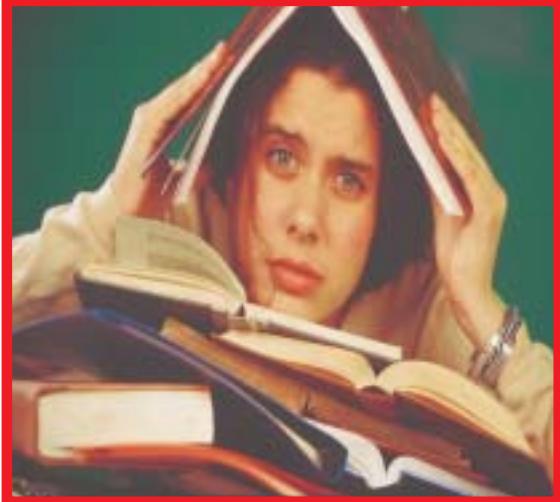
Using highlighting techniques (tables, headings and subheadings, different font sizes, column lines, and white space), below is a revised copy of the information presented on page 16.

Students can make information leap off the page by making content accessible through the following highlighting techniques:

- Graphics (table and figures)
- White space
- **Boldface** text
- Headings and subheadings
- *Italics*
- Underlining
- Varied Font sizes
- Bullets (●⬀📄🔖♦)
- Numbered lists
- Varied **Fo n t types** (computers *offer* **many options**)

Part Number 315564-00			
Wafer #	**Quantity Received**	**Accepted**	**Rejected**
3206-2	541		X
3206-4	643	✔	
3206-5	329	✔	
3206-6	344	✔	
3206-7	143		X
3206-8	906		X

4. Audience Recognition

Who is writing to whom? What does the audience know, need to know, and want to know?

When your audience fails to understand the text, you have failed to communicate!

Recognizing your audiences

Successful technical writers know that they can only achieve clarity by recognizing their audiences. Basically, our students will write to either High Tech Peers, Low Tech Peers, or Lay Readers. These three audience levels have the following traits.

High Tech Peers know as much about a subject matter as you. They have the same job title, same education, same years of experience, and the same level of expertise. For example, a medical doctor writing to another medical doctor would be writing High Tech to High Tech.
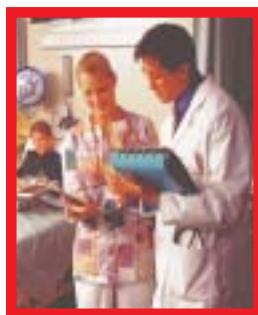
Low Tech Peers who work in your company know something about the subject matter. They may not have the same job title, education, years of experience, or level of expertise. For example, a medical doctor writing to a staff nurse would be writing High Tech to Low Tech.

Lay Readers are your customers. They are completely out of the loop. For example, a medical doctor communicating with a patient.

Writing successfully to these three types of audiences requires different techniques.

High Tech Peers Communicating

High Tech and Low Tech Peer

High Tech and Lay Reader

Writing to High Tech Peers

When writing to a high tech peer, one can use acronyms and abbreviations, usually without any definition. Educators are familiar with **QPA, NEA,** and **KPERS.** But individuals in other fields would assume that NEA meant *National Endowment for the Arts,* not *National Education Association.*

Writing to Low Tech Peers

Accountants do not need their high tech peers to define **FIFO** or **CPR.** If these accountants write to one of their fellow employees in sales, computer technology, or human resources (low tech peers), however, these high-tech terms must be explained. **FIFO** could be parenthetically defined as *First In, First Out.* **CPR,** which everyone assumes means *Cardiopulmonary Resuscitation,* in fact means *Continuing Property Records,* something accountants understand.

Writing to the Lay Reader

Whereas high tech readers do not need acronyms or abbreviations defined, and low tech readers need a parenthetical definition, lay readers want to avoid the confusion completely. All they want is the definition—no abbreviations or acronyms. In fact, they might also need follow-up explanations. Why would a homeowner in a residential area want to be told by local health authorities, "You are in danger of DBPs"? What's a DBP? These lay readers do not even want to be told, "You are in danger of DBPs (disinfection by-products)." What's a *disinfection by-product?* Instead, the lay reader wants to be told that their nearby streams contain *high-acid, chlorine,* and *ammonia levels.*

> Use pronouns in technical writing. After all, companies do not write to companies. People write to people!
>
> Readers want to be spoken **to,** not spoken **at.** Pronouns are effective in technical writing. *You, your, us, we, our, I, me,* and *my* create a personalized tone.

Achieving Audience Recognition		
Audience	**Style**	**Example**
High Tech Peers	Abbreviations/Acronyms OK	Please review the enclosed **OP** and **EN.**
Low Tech Peers	Abbreviations/Acronyms need parenthetical definitions.	Please review the enclosed **OP** (Operating Procedure) and **EN** (Engineering Notice).
Lay Readers	No abbreviations/acronyms. Explanations instead.	By following the enclosed operating procedure, you can ensure that your printer will run to our engineers' desired performance levels.

5. Accuracy

Effective technical writing must be correct, whether grammatically, mathematically, electronically, etc. Errors in technical writing make the company and the employee look bad. More importantly, errors can lead to damages, injuries, lawsuits, or just embarrassment and misunderstandings.

Students must understand the importance of proofeading

Ask your students to try these proofreading techniques:

- **Use the computer's spell check**—remember, however, that a spell check will not catch *form* if you mean *from, to* if you mean *too,* or *except* if you mean *accept.*

- **Let it sit**—for a day or a weekend. When the document is cold, students are more objective about their own writing.

- **Use peer evaluations**—others will see the errors we miss.

- **Read it aloud**—sometimes we can hear errors.

- **Read it backwards**—then you read words out of context. You cannot anticipate the next word.

Ode to Spell Check...

I have a spelling checker.
It came with my PC.
It plainly marks four my revue
Mistakes I cannot sea.
I've run this poem threw it.
I'm sure your pleased to no,
Its letter perfect in it's weigh
My checker tolled me sew.
                                    —Unknown

Conclusion:

Until we tell students what we want in a technical document, they will not give it to us. Once they know the criteria for successful technical writing, then you can hold them accountable for these skills.

5-Trait Rubric

This five-trait rubric can help in assessing student work.

Trait	0 — 1 — 2	3	4 — 5
CLARITY Organization	• Important points are delayed or absent • Some Reporter's Questions never answered • Many vague, connotative words used	• Some important points are delayed • Some Reporter's Questions assumed understood • Some vague, connotative	• Important points come first • Reporter's Questions answered • Specific, denotative words used
CONCISENESS Sentence fluency/ word choice	• Longer words are commonplace • Sentences average over 20 words • Paragraphs often exceed six typed lines	• Longer words used when shorter words exist • Sentences average 15-20 words • Some paragraphs exceed six typed lines	• Words are generally one or two syllables • Sentences average 10-12 words • Paragraphs do not exceed six typed lines
ACCESSIBLE DOCUMENT DESIGN Ideas and Content	• Highlighting is not used • Information is not accessible • Highlighting is overused	• Some main points are highlighted • Information is usually accessible	• Highlighting techniques emphasize main points to help access • Highlighting techniques not overused
AUDIENCE RECOGNITION Voice	• Writer does not define high-tech terms • Writer does not consider audience needs • Writer never uses pronouns to involve audience	• Writer usually defines high-tech terms • Writer usually considers audience needs • Writer often involves audience through pronouns	• Writer defines all high-tech terms • Writer considers audience needs • Writer uses pronouns to involve audience
ACCURACY Writing Conventions	• Punctuation often incorrect • Spelling often incorrect • Excessive grammar & usage errors distort the message	• Punctuation is usually correct • Spelling is usually correct • Grammar & usage somewhat flawed	• Correct punctuation • Correct spelling • Correct grammar & usage

Original source: **Carmen Shelly** *at DeSoto High School, DeSoto, KS*

End-of-Chapter Activities

Clarity and Conciseness

Revise the *italicized* vague words and phrases, specifying exact information. (Students are allowed to invent numbers.)

Specificity	
Vague Word(s)	**Specified**
I have a *low GPA.*	
The b-ball player was *really tall.*	
I'll be home *as soon as possible.*	
The team has a *losing record.*	
The computer has *lots of memory.*	

Change the following long words to shorter words.

Changing Long Words to Short Words	
Long Word	**Short Word**
utilize	
anticipate	
cooperate	
indicate	
initially	
presently	
prohibit	
inconvenience	

Clarity and Conciseness (continued)

Change the following long phrases to one word.

Changing Long Phrases to One Word	
Long Phrase	**One Word**
In the event that	
At this point in time	
With regard to	
In the first place	
Is of the opinion that	
Due to the fact that	
Make revisions	
Take into consideration	
With the exception of	
Make an adjustment of	

Revise the following long sentences, making them shorter.

1. I will be calling you on May 31 to see if you have any questions at that time.

2. If I can be of any assistance to you in the evaluation of this proposal, please feel free to give me a call.

3. The company is in the process of trying to cut the cost of expenditures relating to the waste of unused office supplies.

4. I am of the opinion that Acme employees have too much work to do.

5. In the month of July, my family will make a visit to the state of Arkansas.

6. It is the company's plan to take action to avoid problems with hazardous waste.

7. On two different occasions, the manager of personnel met with at least several different employees to ascertain whether or not they were in agreement with the company's policies regarding overtime.

Accessible Document Design

Ask your students to reformat the following text by using highlighting techniques. Consider using bullets or numbers, headings, boldface or underlining, and white space.

> To make a pie chart using your word processing package's graphic components, turn on the machine. Once it has booted up, double click on the word processing icon. After the system is open, click on "graphic," scroll down to "chart," and double click. Next, click on "data chart types" and select "pie." Once you have done this, input your new data in the "data sheet." After this has been completed, click anywhere on the page to import your new pie chart. If you want to make changes, just double click again inside the pie chart; then you can revise according to your desires.

Student Activity

- Bring a document to class. (This could be a textbook, technical manuals, popular magazines, brochures, etc.)

- In a small group, determine which documents are successfully accessible and which documents are not.

- Reformat any of the flawed documents to improve the document design.

Audience Recognition

- Bring a document to class. (This could be a textbook from your class or other classes, manuals found at home, popular magazines, brochures, etc.)

- In a small group, determine whether high tech terminology, abbreviations, and/or acronyms are used successfully and defined when necessary?

- Define the terminology and/or explain the terminology to improve the document's clarity.

Acronyms & Abbreviations

- Make a list of 4-6 acronyms or abbreviations from an area of interest. (Students interested in computers could list computer terms, students in art could list art terms, etc.)

- Read these terms to see how many of your peers understand the high tech language.

- Define the terms for a low tech reader and/or explain the terms for a lay reader.

(On the next page is an answer key for student activities on pages 22 and 23.)

Answer Key

- **Specificity:** 1.6; six foot seven; by midnight; 3 and 12; and 16 megs.

- **Changing Long Words to Short Words:** use; await; help; show; first; now; stop; problem.

- **Changing Long Phrases to One Word:** if; now; regarding or about; first; thinks; because; revise; consider; except; adjust or fix.

- **Revising Long Sentences:**
  1. I will call on May 31, 1998, to answer questions.

  2. If I can help you assess this proposal, please call.

  3. The company is trying to cut costs of unused office supplies.

  4. I think Acme employees are overworked.

  5. In July, my family will visit Arkansas.

  6. The company plans to avoid hazardous waste problems.

  7. Twice, the personnel manager met with six employees to learn if they agreed with the company's overtime policies.