Chapter 1

Technical Writing: A Brief Introduction

Learning Objectives

- To understand the goals of technical writing;
- To identify the author and audience of technical writing;
- To understand the importance of technical writing in the workplace.

Technical writing refers to the process of conveying complex, specialized information in a clear and concise manner to a specific audience. It involves communicating technical or specialized topics, such as scientific, engineering, or business concepts, using language and formatting that are easily understandable by the intended audience. Technical writing aims to inform, instruct, or persuade readers about a particular subject matter, often in fields where accuracy, precision, and clarity are paramount.

1.1 Rhetorical Aspects of Technical Writing

1. Technical writing is task-driven.

Technical writing has definite purposes. You do it to accomplish particular goals. You never simply present the information for the sake of presenting information.

2. Technical writing is persuasive.

Technical writing is more than presenting factual information. It has the ultimate goal of persuading the audiences to take the action you want them to take. Technical writing is never purely objective and always has a persuasive side.

3. Technical writing has specific audiences.

When you do technical writing, you have target audiences, large or small. Therefore, audience demographics come into play in your design of technical writing. For example, how much knowledge do the audiences have about this subject? Do you need to provide more detailed information to make it clear? Is this language too technical for your audience?

4. Technical writing has a rhetorical context.

A particular piece of technical writing may work within one particular rhetorical context but not another. For the classified car ad, the local newspaper is a good medium as it targets largely a middle-class readership who often read classified ads. Often, different organizational contexts will dictate different communication styles, media, format designs, and language conventions.

5. Technical writing is user-centered.

Technical writing is different from creative writing or poetry where the writer often focuses on expressing himself/herself. In technical writing, the focus is on the users. It aims to accommodate the needs of the users: what they want, what they like, how it will be easier for them to understand the information, and what would be most helpful for them to accomplish tasks.

6. The design of technical writing is deliberate.

In technical writing, every decision you make has a rhetorical purpose, such as including one content over another, using one layout over another, using one graphic over another, using one color over another, and so forth. The very act of decision-making means technical writing is a very deliberate act. That's why it is called rhetorical design.

7. Technical writing has brevity.

Technical writing should communicate the messages efficiently. Generally speaking, it takes more time to read ten words than it does to read five, as long as the five words are the right ones. So when you edit, take every opportunity to reduce the number of the words. As shorter sentences can be read more quickly than the longer ones, you can also consider shortening each sentence to seven to ten words. Use a longer sentence only if it is required.

Truncate redundant expressions. Your goal is to use the fewest possible words. If a word or phrase doesn't add to the meaning or if that meaning is already contained in another word or phrase, remove it. Here are a few examples:

- a bolt of lightning→lightning (Delete unnecessary words.)
- a distance of 10 km→10 km (Distance is measured in km. No need to say both.)

- absolute last→last (Superlatives aren't used along with modifiers. Delete.)
- added bonus→bonus (Both words mean the same thing. Use one.)
- adequate enough→adequate (Both words mean the same thing. Use one.)

Use verbs or adjectives instead of noun phrases. Verbosity is inefficient because it will make a reader read many words to find just one idea. The phrases in the examples below use two or three words to do what the one verb or noun does on its own:

- an emphasis→emphasize
- appearance of→appear
- in agreement with→agree
- argumentation about→argument
- at risk of→risk
- by the repetition of→repeat
- come to the realization→realize
- conduct an experiment→experiment
- conduct an investigation→investigate
- discussion of→discuss
- explorations of→explore
- rate of success→success rate
- without fear→fearlessly

Use words instead of phrases (description or definition) whenever the audience will understand. For example:

- **Original:** three hundred and sixty-five degrees

  Revised: a circle
- **Original:** boiling point of water

  Revised: 100 degrees
- **Original:** North America above the 49th parallel

  Revised: Canada
- **Original:** a disk made of vulcanized rubber used like a ball in a game played on skates with sticks

  Revised: a hockey puck
- **Original:** High-quality learning environments are a necessary precondition for the facilitation and enhancement of the ongoing learning process.

Revised: Good schools are a prerequisite for learning.

Replace any general words with specific ones because they are easier to understand and remember. But be careful. Use a thesaurus to verify that the specific word is the right one. Notice how in the warning above I used the word "careful" and then specified how to be careful by using a thesaurus. "Careful" is a general word. Using a thesaurus is a specific way of being careful. I could have revised that pair of sentences into just one—"Use a thesaurus".

Delete vague words and phrases such as "look" [how?], "work" [what kind? how well?], "it" [what?], "this" [what?], "a number" [how many?], "ability" [what kind?], "around" [quantify], "aspect" [which one?], "about" [how much exactly?], "area" [geography or geometry?], "bad" [how? why?], "better" [than what? by how much?], "help" [how?], "important" [in what way?], "increase" [how much?], "less" [how much?], "some" [how many?], "some people" [who exactly?], and "strange" [in what way?].

Use concrete words instead of abstract ones whenever possible. Sometimes when you cannot think of a word, you can describe the object that we cannot name. That's fine for a draft and if the audiences do not know the term; but if the audiences know the terminology, then find the right word.

8. Technical writing has clarity.

A clear sentence can be interpreted in only one way. There is nothing in the words chosen or the structure used that makes the readers have to stop to think or interpret. Clarity is a metaphor, one that suggests words are like windows on the world. You want your windows clean and transparent, incapable of distorting or coloring the content.

9. Technical writing is direct.

You should get right to the point. The most efficient method is to construct sentences that are in the "subject + verb + object" order. The subject should be concrete, for example, a person or a thing. If the subject is a concept, and it can't be concrete, then make sure it is specific. For example:

- **Original:** One of the main cons of technology integration in the classroom is that cheating becomes easier via technology.

  Revised: Technology in the classroom makes cheating easier.

Avoid starting a sentence with a prepositional phrase. Efficiency is your goal. If you start with a prepositional phrase, your readers have to search for the subject of the sentence. Start with what is the most important. For example:

- **Original:** In their plans for houses, there are brick walls that are often reinforced with stainless steel by architects because of stainless steel's resistance to the effects of the weather.

  Revised: Architects often choose to reinforce brick with stainless steel because it resists corrosion.

Avoid starting a sentence with a reference to the subject of a previous sentence (such as "this" and "that"). Because technical writing is task-oriented, repetition is better than variation. For example:

- **Original:** This problem is created by the inability for students to have a forum where they can search for and find cheaper and up-to-date textbooks.

  Revised: The artificially inflated prices of used textbooks are caused by a lack of competition among resellers.

Avoid starting a sentence with "There is" or "There are" unless the existence of the subject matters more than the subject itself. For example:

- **Original:** There are many people who fear success because these are people who believe they do not deserve it.

  Revised: Many people fear success because they believe they do not deserve it.

- **Original:** There is a presidential appeal being made to the American people for the conservation of gasoline.

  Revised: The President asks Americans to conserve gasoline.

Use the active voice unless you need to use the passive voice. Passive voice sentences are often harder to interpret because who is doing what to whom is unclear. Also, the passive voice does not attribute responsibility for whatever action

is taking place. Avoiding responsibility can be important in some situations and in those situations the passive voice is appropriate. For example:

- **Original:** The group's failure was the result of the way the chairman decided to submit his resignation.

  Revised: The group failed because the chairman resigned the way he did.

Use the verb "to be" and its conjugations only when necessary. The existence of the subject is more important than the subject itself. For example:

- **Original:** Effective speakers offer evidence to support the promises and assertions being made.

  Revised: Effective speakers support their promises and assertions with evidence.

Consider replacing auxiliary verbs (such as "make", "give", "put", and "help") with a main verb because you will often end up with a shorter, more efficient sentence. For example:

- **Original:** We need to make a change in the way we handle new technology when we decide on its incorporation.

  Revised: We need to change the way we choose technological solutions.

- **Original:** People should give law enforcement their full support.

  Revised: People should fully support law enforcement.

10. Technical writing is precise.

Use common words that have only one meaning or that can only be interpreted in one way given the context. Define technical terms before using them. Don't use synonyms and stick to the same word. Write the full expression and place the acronym in round brackets the first time you use it. Then use the acronym. Specify and quantify whenever possible. Instead of saying "some distance", say how far exactly. Instead of saying "many things", list as many things as a user needs to get the general idea.

Use positive rather than negative expressions. For example:

- **Original:** Don't use the verb "to be" and its conjugations unnecessarily.

Revised: Use the verb "to be" and its conjugations only when necessary.

Leave no reasonable question unanswered. For example:

- **Original:** Something that every student has to do at least once a week is dedicating a day to do their laundry.

Revised: Students should launder their clothes weekly.

Use helpful subject headings. A subject heading can focus the reader's attention on the important details and accelerate understanding. Consider the following example:

- **Original:** It is a game played by two or more people with a small leather ball.

The object is to keep the ball off the ground. You can use any part of your body. But you can't use your hands. Hands are forbidden, and the penalty for using them is banishment from the circle. For the best players, just keeping the ball off the ground and the game going isn't enough. They want to show off their skill, flexibility, and balance. What is it? It's unclear.

Revised: Hacky Sack is a game played with a small leather ball.

If you want to explain Hacky Sack to a person who might know the game, the subject heading alone will be enough to efficiently orient the readers to the description—the readers wouldn't have to puzzle over what "it" meant, but if you know the audiences are unfamiliar with the subject, liken it to something familiar:

Revised: A game like Jianzi

Whereas Jianzi is played with a heavy shuttle cock, Hacky Sack is a game played with a small, light leather ball.

Use the way of chunking—a dish is easier to remember than a shopping list. Patterns are easier to remember than items. So if you want to make a meal, for example, and you need to go shopping for the ingredients, it is easier to remember the dishes than the list of ingredients you need for each dish. The idea of the dish contains the list of necessary ingredients.

Similarly, acronyms are easier to remember than phrases. Here are two examples:

- light amplification by stimulated emission of radiation → laser
- self-contained underwater breathing apparatus → scuba gear

Rather than asking the readers to remember a lot of little things, give them one big thing that contains each of the things they need in an easy-to-locate format.

1.2 The Author and Audience of Technical Writing

1.2.1 The Author of Technical Writing

Technical writing has existed for many centuries and can be traced as early back as to Aristotle's period in the 4th century BC. It did not become a real profession until the mid-20th century. In the early part of the 20th century, technical writing was done mostly by engineers as technical writing programs did not emerge in American universities until the mid-20th century. Nowadays, with most American universities offering technical writing programs, most positions related to technical writing are held by people who have been trained in technical writing.

However, people doing technical writing have very different job titles and capacities. How many position titles related to technical writing can you list?

Technical writing is a diverse field, and there are more position types than you may think. The Society for Technical Communication (STC) provides the following as only a partial list of the different jobs within technical communication: technical writers and editors, indexers, information architects, instructional designers, technical illustrators, globalization and localization specialists, usability and human factors professionals, visual designers, web designers and developers, teachers and researchers of technical communication, and trainers and e-learning developers.

All these jobs have one thing in common: They all do some kind of technical writing, although their job scopes are different.

1. Technical writers and editors

Technical writers and editors are the most common position titles for technical writing. Small businesses and organizations often have only one or two technical writers and thus often use the general position title of "technical writer" or "technical editor". The job scopes and responsibilities for these technical writers or editors are

all-encompassing, and these positions require people who are more like Jack of all trades, handling all functions related to technical writing. Large businesses and organizations, on the other hand, tend to have a team of technical writers where everybody's division of duties might be more distinct and therefore have different job titles for people in the technical writing department. Most entry-level positions of technical writing require a bachelor's degree or a certificate in technical writing plus a few years' experience.

2. Indexers

Simply put, indexers are people who create indexes, which are alphabetical lists of important terms and concepts covered in the document. Indexes are different from tables of contents: Tables of contents present outlines of the topics in the exact linear order as they are covered in the documents, while indexes are terms arranged alphabetically. Indexes are used in most book-length manuals. When you buy a new car, for example, it typically comes with an owner's manual that's several-hundred-page-thick. If you want to figure out how to connect your phone to your car through Bluetooth, how will you find that information in the manual? Do you flip through the entire table of contents to find it? Or do you go to the Index section in the back of the manual to look for the entry "Bluetooth"? Most likely, you'll do the latter since it's much easier and faster.

Indexes are a must for hardcopy manuals to help users quickly find the information they need. Nowadays, with many manuals, tutorials, and user guides going online and having the search functions, does it mean that the users no longer need indexes? No, they still need indexes very much. The reason is that many search functions for these online manuals are term-sensitive and not very forgiving, meaning that your search term often has to exactly match the term embedded in the program for the search to work. For example, in the software industry, it is a common consensus that you "close a dialog box" but "quit a program". So, if you want to quit a program and search for "close XYZ", the search engine may return no results.

Indexers are often experienced technical writers and often need a bachelor's degree with some years of experience.