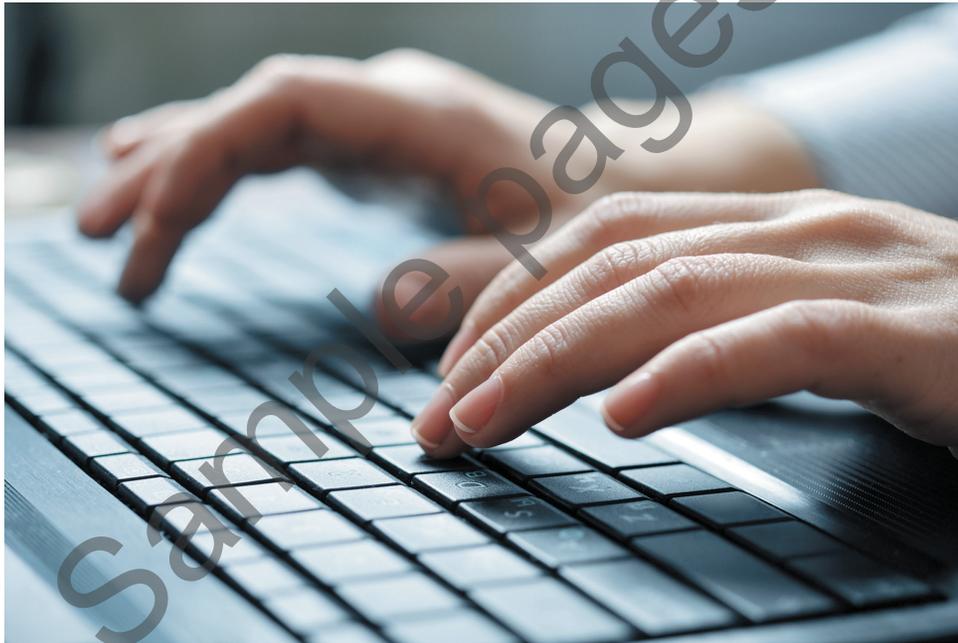


Chapter 1

Introduction to Technical Communication



mama_mia/Shutterstock

“Writing is essential to my work. Everything we do at my company results in a written product of some kind—a formal technical report, a summary of key findings, recommendations and submissions to academic journals or professional associations. We also write proposals to help secure new contracts. No matter if the document is to be delivered in print or online, writing is the most important skill we seek in potential employees and nurture and reward in current employees. It is very hard to find people with strong writing skills, regardless of their academic background.”

—Paul Harder, *President, mid-sized consulting firm*

What Is Technical
Communication?

Main Features of Technical
Communication

Purposes of Technical
Communication

Preparing Effective
Technical Documents

Projects



Learning Objectives

- 1.1 Define technical communication
- 1.2 Identify the main features of technical communication
- 1.3 Explain the purposes of technical communication
- 1.4 Describe the four tasks involved in preparing effective technical documents

What Is Technical Communication?

1.1 Define technical communication

Technical communication is the exchange of information that helps people interact with technology and solve complex problems. Almost every day, we make decisions or take actions that depend on technical information. When we purchase any new device, from a digital camera to a Wi-Fi range extender, it's the setup information that we look for as soon as we open the box. Before we opt for the latest in advanced medical treatment, we go online and search for all the information we can find about this treatment's benefits and risks. From banking systems to online courses to business negotiations, almost every aspect of daily life involves technology and technical information. Because our technologies are so much a part of our lives, we need information that is technically accurate and, importantly, easy to understand and use.

Technical communication serves various needs in various settings. People may need to perform a task (say, assemble a new exercise machine), answer a question (say, about the safety of a flu shot), or make a decision (say, about suspending offshore oil drilling). In the workplace, we are not only consumers of technical communication but also producers. To be effective and useful, any document or presentation we prepare (memo, letter, report, Web page, PowerPoint presentation) must advance the goals of our readers, viewers, or listeners.

Figure 1.1 shows a sampling of the kinds of technical communication you might encounter or prepare, either on the job or in the community.

Technical communication helps us interact with technology in our daily lives

Technical communication helps us solve complex problems

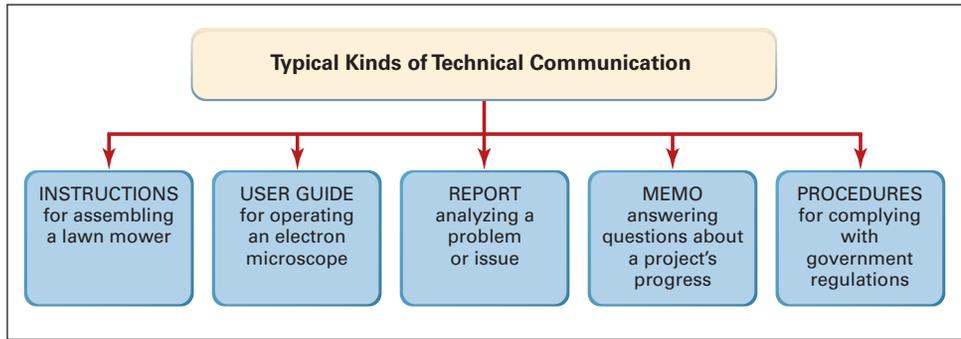


Figure 1.1 Technical Communication Serves Various Needs

Technical Communication Is a Digital and a Human Activity

Digital communication requires attention to style and tone

In today's workplace, with all of the digital communication available to us, we communicate in writing more than ever. Email, texts, chat sessions, social media and blog posts, document review features (such as Word's track changes when editing group documents): These technologies are a daily part of our workplace communication. Digital technologies make it easy for people to collaborate, especially across different time zones or work schedules. Yet in digital formats, we often communicate with such speed that we forget about basic professional standards for workplace communication. For instance, the informal or even humorous tone we use to text our friends is typically not appropriate for a work-related email. An unclear or inaccurate email sent late in the day when you are rushing to get out of the office could easily cause a safety error or legal problem; an inappropriate tone might result in wasted hours resolving an interpersonal situation instead of working on the project.

Online research is not the same as critical thinking

Digital technology also provides plenty of ways, from simple to sophisticated, to research and find information. Doing a Google or other online search, however, is not a substitute for critical thinking skills. The big questions involved in most workplace projects are questions that require us to take our research findings and make the information meaningful by asking questions such as these:

Questions that only a person can answer

- Which information is relevant to this situation?
- Can I verify the credibility and accuracy of this source?
- What does this information mean?
- What action does it suggest?
- How does this information affect me or my colleagues?
- With whom should I share it?
- How might others interpret this information?

Technical Communication Reaches a Global Audience

Linked as we are through our transportation systems and especially our digital technologies, the global community shares social, political, and financial interests. We can no longer pretend to operate solely within regional or national boundaries. Organizations are increasingly multinational; employees work on teams with colleagues from around the globe. The best collaborations happen when communication is tuned to reflect the diversity of people, countries, and cultures that make up the organization and the project team.

Write to a diverse audience

Understanding the point of view of another culture takes time. Even within specific cultures, people are individuals and can't be lumped together into one stereotype. As researchers in intercultural communication remind us, a key component is the communication's *context* (Collier 9; Martin 6). For instance, people communicate differently in the context of being at home than they do when at work.

Consider the cultural context

Cultures differ over which communication behaviors and approaches are appropriate for business relationships, including contract and other legal negotiations, types of documents (e.g., whether to use email, a memo, or a letter), tone and style, use of visuals, and so forth. An effective and appropriate communication style in one culture may be considered inappropriate or even offensive in another. In the workplace, communication tends to be patterned by a set of norms that have developed over time in different cultures. As one business expert notes,

Understand that communication behaviors differ across cultures

Every aspect of global communication is influenced by cultural differences. Even the choice of medium used to communicate may have cultural overtones. For example, it has been noted that industrialized nations rely heavily on electronic technology and emphasize written messages over oral or face-to-face communication. Certainly the United States, Canada, the UK and Germany exemplify this trend. But Japan, which has access to the latest technologies, still relies more on face-to-face communications than on the written mode (Goman 1).

This expert goes on to explain how “[i]n some cultures, personal bonds and informal agreements are far more binding than any formal contract. In others, the meticulous wording of legal documents is viewed as paramount” (Goman 2).

The documents you research and write at work need to reflect an understanding and sensitivity to cultural differences and the communication approaches of your teammates at work and your readers (i.e., your customers or clients). Your best bet is to learn as much as you can by listening and observing; asking trusted colleagues; and reading magazines, newspaper articles, blog posts, and other such information (just be sure the information is written by someone with expertise and experience in international communication). You might also try an online short course on international communication. For more on cross-cultural communication, see Chapters 3 and 5 as well as the Global Projects at the end of each chapter.

Take the time to learn about cultural differences

Technical Communication Is Part of Most Careers

Whatever your job description, you should expect to be evaluated at least in part on your written and oral communication skills. Even if you don't anticipate an actual career in writing, every job involves being a technical communicator at some point. You can expect to encounter situations such as the following:

Most professionals serve as part-time technical communicators

- As a medical professional, psychologist, social worker, or accountant, you will keep precise records that are increasingly a basis for legal action.
- As a scientist, you will report on your research and explain its significance.
- As a manager, you will write memos, personnel evaluations, and inspection reports; you will also give oral presentations.
- As a lab or service technician, you will keep daily activity records and help train coworkers in installing, using, or servicing equipment.
- As an attorney, you will research and interpret the law for clients.
- As an engineer or architect, you will collaborate with colleagues as well as experts in related fields before presenting a proposal to your client. (For example, an architect's plans are reviewed by a structural engineer who certifies that the design is sound.)
- As an employee or intern in the nonprofit sector (an environmental group or a government agency), you will research important topics and write brochures, press releases, or handbooks for clients.
- As an employee of any company or organization, you will write status reports, trip reports, memos, proposals, instructions, and many other forms of technical communication.

The more you advance in your field, the more you will need to share information and establish contacts. Managers and executives spend much of their time negotiating, setting policies, and promoting their ideas—often among diverse cultures around the globe.

In addition, most people can expect to work for several different employers throughout their career. Each employer will have questions such as the following:

Employers seek portable skills

- Can you write and speak effectively in a variety of formats and to a range of different people?
- Can you research information, verify its accuracy, figure out what it means, and shape this information for your readers' specific purposes?
- Can you work on a team with people from diverse backgrounds?
- Can you get along with, listen to, and motivate others?
- Are you flexible enough to adapt to rapid changes in business conditions and technology?
- Can you market yourself and your ideas persuasively?
- Are you ready to pursue lifelong learning and constant improvement?

Although technical expertise and experience is important, the above items, most especially the first two (communication and critical thinking), are top among the portable skills employers seek in today's college graduates.

Technical Communicators Play Many Roles

Full-time technical communicators work in many capacities. Job titles include information architect, user experience engineer, technical writer, technical editor, documentation specialist, Web development specialist, and content developer. In the public sector, government agencies (federal, state, and local) hire technical communicators to take technical research and make it accessible to nonexpert readers by writing and designing blog and social media posts, podcasts, Web pages, short reports, and brochures. In the private sector, technical communicators can be found across the spectrum, including in the highly regulated banking, pharmaceutical, and medical device industries, where these skilled communicators create specifications, procedures, and documentation for global audiences. You will also find technical communicators employed at retail companies such as Target and Best Buy to work on websites and technical documentation and in every high-tech company such as Microsoft and Apple where teams of technical communicators are responsible for user manuals, on-line help, customer support, and much more.

Technical communicators also edit reports for punctuation, grammar, style, and logical organization. They may oversee publishing projects, coordinating the efforts of writers, visual artists, graphic designers, content experts, and lawyers to produce a complex manual, report, or proposal. Given their broad range of skills, technical communicators often enter related fields such as technical or scientific publishing, magazine editing, video production (including writing scripts), training, and college teaching.

The variety of job titles of technical communicators

What technical communicators do

Main Features of Technical Communication

1.2 Identify the main features of technical communication

Almost any form of technical communication displays certain shared features: The communication is reader-centered, accessible and efficient, often produced by teams, and delivered in a variety of digital and hard copy formats.

Reader-Centered

Unlike poetry, fiction, or college essays, a technical document rarely focuses on the writer's personal thoughts and feelings. This doesn't mean your document should have no personality (or voice), but it does mean that the needs of your readers come first.

Focus on the reader, not the writer

What readers expect

Workplace readers typically are interested in “who you are” only to the extent that they want to know what you have done, what you recommend, or how you speak for your company. Reader-centered documents focus on what people need to learn, do, or decide. For example, while the history of how this product was invented may be of interest to the writer, instructions for assembling a new workstation desk should focus on what readers need to do—assemble their desk and start using it. Writing from a reader-centered perspective takes practice and attention (the rest of this text will emphasize reader-centered writing and design to help you get the idea).

Accessible and Efficient

Make documents easy to navigate and understand

Readers expect to find the information they need and to have questions answered clearly. For instance, the document shown in Figure 1.2 is written and designed so that a nontechnical audience can find and follow the information. Instead of long technical passages, the content is presented in short chunks, answering the main question readers will ask (how to choose the right model).

An accessible and efficient technical document includes elements such as those displayed in Figure 1.2 as well as others listed below.

Elements that make a document accessible and efficient

- **worthwhile content**—includes all (and only) the information readers need
- **sensible organization**—guides the reader and emphasizes important material
- **readable style**—promotes fluid reading and accurate understanding
- **effective visuals**—clarify concepts and relationships, and substitute for words whenever possible
- **effective page design**—provides heads, lists, type styles, white space, and other aids to navigation
- **supplements (abstract, appendix, glossary, linked pages, and so on)**—allow readers to focus on the specific parts of a long document that are relevant to their purpose

Recognize your legal accountability

Accessible, efficient communication is no mere abstract notion: In the event of a lawsuit, faulty writing is treated like any other faulty product. If your inaccurate, unclear, or incomplete information leads to injury, damage, or loss, you and your company or organization can be held responsible.

NOTE Make sure your message is clear and straightforward—but do not oversimplify. Information designer Nathan Shedroff reminds us that, while clarity makes information easier to understand, simplicity is “often responsible for the ‘dumbing down’ of information rather than the illumination of it” (280). The “sound bytes” that often masquerade as network news reports serve as a good case in point.



Use a Programmable Thermostat Properly

A programmable thermostat is ideal for people who are away from home during set periods of time throughout the week. Through proper use of pre-programmed settings, a programmable thermostat can save you about \$180 every year in energy costs.

How Do You Choose the Right One for You?

To decide which model is best for you, think about your schedule and how often you are away from home for regular periods of time—work, school, other activities—and then decide which of the three different models best fits your schedule:

7-day models are best if your daily schedule tends to change; for example, if children are at home earlier on some days. These models give you the most flexibility and let you set different programs for different days—usually with four possible temperature periods per day.

5+2-day models use the same schedule every weekday, and another for weekends.

5-1-1 models are best if you tend to keep one schedule Monday through Friday and another schedule on Saturdays and Sundays.

Programmable Thermostat Settings

You can use the table below as a starting point for setting energy-saving temperatures, and then adjust the settings to fit your family's schedule and stay comfortable.

Setting	Time	Setpoint Temperature (Heat)	Setpoint Temperature (Cool)
Wake	6:00 a.m.	< 70° F	> 78° F
Day	8:00 a.m.	Setback at least 8° F	Setup at least 7° F
Evening	6:00 p.m.	< 70° F	> 78° F
Sleep	10:00 p.m.	Setback at least 8° F	Setup at least 4° F

Annotations:

- Overview information summarizes the document's main point
- Heading is phrased as the main question readers will ask
- Paragraphs and sentences are short
- Color is used to highlight key items
- Table provides easy-to-read comparative data

Figure 1.2 An Effective Technical Document Language, layout, and PDF format make the information easy for everyday readers to understand and access.

Source: A Guide to Energy-Efficient Heating and Cooling, Energy Star Program, August 2009.

Often Produced by Teams

Prepare for teamwork

Technical documents are often complex. Instead of being produced by a lone writer, complex documents usually are created by teams composed of writers, Web designers, engineers or scientists, managers, legal experts, and other professionals. The teams might be situated at one site or location or distributed across different job sites, time zones, and countries.

Delivered in Paper and Digital Versions

Select the appropriate medium or combination of media

Technical documents can be delivered in a variety of media such as print (hard copy), Web pages, PDF documents, e-books, podcasts, blog and social media posts, tweets, and online videos. In many cases, there is no clear distinction between print and digital communication. Figure 1.2 is a good example: The document is in PDF format and can be read online, downloaded for later reading, or downloaded and printed on paper. Technical communicators must write well but must also be able to think about page design and media choices.

Purposes of Technical Communication

1.3 Explain the purposes of technical communication

What purpose or combination of purposes will your document serve?

Most forms of technical communication address one of three primary purposes: (1) to anticipate and answer questions (inform your readers); (2) to enable people to perform a task or follow a procedure (instruct your readers); or (3) to influence people's thinking (persuade your readers). Often, as in Figure 1.2, these purposes will overlap.

Documents That Inform

Anticipate and answer your readers' questions

Informational documents are designed to inform—to provide information that answers readers' questions clearly and efficiently. Figure 1.2 is primarily informational. It is designed for a wide audience of readers who may have questions but know little about the technical details.

Documents That Instruct

Enable your readers to perform certain tasks

Instructional documents help people do something: assemble a new computer, perform CPR, or, in the case of Figure 1.2, choose and use a programmable thermostat. This page, part of a longer document on energy-efficient heating and cooling, provides basic instructions to help people decide how to choose the most suitable thermostat

for their needs. Action verbs and phrases, such as “think about your schedule” and “decide which of the three models best fits,” are clear and direct. A simple table provides visual instructions on how and when to set thermostat temperatures.

Documents That Persuade

Persuasion encourages people to take a desired action. While some documents (such as a sales letter) are explicitly persuasive, even the most technical of documents can have an implicitly persuasive purpose. The first paragraph of Figure 1.2, for example, encourages readers to use a programmable thermostat by pointing out how much a person could save in yearly energy bills.

Motivate your readers

Preparing Effective Technical Documents

1.4 Describe the four tasks involved in preparing effective technical documents

Whether you are a full-time communication professional or an engineer, nurse, scientist, technician, legal expert, or anyone whose job requires writing and communicating, the main question you face is this: “How do I prepare the right document for this group of readers and this particular situation?”

A main question you must answer

Other chapters in this book break down the process in more detail. In Chapter 2, for example, you will learn about analyzing the audience and purpose for any document and situation. Later, you will see examples of document types typically used in workplace environments. Regardless of the type, producing an effective document typically requires that you complete the four basic tasks depicted in Figure 1.3 and described below.

- **Deliver information readers can use**—because different people in different situations have different information needs (Chapter 2)
- **Use persuasive reasoning**—because people often disagree about what the information means and what action should be taken (Chapter 3)
- **Weigh the ethical issues**—because unethical communication lacks credibility and could alienate readers (Chapter 4)
- **Practice good teamwork**—in most professions, documents are not produced by one person but by a team of colleagues from different parts of the organization (Chapter 5)

A workplace communicator’s four basic tasks

The short cases that follow illustrate how a typical professional confronts these tasks in her own day-to-day communication on the job.

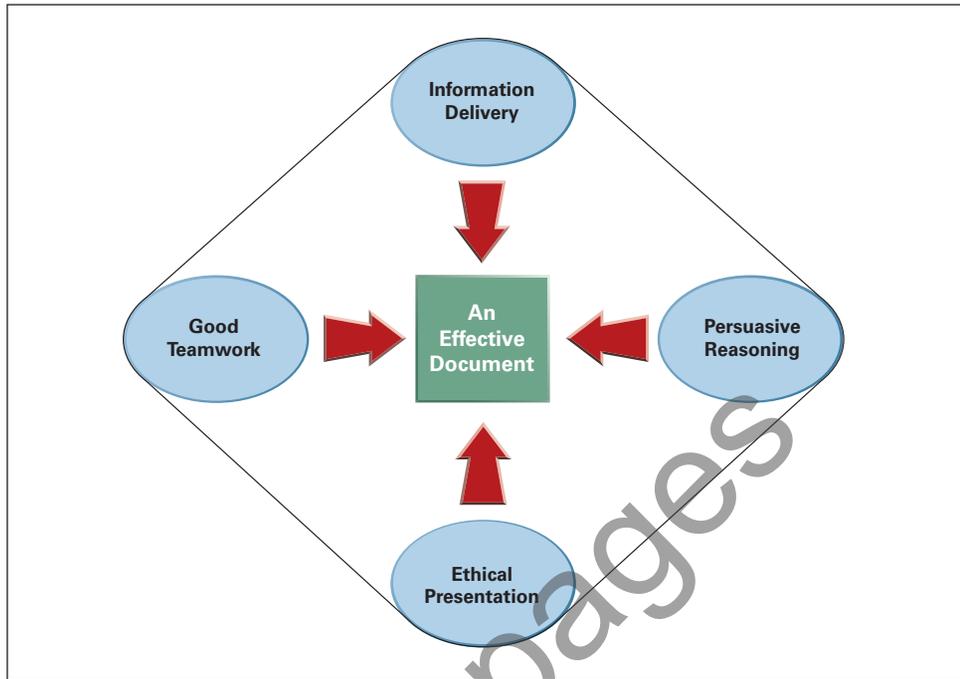


Figure 1.3 How an Effective Document Is Produced

Case

Providing Information Readers Can Use

“Can I provide exactly what readers need?”

Sarah Burnes was hired two months ago as a chemical engineer for Millisun, a leading maker of film and digital imaging supplies and equipment. Sarah’s first major assignment is to evaluate the plant’s incoming and outgoing water. (Waterborne contaminants can taint these products during the production process, and the production process itself can pollute outgoing water.) Management wants an answer to this question: How often should we change water filters? The filters are expensive and hard to change, sometimes halting production for up to a day at a time. The company wants as much “mileage” as possible from these filters, without either incurring government fines or tainting its film production.

Sarah will study endless printouts of chemical analysis, review current research and government regulations, do some testing of her own, and consult with her colleagues. When she finally determines what all the data indicate, Sarah will prepare a recommendation report for her bosses.

Later, Sarah will collaborate with the company training manager and the maintenance supervisor to prepare a user manual, instructing employees on how to check and change the filters. To cut down any additional design and publishing costs, the company has asked Sarah to design and produce this manual herself (using Adobe InDesign) and then to make the manual available as a Web page and as a PDF document.

Sarah's report, above all, needs to be accurate; otherwise, the company gets fined or lowers production. Once she has processed all the information, she faces the problem of giving readers what they need: *How much explaining should I do? How will I organize the manual? Do I need visuals? And so on.*

Sarah's next project, described below, also requires research and attention to detail but takes on an even more persuasive quality. In order to resolve the matter, Sarah will seek consensus for *her* view.

Case

Being Persuasive

Millisun and other electronics producers are located on the shores of a small harbor, the port for a major fishing fleet. During the 1980s and 1990s, these companies discharged effluents containing metal compounds, PCBs, and other toxins directly into the harbor. Sarah is on a multicompany team, assigned to work with the U.S. Environmental Protection Agency, as well as state and local environmental agencies, to clean up the harbor. Much of the team's collaboration occurs via email and a shared set of documents (using the company's internal shared document system, similar to Google Docs or Microsoft OneDrive).

Enraged local citizens are demanding immediate action, angry that the process has taken so many years, and the companies themselves are anxious to end what has now become a true public relations nightmare due to the use of Twitter and several Facebook pages that citizens have set up. But the team's analysis reveals that any type of cleanup would stir up harbor sediment, possibly dispersing the solution into surrounding waters and the atmosphere. (Many of the contaminants can be airborne.) Premature action might actually increase danger, but team members disagree on the degree of risk and on how to proceed.

Sarah's communication here takes on a persuasive dimension: She and her team members first have to resolve their own disagreements and produce an environmental impact report that reflects the team's consensus. If the report recommends further study, Sarah will have to justify the delays to her bosses and the public relations office. She will have to make other people understand the dangers as well as she does.

"Can I influence people to see things my way?"

In the preceding case, the facts are neither complete nor conclusive, and views differ about what these facts mean. Sarah will have to balance the various political pressures and make a case for her interpretation. Also, as company spokesperson, Sarah will be expected to protect her company's interests. Some elements of Sarah's persuasion problem: *Are other interpretations possible? Is there a better way? Can I expect political or legal fallout?*

Case

Considering the Ethical Issues

To ensure compliance with Occupational Safety and Health Administration (OSHA) standards for worker safety, Sarah is assigned to test the air purification system in Millisun's chemical division. After finding the filters hopelessly clogged, she decides to test the air quality and

"Can I be honest and still keep my job?"

discovers dangerous levels of benzene (a potent carcinogen). She reports these findings in an email memo to the production manager, with an urgent recommendation that all employees be tested for benzene poisoning. The manager phones and tells Sarah to “have the filters replaced,” but says nothing at all about her recommendation to test for benzene poisoning. Now Sarah has to decide what to do about this lack of response: Assume the test is being handled? Raise the issue again, and risk alienating her boss? Send copies of her original email to someone else who might take action?

As the preceding case illustrates, Sarah also will have to reckon with the ethical implications of her writing, with the question of “doing the right thing.” For instance, Sarah might feel pressured to overlook, sugarcoat, or suppress facts that would be costly or embarrassing to her company.

Situations that compromise truth and fairness present the hardest choices of all: Remain silent and look the other way, or speak out and risk being fired. Some elements of Sarah’s ethics problem: *Is this fair? Who might benefit or suffer? What other consequences could this have?*

In addition to solving these various problems, Sarah has to work in a team setting: Much of her writing will be produced in collaboration with others (technical editors, other engineers, project managers, graphic artists), and her audience will extend beyond readers from her own culture.

Case

Working on a Team and Thinking Globally

Recent mergers have transformed Millisun into a multinational corporation with branches in 11 countries. Sarah can expect to collaborate with coworkers from diverse cultures on research and development and with government agencies of the host countries on safety issues, patents and licensing rights, product liability laws, and environmental concerns. Also, she can expect to confront the challenges of addressing the unique needs and expectations of people from various cultures across the globe. She will need to be careful about how she writes her daily email status reports, for example, so that these reports convey respect for cultural differences.

In order to standardize the sensitive management of the toxic, volatile, and even explosive chemicals used in film production, Millisun is developing automated procedures for quality control, troubleshooting, and emergency response to chemical leakage. Sarah has been assigned to a team that is preparing Web-based training packages and online instructional videos for all personnel involved in Millisun’s chemical management worldwide.

“Can I connect with all these different colleagues?”

As a further complication, Sarah will have to develop working relationships with people she has never met face to face, people from other cultures, and people she knows only via email and a few conference or video calls.

For Sarah Burnes, or any of us, writing is not just putting words on paper. Writing in the workplace is a process. Throughout this process, we rarely work alone but instead collaborate with others for information, help in writing, and feedback.

Projects

For all projects, check with your instructor about whether to present your findings in class, bring drafts to class for discussion, upload your project to the class learning management system (LMS), and/or use the LMS forum or discussion boards to collaborate and review each activity below.

General

1. You have been asked to write a procedure manual for your college/university library. This would involve instructions for using the library and the rules to be followed. How would you go about preparing the right kind of document for student readership? How would you make the document accessible and efficient?
2. There are three major purposes of technical communication: to anticipate or answer questions; to help in performing a task or following a procedure; and to influence thinking. Find one example of each that you have encountered in your institute and evaluate its effectiveness. You may refer to your institute's Web site, emails, or announcement boards. Prepare a report to present to the class explaining your evaluation of each chosen example.

Team

Hobbies, Pastimes, and Interests

Class members will work together often this semester. Get acquainted with your classmates and learn about the sort of things they enjoy outside the classroom environment. Interact with the person seated next to you and present their pastimes, hobbies, or interests to the class. Use the following procedure:

- a. Ask your neighbor about their pastimes or hobbies and choose one that you are most unfamiliar with. Find out more about that interest; you have five minutes to ask as many questions as you can.
- b. Make sure that you take notes and understand the pastime or hobby.
- c. Take your notes home and decide on how to present the information engagingly. You can choose to either instruct others about the pastime or hobby, or you can attempt to persuade others to take up the hobby.
- d. Prepare a single-sided document and show this to your neighbor who can check it for accuracy.
- e. Present the finished document in a format requested by your instructor (uploaded to the class learning management system; posted to a class forum or blog; sent as an email attachment; or handed out as a paper document in class).

Digital and Social Media

With a team of 2–3 other students, choose an electrical device or brand. Use a search engine to locate the manufacturer's Web site of your chosen product. On this Web site, locate instructions on how to use the product. Identify whether the instructions are simply informative, instructional, or persuasive. Now search for independent instructions for using the product, perhaps on YouTube or a blog. How do these instructions differ from the official versions (the ones you found on the manufacturer's Web site)? In your view, which of them is better in terms of information, instruction, and persuasion?

Global

Many products are now sold on the global market. However, technical communication can vary across countries or regions to suit the specific needs of the local market. Choose a well-known global brand (pick a brand which is not based in your home country) and find the home country Web site for that brand. Examine the patterns of communication in relation to aspects such as packaging, marketing, and advertising. Now find the Web site of the brand targeting your country or region and compare the communication patterns. How similar or different are they and why might this be the case? Present your findings in a short memo to your instructor. (For this and other projects that request a memo, see Chapter 15 for memo elements and format.)