FIFTEENTH EDITION

Technical Communication

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List of Sample Documents and Forms

A Topical List of the GUIDELINES Boxes

A Guide to the CHECKLISTS

Technical Communication

Fifteenth Edition

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Brief Contents

Detailed Contents

Preface

Whether digital, face-to-face, handwritten, or printed, workplace communication is more than a value-neutral exercise in "information transfer." Workplace communication is also a complex social transaction. From reports to proposals, job applications to email messages, video chats to oral presentations, every rhetorical situation has its own specific interpersonal, ethical, legal, and cultural demands. Moreover, today's workplace professional needs to be a skilled communicator and a discriminating consumer of information, skilled in methods of inquiry, retrieval, evaluation, and interpretation essential to informed decision making.

Designed in response to these issues, *Technical Communication*, Fifteenth Edition, addresses a wide range of interests for classes in which students from a variety of majors are enrolled. The text explains, illustrates, and applies rhetorical principles to an array of assignments—from memos, résumés, and email to formal reports and proposals. To help students develop awareness of audience and accountability, exercises incorporate the problem-solving demands typical in college and on the job. Self-contained chapters allow for various course plans and customized assignments.

What's New to the Fifteenth Edition?

Technical Communication, Fifteenth Edition, has been thoroughly revised to account for the latest innovations in workplace communication and today's technologically sophisticated, diverse, and global workforce. Students will benefit from a variety of new content and features in this edition:

- **The latest coverage of digital communication and social media.** As in every edition of *Technical Communication*, the latest innovations in digital communication have been woven throughout the book (for example, using JAWS to make Web pages accessible for visually impaired users; the increasingly common use of video interviews; the use of PDF files for most online instructional material; using collaborative writing apps and spaces such as Google Drive; and more). In this edition, we've placed a special emphasis on the relationships between social media and technical communication, with social media considerations incorporated into nearly every chapter. In addition, the "Social Media" chapter itself (Chapter 25) has been updated and expanded to include new discussion of workplace uses of Instagram and creating instructional videos for YouTube and other social media, including a new "Guidelines for Creating Instructional Videos for Social Media" box.
- **New discussions on the challenges of assessing credible information when using online sources.** In addition to covering the latest in digital technology, we have included content on the challenges writers and everyday citizens face when using the Internet for research, including discussions in Chapters 7, 8, and 9 (on research) about *confirmation bias* and ways that online information tends to reinforce what people already believe or want to believe.
- **Streamlined topical coverage within chapters.** Although we have not changed the overall structure or sequence of chapters in the book, we have done extensive combining of related sections and reorganizing of topics within chapters for improved accessibility and fewer major sections for students to navigate. As in the previous edition, all major sections are tied

to the Learning Objectives that appear at the beginning of each chapter.

- **An extensively revised chapter on visuals.** Chapter 12, "Designing Visual Information," now places stronger emphasis on planning visuals by placing the Planning Sheet for Preparing Visuals early in the chapter. In addition, the chapter includes a new section on understanding and creating infographics, as well as a new section on presenting visuals.
- **A revised and expanded chapter on email.** Chapter 14, "Email," now includes a new section on the three major types of email (primary, transmittal, and formatted), as well as revised and expanded coverage of interpersonal issues when using email, updated coverage of global, ethical, and legal issues related to email, and new and revised sample emails throughout the chapter.
- **A thoroughly revised chapter on oral presentations.** Without changing any of the clear and practical advice on planning, preparing, and delivering oral presentations, Chapter 23, "Oral Presentations and Video Conferencing" has been revised to include a new section on when and how to use handouts during presentations, expanded discussion of the cautions of relying too much on presentation apps, more emphasis on considering the needs of off-site audiences when planning and preparing oral presentations, and updated figures throughout the chapter.
- **Extensively revised Projects.** The end-of-chapter Projects—which continue to be organized into General, Team, Digital and Social Media, and Global categories—have been fully revised for this edition.

Hallmarks of *Technical Communication*

Technical Communication, Fifteenth Edition, retains—and enhances or expands—the features that have made it a best-selling text for technical communication over fourteen editions. These include the following:

- **Complete coverage for any course in technical communication, business communication, or professional writing.** The topics move from basic foundational concepts to chapters on research, organization, style, visual characteristics, and document design, and finally to specific documents and applications. The appendix includes thorough coverage of the most recent MLA and APA documentation styles, and a handbook of grammar, mechanics, and usage.
- **A reader-friendly writing style that presents all topics clearly and concisely.** Simple, straightforward explanations of concepts and audience/purpose analyses of specific document types help differentiate technical communication from academic writing.
- **The most current and thorough coverage of workplace technologies, ethics, and global considerations in the workplace.** Always prominent in the book, these three topics have been updated and expanded throughout to keep up with the changes in the contemporary workplace.
- **Strong coverage of information literacy.** According to the American Library Association Presidential Committee on Information Literacy, information-literate people "know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them." Critical thinking—the basis of information literacy—is covered intensively in Part II and integrated throughout the text, especially in discussions about online information.
- **A focus on applications beyond the classroom.** Clear ties to the workplace have always been a primary feature of this book. This edition includes examples from everyday on-the-job situations and sample documents, as well

as dedicated chapters on ethics, teamwork, and global issues. Each chapter opener includes a quote from an on-the-job communicator.

- **Emphasis on the humanistic aspects of technical communication.** Technical communication is ultimately a humanistic endeavor, not just a set of job-related transcription tasks, with broad societal implications. Accordingly, situations and sample documents in this edition address complex technical and societal issues such as climate change, public health issues, environmental and energy topics, digital technology, and genomics.
- **Plentiful model documents and other useful figures throughout the book.** Descriptions and instructions for creating technical documents are accompanied by clear, annotated examples. Graphic illustrations throughout make abstract concepts easy to understand.
- **Highly praised pedagogical features.** Pedagogical features, including chapter-opening Learning Objectives, summary Guidelines boxes, real-world Consider This boxes, Case Studies, annotated figures, summary marginal notes, and end-of-chapter Checklists and Projects reinforce chapter topics. These features are outlined in more detail below.

How this Book is Organized

Technical Communication is designed to allow instructors maximum flexibility. Each chapter is self-contained, and each part focuses on a crucial aspect of the communication process. Following are the five major parts of the book:

- **Part 1: Communicating in the Workplace** treats job-related communication as a problem-solving process. Students learn to think critically about the informative, persuasive, and ethical dimensions of their communications. They also learn how to adapt to the interpersonal challenges of collaborative work, and to address the various needs and expectations of global audiences.
- **Part 2: The Research Process** treats research as a deliberate inquiry process. Students learn to formulate significant research questions; to explore primary and secondary sources in hard copy and digital form; to evaluate and interpret their findings; and to summarize for economy, accuracy, and emphasis. Students are asked to think critically about online information and to consider the credibility and truthfulness of the source.
- **Part 3: Organization, Style, and Visual Design** offers strategies for organizing, composing, and designing messages that readers can follow and understand. Students learn to control their material and develop a readable style. They also learn about the rhetorical implications of graphics and page design—specifically, how to enhance a document's access, appeal, and visual impact for audiences who need to locate, understand, and use the information successfully.
- **Part 4: Specific Documents and Applications** applies earlier concepts and strategies to the preparation of print and electronic documents and oral presentations. Various letters, memos, reports, and proposals offer a balance of examples from the workplace and from student writing. Each sample document has been chosen so that students can emulate it easily. Chapters on email, Web pages, and social media emphasize the ubiquity of digital communication in today's workplace.
- **Part 5: Resources for Writers** includes "A Quick Guide to Documentation," which provides general guidance as well as specific style guides and citation models for MLA and APA styles, and "A Quick Guide to Grammar, Usage, and Mechanics," which provides a handy resource for answering questions about the basic building blocks of writing.

Learning Enhancement Features

This book is written and designed to be a highly accessible document, so that readers can "read to learn and learn to do." *Technical Communication*,

Fifteenth Edition, includes the following learning enhancement features that will help students access the material easily and use the ideas to become effective technical communicators:

- ***Chapter opening quotations*** demonstrate the real-world applications of each chapter's topic.
- ***Learning Objectives*** at the beginning of each chapter tie in with the main headed sections of each chapter and provide a set of learning goals for students to fulfill.
- ***Guidelines* boxes** help students prepare specific documents by synthesizing the chapter's information.
- ***Cases* and sample situations** encourage students to make appropriate choices as they analyze their audience and purpose and then compose their document.
- **Sample documents** model various kinds of technical writing, illustrating for students what they need to do. Captions and annotations identify key features in sample documents.
- ***Consider This* boxes** provide interesting and topical applications of the important issues discussed in various chapters, such as collaboration, technology, and ethics.
- ***Notes* callouts** clarify up-to-the-minute business and technological advances and underscore important advice.
- **Marginal notes** summarize larger chunks of information to reinforce key chapter concepts.
- ***Checklists*** promote careful editing, revision, and collaboration. Students polish their writing by reviewing key criteria for the document and by referring to cross-referenced pages in the text for more information on each point.
- **General, team, global, and digital and social media *Projects*** at each chapter's end help students apply what they have learned.

Revel™

Revel is an interactive learning environment that deeply engages students and prepares them for class. Media and assessment integrated directly within the authors' narrative lets students read, explore interactive content, and practice in one continuous learning path. Thanks to the dynamic reading experience in Revel, students come to class prepared to discuss, apply, and learn from instructors and from each other.

The Revel features accompanying *Technical Communication* are as follows:

- **Journal Prompts** appear at the end of every major section in each chapter, encouraging hands-on practice through writing. Students are asked to perform brief writing activities that involve reflection, brainstorming, drafting a portion of a document, or analyzing a particular document.
- **Multiple-Choice Quizzes** help reinforce facts and concepts as students move through each major section in each chapter (the end of each major section quiz features three questions directly tied to that section) and then again at the end of the chapter (the end-of-chapter quiz provides five questions covering various sections of the chapter).
- **Table Drag-and-Drop** activities help students remember information by matching terms with their descriptions or placing parts of complex documents in the right order.
- **Fill-in-the-Blank and True/False Quick Check** activities are directly tied to the Guidelines boxes that appear in every chapter and provide a quick means of remembering concepts presented in these important boxes.
- **Shared Writing Activities** at the end of each chapter encourage students to share, discuss, and critique each other's work.

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Pearson English Assignments Library

Available with your adoption of any © 2019 or © 2020 Pearson English course in Revel is the English Assignments Library comprising 500 essay and Shared Media prompts:

- A series of 300 fully editable essay assignments invite students to write on compelling, wide-ranging writing topics. You can choose from an array of writing prompts in the following genres or methods of development: Argument/Persuasion; Comparison/Contrast; Critique/Review; Definition; Description; Exposition; Illustration; Narration; Process Analysis; Proposal; and Research Project. Assignments can be graded using a rubric based on the WPA Outcomes for First-Year Composition. You can also upload essay prompts and/or rubrics of your own.
- 200 Shared Media assignments ask students to interpret and/or produce various multimedia texts to foster multimodal literacy. Shared Media activities include analyzing or critiquing short professional videos on topics of contemporary interest; posting brief original videos or presentation slides; and sharing original images—such as posters, storyboards, concept maps, or graphs.

Format Options

Below are format options by which Technical Communication is available.

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- **INSTANT ACCESS** Students can purchase access directly from Pearson to start their subscription immediately.
- **PRINT UPGRADE** Students can choose to have a printed loose-leaf version sent to them with free shipping

Revel Combo Card

The Revel Combo provides the Revel access code card plus a coupon for the loose-leaf print reference (delivered by mail). This option is perfect for students who need to purchase all of their materials from the campus bookstore.

Print Rental

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Supplements

Make more time for your students with instructor resources that offer effective learning assessments and classroom engagement. Pearson's partnership with educators does not end with the delivery of course materials; Pearson is there with you on the first day of class and beyond. A dedicated team of local Pearson representatives will work with you to not only choose course materials but also integrate them into your class and assess their effectiveness. Our goal is your goal—to improve instruction with each semester.

Pearson is pleased to offer the following resources to qualified adopters of *Technical Communication*. Several of these supplements are available to instantly download from Revel or on the Instructor Resource Center (IRC); please visit the IRC at www.pearson.com/us to register for access.

- **TEST BANK** Evaluate learning at every level. Reviewed for clarity and accuracy, the Test Bank measures this material's learning objectives with multiple-choice, true/false, and fill-in-the-blank questions. You can easily customize the assessment to work in any major learning management system and to match what is covered in your course. Word and BlackBoard versions are available on the IRC.
- **PEARSON MYTEST** This powerful assessment generation program includes all of the questions in the Test Bank. Quizzes and exams can be easily authored and saved online and then printed for classroom use, giving you ultimate flexibility to manage assessments anytime and anywhere. To learn more, visit www.pearsonmytest.com.
- **INSTRUCTOR'S RESOURCE MANUAL by Lee Scholder, M.S., J.D.** Create a comprehensive roadmap for teaching classroom, online, or hybrid courses. Designed for new and experienced instructors, the Instructor's Resource Manual includes overall teaching strategies (including general teaching ideas, advice on how to use the Revel features accompanying *Technical Communication*, and sample syllabi) and chapter-specific resources (including chapter overviews, Learning Objectives, teaching tips, additional exercises, and quizzes). Available within Revel and on the IRC.
- **POWERPOINT PRESENTATION** Make lectures more enriching for students. The accessible PowerPoint Presentation includes a full lecture outline and figures from the textbook and Revel edition. Available on the IRC.

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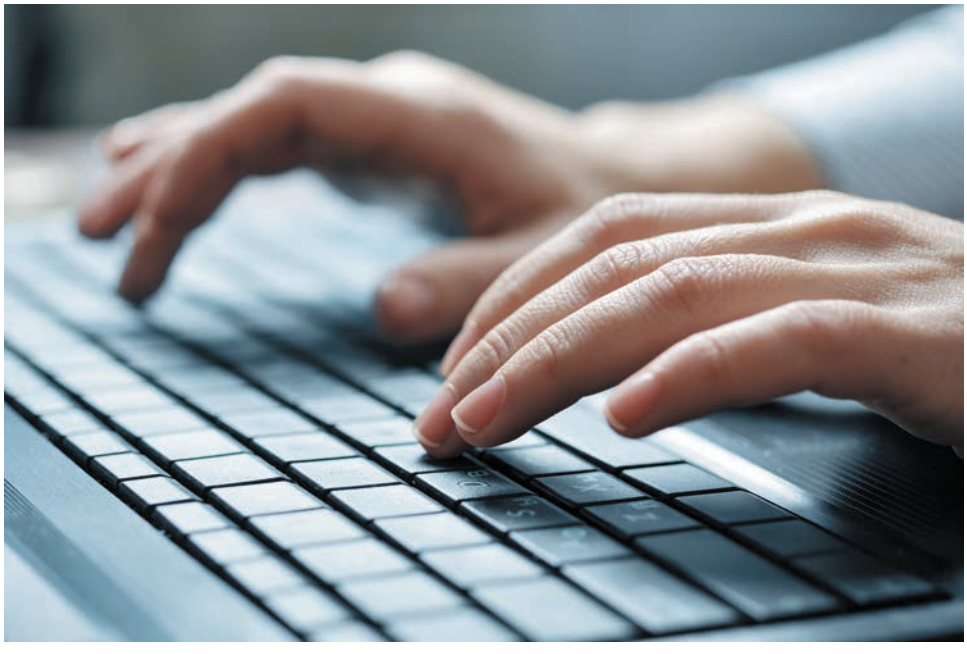
—John M. Lannon and Laura J. Gurak

Part 1

Communicating in the Workplace

Chapter 1
Introduction to Technical Communication



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"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

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-Ffi 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 helps us interact with technology in our daily lives

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.

Technical communication helps us solve complex problems

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.

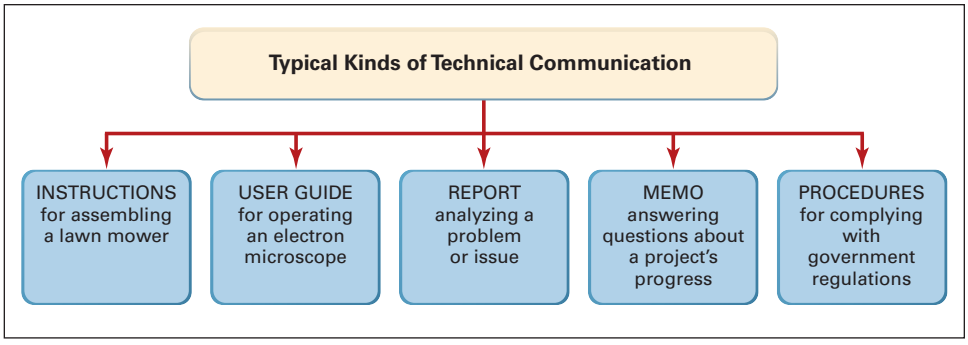

Figure 1.1 Technical Communication Serves Various Needs

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

Write to a diverse 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.

Consider the cultural context

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.

Understand that communication behaviors differ across cultures

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,

> 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).

Take the time to learn about cultural differences

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.

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

The variety of job titles of technical communicators

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, online help, customer support, and much more.

What technical communicators do

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.

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

Focus on the reader, not the writer

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.

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.*

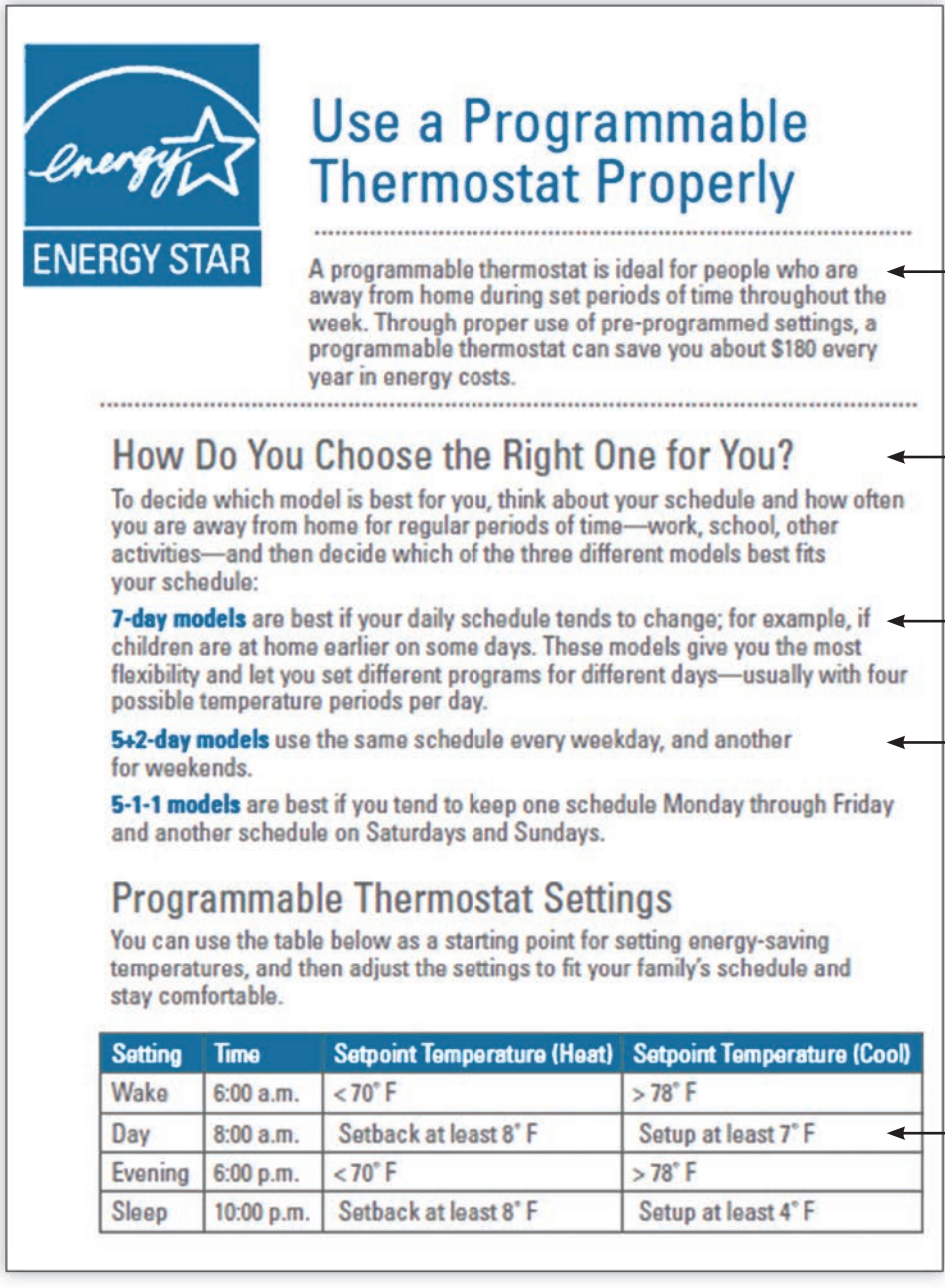

Figure 1.2 An Effective Technical Document Language, layout, and PDF format make the information easy for everyday readers to understand and access.

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

Motivate your readers

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.

Preparing Effective Technical Documents

1.4 Describe the four tasks involved in preparing effective technical documents

A main question you must answer

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?"

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.

A workplace communicator's four basic tasks

- **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)

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

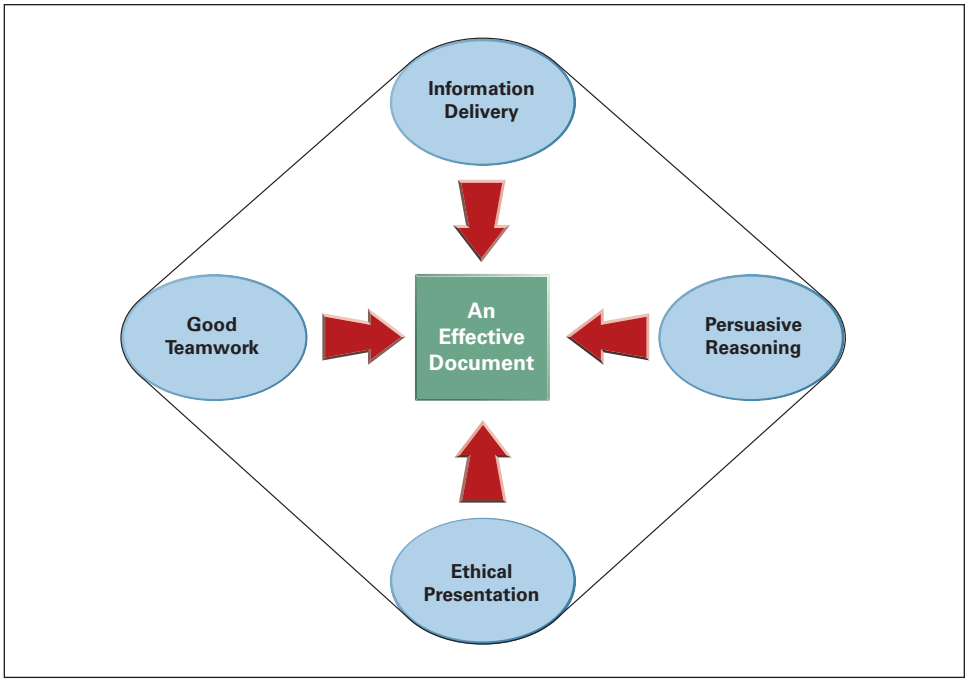

Figure 1.3 **How an Effective Document Is Produced**

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

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

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.

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

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

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

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

"Can I connect with all these different colleagues?"

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.

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. Write a memo to your boss, justifying reimbursement for this course. Explain how the course will help you become more effective on the job. (For this and other projects below that request a memo, see Chapter 15 for memo elements and format.)
2. Locate a Web site or Facebook page for an organization that hires graduates in your major. In addition to technical knowledge, what writing and communication skills does this organization seek in job candidates? Discuss your findings in class and create a short presentation for other students, explaining what communication skills they require to find a job in this or a similar organization. If your class is using a learning management system, upload your presentation to the site and refer to it later when working on job search materials (Chapter 16).

Team

Introducing a Classmate

Class members will work together often this semester. To help everyone become acquainted, your task is to introduce to the class the person seated next to you. (That person, in turn, will introduce you.) Follow this procedure:

- **a.** Exchange with your neighbor whatever information you think the class needs: background, major, career plans, kinds of writing and other communication that might be done in that job, and so on. Each person gets 5 minutes to tell her or his story.
- **b.** Take careful notes; ask questions if you need to.
- **c.** Take your notes home and select only the information you think the class will find useful.
- **d.** Prepare a one-page document (a few paragraphs is fine) telling your classmates who this person is.
- **e.** Ask your neighbor to review the document for accuracy; revise as needed.
- **f.** In class, introduce your neighbor using your document as a guide. Turn in your document in whatever format your instructor prefers (uploaded to the learning management system; posted to a class forum or blog; sent as an email attachment; handed in on paper in class).

Digital and Social Media

With a team of 2–3 other students, visit a government Web site, such as the Food and Drug Administration, the Centers for Disease Control, or NASA. Locate documents similar in purpose to Figure 1.2 in this chapter. Analyze these documents, noting whether they conform to one of the three purposes (informative, instructional, persuasive) described in this chapter or whether they are a blend of these purposes. Next, locate the Facebook page of that government agency. How is content presented differently on each site? Does the Facebook page appear to have a different purpose from the Web site? If so, what are the differences?

Global

Look back at the Sarah Burnes case in this chapter. Assume you are about to join a team at work—a team that has members from Ireland, India, China, and the United States. Online, search for information to help you learn what you can about patterns of communication; issues to look for include politeness, turn-taking, use of first names or titles, gender roles, and formal versus informal kinds of language. Describe your findings in a short memo to your instructor. Be sure to include links to the Web sites and other online sources you found.

Chapter 2
Meeting the Needs of Specific Audiences

Ian Lishman/Juice Images/Getty images

"Audience is key. I write for people who have different levels of technical expertise, including service technicians, managers, engineers, and customers. I also work with the marketing team on proposals for commercial clients and with the legal department to write regulatory documents. It's important for me to understand how much background information and technical explanations are required for a particular set of readers. In terms of the document's design and overall size, I need to consider the primary way people will interact with the material: on paper, on a computer, or on a phone."

—John Bryant, Technical Communication Project Lead

Learning Objectives

2.1 Ask the right questions to analyze your audience and purpose

2.2 Assess your audience's technical background

2.3 Identify the appropriate document qualities for your audience

2.4 Develop an audience and use profile to guide your work

Definition of audience

All technical communication is intended for people who will use and react to the information. These people are considered to be the *audience* for your document: people who are reading the material in order to do something or learn something.

Why understanding your audience is important

Before you start writing, you need to identify with as much precision as possible who will be reading the document and then understand how that particular audience will use your material. For example, you might need to *define* something—as in explaining to insurance clients what the term "variable annuity" means. You might need to *describe* something—as in showing an architectural client what a new office building will look like. You might need to *explain* something—as in instructing an auto repair technician how to reprogram the car's electronic ignition. Or you might need to *propose* something—as in arguing for change in your company's sick-leave policy. Preparing an effective document requires systematic analysis of your audience and the ways in which they will use your document (Figure 2.1).

Because people's basic requirements vary, every audience expects a message tailored to its own specific interests, social conventions, ways of understanding problems, and information needs.

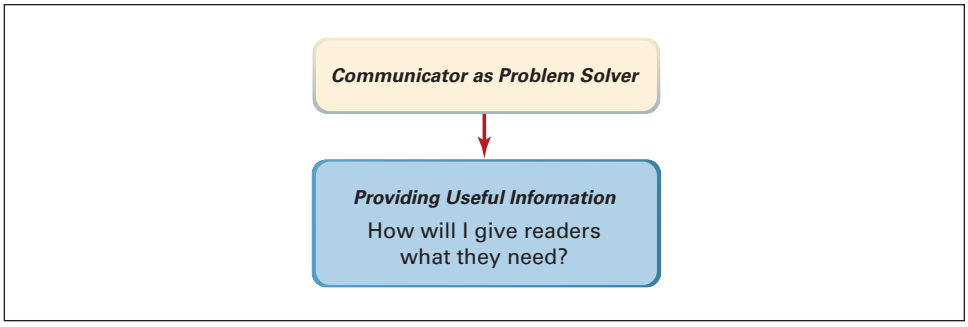

Figure 2.1 Communicators Begin by Considering Their Audience

Analyze Your Document's Audience and Purpose

2.1 Ask the right questions to analyze your audience and purpose

Explore all you can about who will use your document, why they will use it, and how they will use it. Begin by analyzing your audience and the background, needs, and preferences of these readers. Among the questions you must answer are these:

Questions for analyzing a document's audience

- Who is the main audience for this document?
- Who else is likely to read it?
- What is your relationship with the audience?
- Are multiple types of relationships involved?
- What information does this audience need?
- How familiar might the audience be with technical details?
- Do these readers have varying levels of expertise?
- What culture or cultures does your audience represent?
- How might cultural differences shape readers' expectations and interpretations?
- How will people interact with the material: in digital formats, on paper, or both?

Answer these questions by considering the suggestions that follow.

Primary and Secondary Audiences

"Who is the main audience for this document?"

When writing a technical document, keep two audiences in mind. Most documents are geared to an immediate audience of readers. This is your primary audience. For instance, a set of instructions for installing and using a new software application for an office network might be directed primarily toward the information technology support staff who would be doing the installing.

But most documents also have a secondary audience, those individuals outside the immediate circle of people who will be needing the information directly. For example, a secondary audience for these instructions might be managers, who will check to see if the instructions comply with company policy, or lawyers, who will make sure the instructions meet legal standards.

"Who else is likely to read it?"

Generally, primary readers are people who will be the main users of the document (often they are also the people who requested the document). Secondary readers are those who will support the project, who will advise any decision makers, or who will be affected by this document in some other way.

Your Relationship to Your Readers

Besides identifying your audience in a general way, you also need to understand your relationship with everyone involved. In your situation, will the readers be superiors, colleagues, or subordinates? Your answer will help you determine the level of formality and authority to use in the document. Are the readers from inside or outside your organization? Answering this question will help you decide how confidential you need to be. Do you know the readers personally? If so, perhaps you can adopt a slightly more informal (but still professional) tone. Are they likely to welcome or to resist your information? Knowing the answer will help you decide how persuasive you need to be. Are they a combination of people from various levels, both inside and outside the company? The answer will help you tailor your document for various readers.

"What is my relationship with this audience?"

Purpose of Your Document

Spell out precisely what you want your document to accomplish and how you expect readers to use it. In other words, determine your purpose. Ask these questions:

- What is the main purpose of the document?
- What other purpose or purposes does the document serve?
- What will readers do with this information?

Questions for deciding on the purpose of your document

Answer these questions by considering the suggestions in the sections that follow.

Primary and Secondary Purposes

Most forms of technical communication fulfill a specific primary purpose. As discussed in Chapter 1, the primary purpose (to inform, to instruct, or to persuade) will affect the document's overall shape and substance.

"What is the main purpose of this document?"

Many documents have one or more secondary purposes. For example, the primary purpose in a typical instruction manual is to instruct, that is, to teach an audience how to assemble or use the product. But for ethical and legal reasons, companies also want people to use the product safely. A user manual for a power tool or a lawnmower, for instance, almost always begins with a page that spells out safety hazards and precautions before instructing readers about how to proceed with the mechanism.

"What other purposes does this document serve?"

Write a clear audience and purpose statement

In planning your document, work from a clear statement that identifies the target audience as well as the document's primary and secondary purposes. For example, "The purpose of my document is *to inform* company employees of the new absentee policy and *to instruct* them on how to follow the procedures properly," or "The purpose of my document is *to inform* my division's programmers about the new antivirus software, as well as *to instruct* them on how to install the software and *to persuade* them of the importance of running weekly virus scans."

Intended Use of the Document

"How will readers use this document?"

In addition to determining purposes of a document from your own perspective, also consider how and why it will be used by others. As you plan your document, answer these questions:

Questions for anticipating how your document will be used

- Do my readers simply want to learn facts or understand concepts? Will they use my information in making some type of decision?
- Will people act immediately on the information?
- Do they need step-by-step instructions?
- In my audience's view, what is most important about this document?

Besides answering these questions, try asking members of your audience directly, so you can verify what they want to know.

Assess the Audience's Technical Background

2.2 Assess your audience's technical background

"How much expertise does this audience possess?"

When you write for a close acquaintance (coworker, engineering colleague, chemistry professor who reads your lab reports, or supervisor), you adapt your report to that person's knowledge, interests, and needs. But some audiences are larger and less defined (say, for a journal article, a user manual, a set of first-aid procedures, or an accident report). When you have only a general notion about your audience's background, decide whether your document should be *highly technical*, *semitechnical*, or *nontechnical*, as depicted in Figure 2.2.

Highly Technical Audience

"Does my audience understand highly technical information?"

Readers at a specialized level expect to be presented the facts and figures they need—without long explanations. In Figure 2.3, an emergency room physician reports to the patient's doctor, who needs an exact record of symptoms, treatment, and results. In this situation, a highly technical version is both appropriate and important.

For her expert colleague, this physician doesn't need to define the technical terms (*pulmonary edema*, *sinus rhythm*). Nor does she need to interpret lab findings

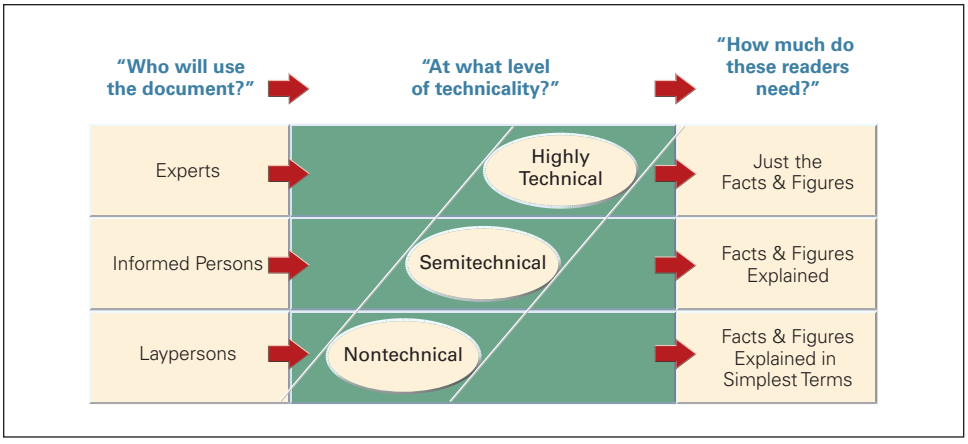

Figure 2.2 Deciding on a Document's Level of Technicality

The patient was brought to the ER by ambulance at 1:00 A.M., September 27, 2010. The patient complained of severe chest pains, dyspnea, and vertigo. Auscultation and EKG revealed a massive cardiac infarction and pulmonary edema marked by pronounced cyanosis. Vital signs: blood pressure, 80/40; pulse, 140/min; respiration, 35/min. Lab: wbc, 20,000; elevated serum transaminase; urea nitrogen, 60 mg%. Urinalysis showed 4+ protein and 4+ granular casts/field, indicating acute renal failure secondary to the hypotension.

The patient received 10 mg of morphine stat, subcutaneously, followed by nasal oxygen and 5% D & W intravenously. At 1:25 A.M. the cardiac monitor recorded an irregular sinus rhythm, indicating left ventricular fibrillation. The patient was defibrillated stat and given a 50 mg bolus of Xylocaine intravenously. A Xylocaine drip was started, and sodium bicarbonate administered until a normal heartbeat was established. By 3:00 A.M., the oscilloscope was recording a normal sinus rhythm.

As the heartbeat stabilized and cyanosis diminished, the patient received 5 cc of Heparin intravenously, to be repeated every six hours. By 5:00 A.M. the BUN had fallen to 20 mg% and vital signs had stabilized: blood pressure, 110/60; pulse, 105/min; respiration, 22/min. The patient was now conscious and responsive.

Expert readers need facts and figures, which they can interpret for themselves

Figure 2.3 A Technical Version of an Emergency Treatment Report This version is written for medical experts.

(*4+ protein, elevated serum transaminase*). She uses abbreviations that her colleague clearly understands (*wbc, BUN, 5% D & W*). Because her colleague knows all about specific treatments and medications (*defibrillation, Xylocaine drip*), she does not explain their scientific bases. Her report answers concisely the main questions she can anticipate from this particular reader: What was the problem? What was the treatment? What were the results?

Semitechnical Audience

"Does my audience know a little but need further guidance?"

In certain cases, readers will have some technical background but not as much as the experts. For instance, first-year medical students have specialized knowledge, but they know less than the advanced students. Yet all medical students could be considered semitechnical. Therefore, when you write for a semitechnical audience, identify the *lowest* level of understanding in the group, and write to that level. Too much explanation is better than too little.

The partial version of the medical report in Figure 2.4 might appear in a textbook for medical or nursing students, in a report for a medical social worker, or in a monthly report for the hospital administration.

Informed but nonexpert readers need enough explanation to understand what the data mean

Examination by stethoscope and electrocardiogram revealed a massive failure of the heart muscle along with fluid buildup in the lungs, which produced a cyanotic discoloration of the lips and fingertips from lack of oxygen.

The patient's blood pressure at 80 mm Hg (systolic)/40 mm Hg (diastolic) was dangerously below its normal measure of 130/70. A pulse rate of 140/minute was almost twice the normal rate of 60–80. Respiration at 35/minute was more than twice the normal rate of 12–16.

Laboratory blood tests yielded a white blood cell count of 20,000/cu mm (normal value: 5,000–10,000), indicating a severe inflammatory response by the heart muscle. The elevated serum transaminase enzymes (produced in quantity only when the heart muscle fails) confirmed the earlier diagnosis. A blood urea nitrogen level of 60 mg% (normal value: 12–16 mg%) indicated that the kidneys had ceased to filter out metabolic waste products. The 4+ protein and casts reported from the urinalysis (normal value: 0) revealed that the kidney tubules were degenerating as a result of the lowered blood pressure.

The patient immediately received morphine to ease the chest pain, followed by oxygen to relieve strain on the cardiopulmonary system, and an intravenous solution of dextrose and water to prevent shock.

Figure 2.4 A Semitechnical Version of an Emergency Treatment Report This version is written for readers who are not experts but who have some medical background.

This semitechnical version explains the raw data (highlighted in yellow). Exact dosages are omitted because no one in this audience actually will be treating this patient. Normal values of lab tests and vital signs, however, help readers interpret the report results. (Experts know the normal values.) Knowing what medications the patient received would be especially important in answering this audience's central question: How is a typical heart attack treated?

Nontechnical Audience

"Does my audience have little or no technical background?"

People with no specialized training (laypersons) look for the big picture instead of complex details. These readers expect technical data to be translated into words that most people will understand. Laypersons are impatient with abstract theories, but they want enough background to help them make the right decision or take the right action. They are bored or confused by excessive detail but frustrated by raw facts left unexplained or uninterpreted. They expect to understand the document after reading it only once.

The nontechnical version of the medical report shown in Figure 2.5 might be written for the patient's spouse or other family member, or as part of a script for an online documentary video about emergency-room treatment. Nearly all interpretation (highlighted in yellow), this version mentions no specific medications, lab tests, or normal values. It merely summarizes events and briefly explains what they mean and why these particular treatments were given.

Heart sounds and electrical impulses were both abnormal, indicating a massive heart attack caused by failure of a large part of the heart muscle. The lungs were swollen with fluid and the lips and fingertips showed a bluish discoloration from lack of oxygen.

Blood pressure was dangerously low, creating the risk of shock. Pulse and respiration were almost twice the normal rate, indicating that the heart and lungs were being overworked in keeping oxygenated blood circulating freely.

Blood tests confirmed the heart attack diagnosis and indicated that waste products usually filtered out by the kidneys were building up in the bloodstream. Urine tests showed that the kidneys were failing as a result of the lowered blood pressure.

The patient was given medication to ease the chest pain, oxygen to ease the strain on the heart and lungs, and intravenous solution to prevent the blood vessels from collapsing and causing irreversible shock.

Laypersons need everything translated into terms they understand

Figure 2.5 A Nontechnical Version of an Emergency Treatment Report This version is written for readers who have no medical background.

In a different situation, however (say, a malpractice trial), the layperson jury would require detailed technical information about medication and treatment. Such a report would naturally be much longer—basically a short course in emergency coronary treatment.

Audiences with Varying Technical Backgrounds

The technical background of large and diverse audiences can be variable and hard to pin down. When you must write for audiences at different levels, follow these suggestions:

How to tailor a document to address different technical backgrounds

- If the document is short (a letter, memo, email, or anything less than two pages), rewrite it at different levels for different backgrounds.
- If the document exceeds two pages, address the primary readers. Then provide appendices, glossaries, hyperlinks, or other easily accessible information for secondary readers. Transmittal letters and informative abstracts can also help nonexperts understand a highly technical report. (See Chapter 21 for use and preparation of appendices and other supplements.)

For an illustration of these differences, consider the following case.

Case

Tailoring a Single Document for Multiple Audiences

Different readers have differing information needs

You are a metallurgical engineer in an automotive consulting firm. Your supervisor has asked you to test the fractured rear axle of a 2016 Delphi pickup truck recently involved in a fatal accident. Your assignment is to determine whether the fractured axle *caused* or *resulted from* the accident.

After testing the hardness and chemical composition of the metal and examining microscopic photographs of the fractured surfaces (fractographs), you conclude that the fracture resulted from stress that developed *during* the accident. Now you must report your procedure and your findings to a variety of readers.

"What do these findings mean?"

Because your report may serve as courtroom evidence, you must explain your findings in meticulous detail. But your primary readers (the decision makers) will be nonspecialists (the attorneys who have requested the report, insurance representatives, possibly a judge and a jury), so you must translate your report, explaining the principles behind the various tests, defining specialized terms such as "chevron marks," "shrinkage cavities," and "dimpled core," and showing the significance of these features as evidence.

"How did you arrive at these conclusions?"

Secondary readers will include your supervisor and outside consulting engineers who will be evaluating your test procedures and assessing the validity of your findings. Consultants will be focusing on various parts of your report, to verify that your procedure has been exact and faultless. For this group, you will have to include appendices spelling out the technical details of your analysis: *how* hardness testing of the axle's case and core indicated that the axle had been properly carburized; *how* chemical analysis ruled out the possibility that the manufacturer had used inferior alloys; *how* light-microscopic fractographs revealed that the origin of the fracture, its direction of propagation, and the point of final rupture indicated a ductile fast fracture, not one caused by torsional fatigue.

In the previous scenario, primary readers need to know *what your findings mean,* whereas secondary readers need to know *how you arrived at your conclusions.* Unless it serves the needs of each group independently, your information will be worthless.

Digital Documents for Multiple Audiences

Advantages of digital documents for multiple audiences

A great way to address different technical levels of audience is with digital documents, including Web pages, blogs and wikis, PDFs, shared drive documents (such as Google drive), and others. These forms are ideal for providing information for readers from a wide range of backgrounds because you can use hyperlinks, tabs, and other interactive features to direct different audiences to information written and designed to match their interests and backgrounds. The Web site in Figure 2.6 uses tabs and links to accommodate different levels of interest and expertise.

Advantages of digital documents for global audiences

Any document can easily reach across the globe, and digital documents are also useful when readers are from different countries or cultures. The instruction guide you write for a new camera card reader, for example, may well end up on a Web site, where it will be used by customers worldwide. Some international readers may be offended by commands in strongly worded imperative forms, such as "STOP: Do not insert the storage card until you reach Step 3." Or they may be baffled by icons and other visuals that have no meaning in their culture. But with Web-based documents, readers can click on a link to choose from different countries and cultures and will then receive information that is properly translated and localized (adapted) for them.

For more on this topic, see the "Technical Communication Reaches a Global Audience" section in Chapter 1 as well as Chapter 5.

Anticipate Your Audience's Preferences

2.3 Identify the appropriate document qualities for your audience

Readers approach any document with certain preferences: its desired length and details, the format and medium in which it should be presented, and the appropriate tone, as well as deadline and budget expectations.

Length and Details

Give readers only what they need and want

The length and amount of detail in your document depends on what you can learn about your audience's needs. Were you asked to "keep it short" or to "be comprehensive"? Are people more interested in conclusions and recommendations, or do they want everything spelled out?

Format and Medium

Decide how your document will look and will be distributed

Does your audience expect a letter, a memo, an email, a short report, or a long, formal report with supplements (title page, table of contents, appendixes, and so on—see Chapter 21, "Front Matter and End Matter Supplements")? Can visuals and page

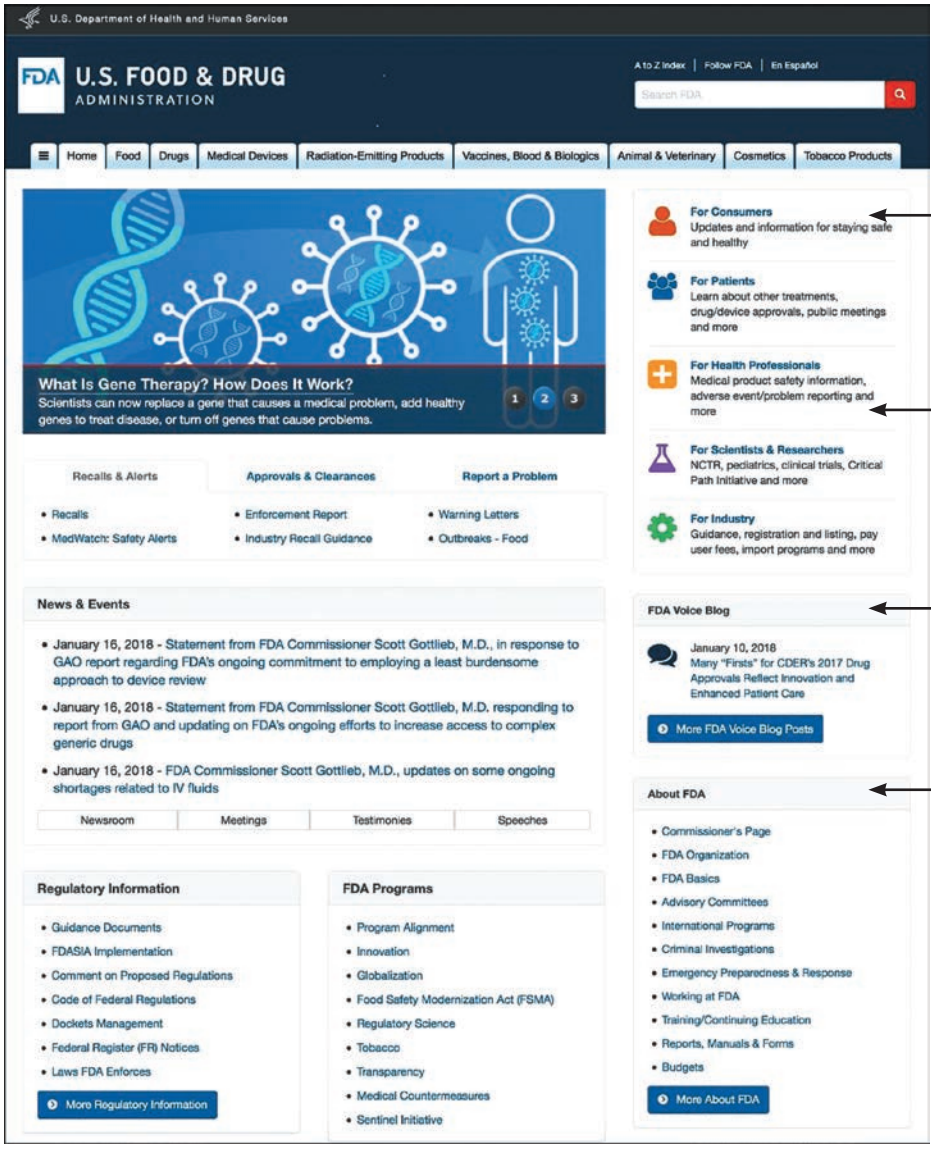

Figure 2.6 A Web Page Designed for Multiple Audiences This page uses links and tabs to provide information for people from a range of backgrounds, including consumers, patients, health professionals, and scientists. A blog allows readers to share their views. The site is available in both English and Spanish.

Source: U.S. Food and Drug Administration.

layout (charts, graphs, drawings, headings, lists) make the material more accessible? Should the document be available as a PDF, as a Web site with links, in hard copy, as a social media post, or in some combination of the above?

Tone

Decide on the appropriate tone for your situation

The tone of your writing conveys an image of who you are: your *persona*—the image that comes through between the lines. Tone can range from formal (as in a business letter to a client) to semiformal (as in a memo announcing a change in company dress policy) to informal (as in a quick email to colleagues announcing the upcoming company picnic). Workplace readers expect a tone that reflects both the importance or urgency of the topic and the relationship between writer and reader. For example, the letter to a client that begins with "We are pleased to forward your annual investment statement" is probably appropriate. But a similar tone used in the memo about the company picnic would seem stuffy and pretentious ("I am pleased to announce...").

At the same time, the tone of your writing can range from friendly and encouraging to distant and hostile. For example, a bossy tone in a memo to your employees ("It would behoove you to...") would make them feel demeaned and resentful. In short, your tone is effective when you sound like a likable person talking to people in a workplace setting. The notion of *workplace setting* is key here: Always avoid the kind of unprofessional free-for-all tone that is common in tweets, text messages, and emails among casual friends outside of work.

Due Date and Timing

Know when to submit the document

Does your document have a deadline? Workplace documents almost always do. Is there a best time to submit it? Do you need to break down the deadline into a schedule of milestones? Will any of your information become outdated if you wait too long to complete the document?

Budget

Calculate the financial costs

Does your document have a production budget? If so, how much? Where can you save money? How much time can your company afford to allot you for creating the document? How much money can you spend obtaining permission to use materials from other sources? How much can you spend on Web design, page layout, and, if in hard copy, on printing, binding, and distributing your document?

> *NOTE Although a detailed analysis can tell you a great deal, rarely is it possible to pin down an audience with certainty, especially if your audience is large and diverse. Before you circulate or submit a final document, ask selected readers for feedback. For task-oriented documents, such as instructions or procedures, you can also conduct a usability test (see Chapter 19).*

Guidelines

for Analyzing Your Audience and Its Use of the Document

- **Picture exactly what these readers need and how they expect to use your document.** Whether it's the company president or the person next to you in class, that person has specific concerns and information needs. Your readers may need to complete a task, solve a problem, make a decision, evaluate your performance, or take a stand on an issue. Think carefully about exactly what you want your readers to be able to do.
- **Learn all you can about who will use your document.** Are your primary readers superiors, colleagues, or subordinates? Are they inside or outside your organization? Who else might be interested or affected? What do readers already know about this topic? How much do they care? Are they likely to welcome or reject your information?
- **In planning your document, work from a clear statement of audience and purpose.** For example, "The purpose of my document is to [describe using verbs: persuade, instruct, inform] the target audience [identify precisely: colleagues, superiors, clients]."
- **Consider your audience's technical background.** Colleagues who speak your technical language will understand raw data. Managers who have limited technical knowledge expect interpretations and explanations. Clients with little or no technical background want to know what this information means to them, personally (to their health, pocketbook, safety). However, none of these generalizations might apply to your situation. When in doubt, aim for low technicality.
- **When you don't know exactly who will be reading your document, picture the "general reader."** A nontechnical audience will expect complex information to be explained in ways that have meaning for them, personally, and insofar as possible in everyday language. (For example, refer to "heart and lungs" instead of "cardiopulmonary system." Instead of "A diesel engine generates 10 BTUs per gallon of fuel compared with 8 BTUs generated by a conventional gasoline engine," write "A diesel engine yields 25 percent better gas mileage than its gas-burning counterpart.")
- **Consider readers' cultural backgrounds.** Identify as closely as possible your audience's specific customs and values. How might cultural differences play a role in readers' interpretation of your presentation?
- **Anticipate your audience's reactions.** If the topic is controversial or the news is bad, will some people resist your message? Will some feel threatened or offended? Should you be bold and outspoken or tread lightly? No matter how accurate your information or how sensible your ideas, an alienated audience will reject them out of hand.
- **Anticipate your audience's questions.** Based on their needs and concerns, readers have questions such as these: What is the purpose of this document? Why should I read it? What happened, and why? Who was involved? How do I perform this task? How did you perform it? What action should be taken, and why? How much will it cost? What are the risks? Give readers what they need to know, instead of what they already know. Give them enough material to understand your position and to react appropriately.
- **Anticipate your audience's preferences.** Try to pinpoint the length, detail, format, medium, tone, timing, and budget preferred by this audience. As the situation allows, adjust your document accordingly.

Develop an Audience and Use Profile

2.4 Develop an audience and use profile to guide your work

In order to focus sharply on your audience, purpose, and the many factors discussed in this chapter, develop your own version of the Audience and Use Profile Sheet shown in Figure 2.7 for any document you prepare. Modify this sheet as needed to suit your own situation, as shown in the following case.