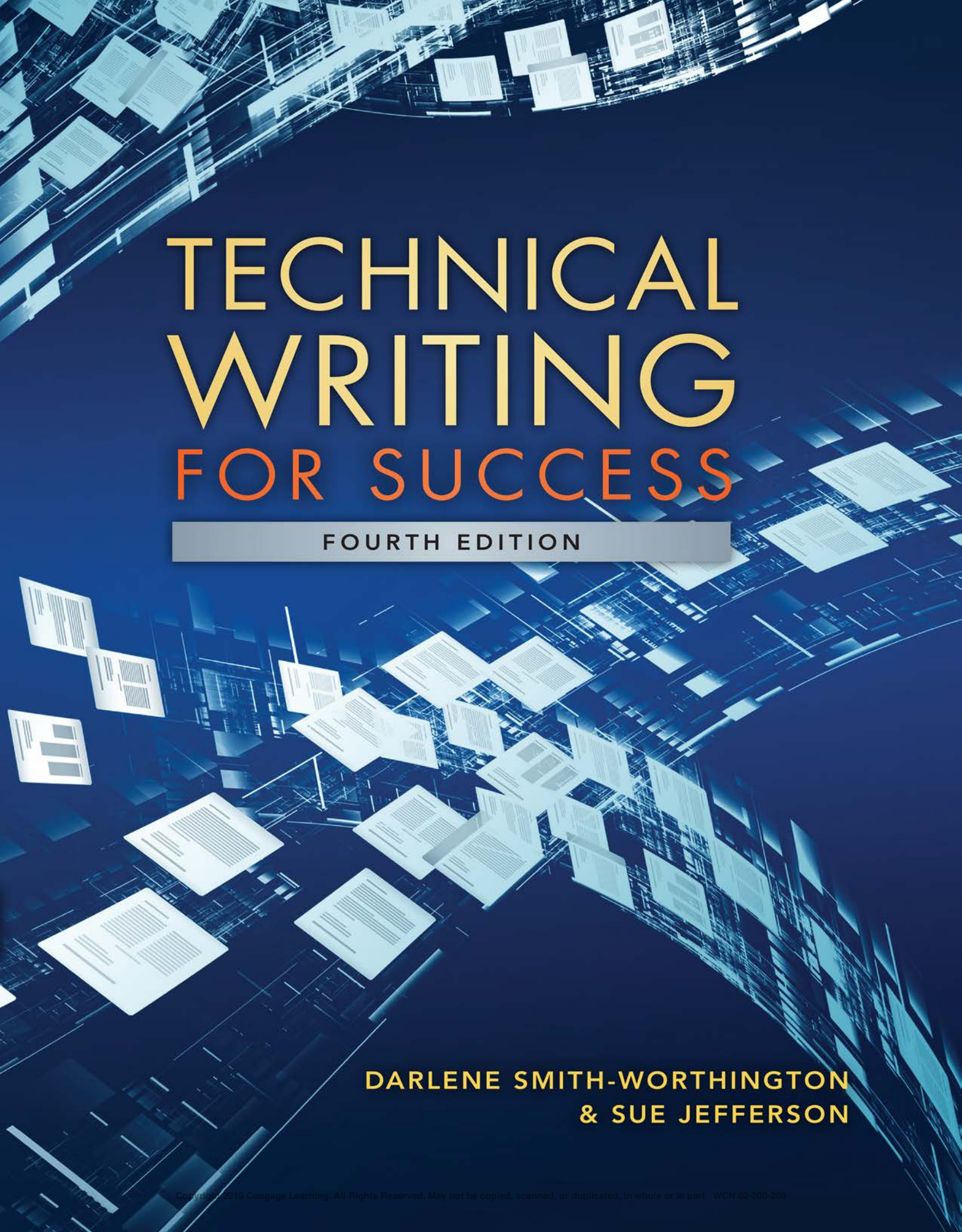


TECHNICAL WRITING FOR SUCCESS

FOURTH EDITION

Darlene Smith-Worthington
& Sue Jefferson

CENGAGE

Australia • Brazil • Mexico • Singapore • United Kingdom • United States

***Technical Writing for Success,* Fourth Edition**
Darlene Smith-Worthington & Sue Jefferson

SVP, GM Skills & Global Product Management: Jonathan Lau

Product Director: Matt Seeley

Associate Product Manager: Kelly Lischynsky

Executive Director of Development: Marah Bellegarde

Senior Product Development Manager: Larry Main

Senior Content Developer: Anne Orgren

Product Assistant: Mara Ciacelli

Vice President, Marketing Services: Jennifer Ann Baker

Marketing Manager: Scott Chrysler

Senior Content Project Manager: Nina Tucciarelli

Design Director: Jack Pendleton

Text and Cover Design: kedesign

Cover image(s): agsandrew/Shutterstock

Library of Congress Control Number: 2017948365

ISBN: 978-1-3059-4882-2

Cengage Learning
20 Channel Center Street
Boston, MA 02210
USA

Cengage Learning is a leading provider of customized learning solutions with employees residing in nearly 40 different countries and sales in more than 125 countries around the world. Find your local representative at **www.cengage.com.**

Cengage Learning products are represented in Canada by Nelson Education, Ltd.

To learn more about Cengage Learning, visit **www.cengage.com.**

Purchase any of our products at your local college store or at our preferred online store **www.cengagebrain.com**

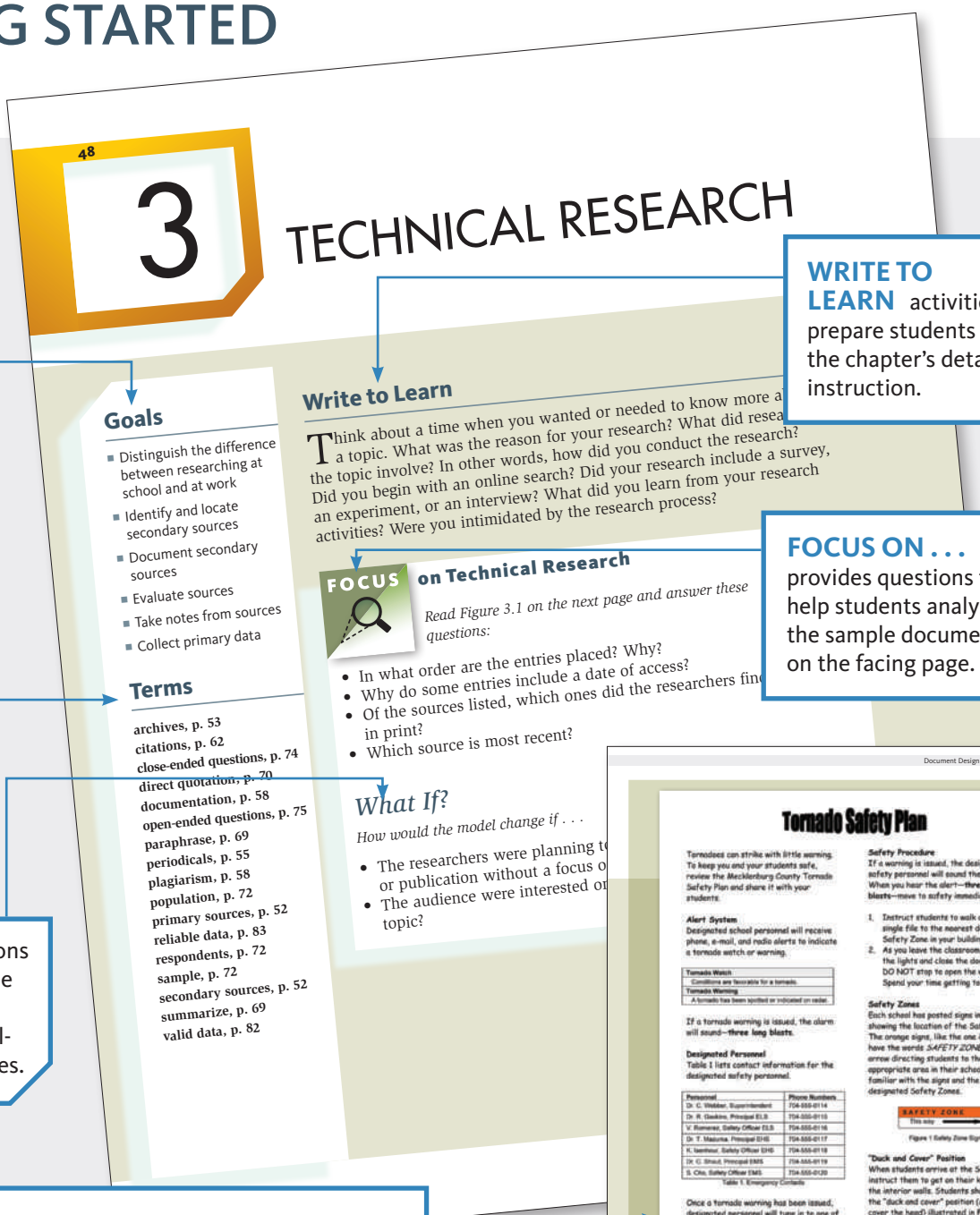
Printed in the United States of America
Print Number: 01 Print Year: 2017

CONTENTS

AN APPLIED APPROACH TO WORKPLACE WRITING!

Welcome to the Fourth Edition of *Technical Writing for Success*. This text is lively and relevant for students, and easy to use and effective for instructors. Using a learn-by-doing approach, skills are introduced and applied so that mastering technical writing is relevant and exciting.

GETTING STARTED



GOALS are clearly defined learning objectives to guide learning.

TERMS are highlighted and defined in the chapter.

WHAT IF? questions relating to the sample documents provide students with critical-thinking opportunities.

WRITE TO LEARN activities prepare students for the chapter's detailed instruction.

FOCUS ON . . . provides questions to help students analyze the sample document on the facing page.

Real-world **SAMPLE DOCUMENTS** add relevance to the chapter.

A LOOK INTO THE REAL WORLD OF TECHNICAL WRITING

WRITING@WORK addresses the 16 Career Clusters and demonstrates various career options while showcasing people who use technical writing in their careers.

NEW: WRITING IN THE DISCIPLINES immediately follows each chapter's "Writing@Work" feature and is tied to the same career cluster that is featured in the related "Writing @ Work" profile.

CAREER CLUSTERS

The U.S. Department of Education has grouped careers into 16 different clusters based on similar job characteristics.

The value of using these clusters is that they:

- Show the importance of writing in all careers
- Allow students to explore a wide range of career opportunities from entry level through management and professional levels
- Provide an easy solution to implementing careers into any class

SPECIAL FEATURES ENHANCE LEARNING

Communication Dilemma

Discriminating readers use their critical-thinking skills to look out for information that is inaccurate, biased, sensationalized, or lacking in pertinent details.

When you use material from your reading, you have an ethical obligation to double-check its accuracy, looking for other sources that report the same findings. Publications that must be produced quickly—such as newspapers, magazines, and books on the latest technology—are prone to errors. Information published with few, if any, editorial guidelines—for example, some articles on the Internet and stories in tabloids—cannot be trusted.

The next time you find an Internet article that promises the fountain of youth or hands you a get-rich-quick scheme, be skeptical and remember: You cannot believe everything you read.

Think Critically

What might motivate people to publish articles that are not completely factual?

Focus on Ethics

Claudia is setting up a website for her floral business, Claudia's Creations. She is in a hurry to get the site up and running. She wants to show some of the sprays, wedding bouquets, and dish gardens she has created, but she cannot find the pictures she took of them. So she searches the Web and finds designs that she likes on two websites: Floral Fantasia and Flowers by Chenda. Claudia decides to use some of the designs from those sites on her own website until she finds her misplaced pictures or takes new ones.

Think Critically

What might happen if Claudia's customers discover that she used flower designs from other sites?

Focus on Ethics provides examples and scenarios of real-world ethical dilemmas for students to consider.

Communication Dilemma provides real-world communication situations.

Communication Technologies

Want to shore up your interview skills while you walk the dog? Help is available for both Android and Apple devices with Job Interview Questions and Answers from Career Confidential. It's an interactive video app to give you practice with "tough interview questions in an easy-to-use mock interview format." You can practice and compare your answers to suggestions supplied by a professional coach. Play Store also offers 101 HR Interview Questions from Programmerworld with 16 categories of questions.

With The SimuGator, an iTunes app with over 50 questions, users can experience various interviewing styles from different interviewers.

Think Critically

What is the benefit to using an app to help you practice your interview skills? Is there some way the app could hurt your performance during an interview?

Communication Technologies contains helpful information about current workplace technologies.

Warm Up activities provide scenarios and questions to encourage students to start thinking ahead for each section of the text.

WARM UP 7.4 SPECIAL WEB CONTENT

Describe your experiences with two of these situations: (1) choosing a theme for a prom, a dance, a reunion, or a holiday event; (2) keeping a journal; (3) answering the same questions over and over; (4) collaborating on a project; or (5) writing posts on Facebook.

The Web offers a new medium for established ways of communicating. The type of writing is not altogether new, but when the audience and medium change, good writers adapt. The result? New avenues of writing for existing genres. Six of these adaptations are outlined next: home page, blog, FAQ, wiki, social media, and video sharing.

Home Page

Think of your website as a theme park. Your park may have many areas—rides, a petting zoo, edutainment, restaurants, and more, or only a single nature trail. The home page of your website is like the entrance to the park. Because you want many visitors, you design an inviting entrance, one that

Stop and Think allows students to check comprehension before moving to the next section.

STOP AND THINK 7.4

Name five types of writing assignments adapted especially for the Web. Choose two and describe them in detail.

ABUNDANT END-OF-CHAPTER ASSESSMENT

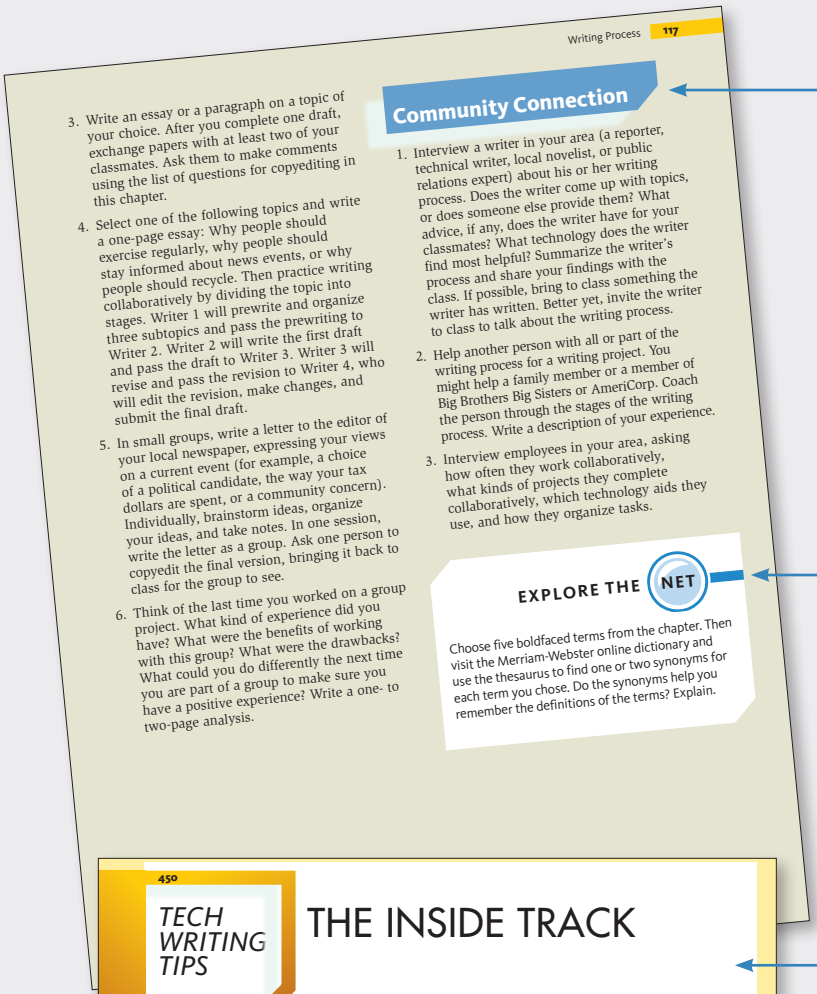
The assessments found at the end of every chapter give students the opportunity to test their knowledge.

SUMMARY reviews the key concepts of the chapter.

CHECKLIST encourages students to be responsible for their own success.

BUILD YOUR FOUNDATION and **YOUR TURN** include practice exercises, applications, and opportunities for writing to reinforce and assess learning.

SPECIAL FEATURES ENHANCE LEARNING



Writing Process 117

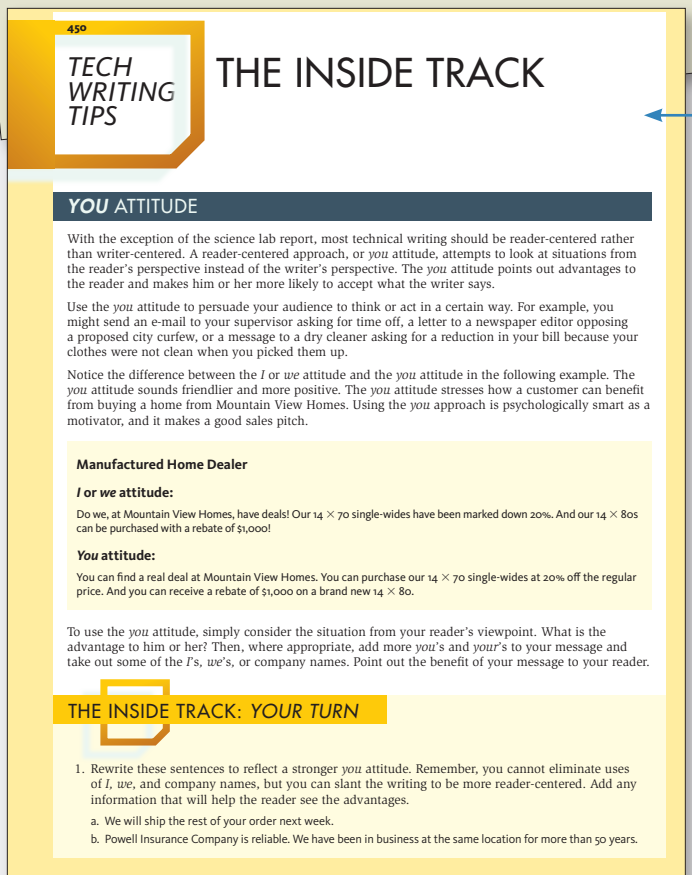
3. Write an essay or a paragraph on a topic of your choice. After you complete one draft, exchange papers with at least two of your classmates. Ask them to make comments using the list of questions for copyediting in this chapter.
4. Select one of the following topics and write a one-page essay: Why people should exercise regularly, why people should stay informed about news events, or why people should recycle. Then practice writing collaboratively by dividing the topic into stages. Writer 1 will prewrite and organize three subtopics and pass the prewriting to Writer 2. Writer 2 will write the first draft and pass the draft to Writer 3. Writer 3 will revise and pass the revision to Writer 4, who will edit the revision, make changes, and submit the final draft.
5. In small groups, write a letter to the editor of your local newspaper, expressing your views on a current event (for example, a choice of a political candidate, the way your tax dollars are spent, or a community concern). Individually, brainstorm ideas, organize your ideas, and take notes. In one session, write the letter as a group. Ask one person to copyedit the final version, bringing it back to class for the group to see.
6. Think of the last time you worked on a group project. What kind of experience did you have? What were the benefits of working with this group? What were the drawbacks? What could you do differently the next time you are part of a group to make sure you have a positive experience? Write a one- to two-page analysis.

Community Connection

1. Interview a writer in your area (a reporter, technical writer, local novelist, or public relations expert) about his or her writing process. Does the writer come up with topics, or does someone else provide them? What advice, if any, does the writer have for your classmates? What technology does the writer find most helpful? Summarize the writer's process and share your findings with the class. If possible, bring to class something the writer has written. Better yet, invite the writer to class to talk about the writing process.
2. Help another person with all or part of the writing process for a writing project. You might help a family member or a member of Big Brothers Big Sisters or AmeriCorp. Coach the person through the stages of the writing process. Write a description of your experience.
3. Interview employees in your area, asking how often they work collaboratively, what kinds of projects they complete collaboratively, which technology aids they use, and how they organize tasks.

EXPLORE THE NET

Choose five boldfaced terms from the chapter. Then visit the Merriam-Webster online dictionary and use the thesaurus to find one or two synonyms for each term you chose. Do the synonyms help you remember the definitions of the terms? Explain.



450

TECH WRITING TIPS

THE INSIDE TRACK

YOU ATTITUDE

With the exception of the science lab report, most technical writing should be reader-centered rather than writer-centered. A reader-centered approach, or *you* attitude, attempts to look at situations from the reader's perspective instead of the writer's perspective. The *you* attitude points out advantages to the reader and makes him or her more likely to accept what the writer says.

Use the *you* attitude to persuade your audience to think or act in a certain way. For example, you might send an e-mail to your supervisor asking for time off, a letter to a newspaper editor opposing a proposed city curfew, or a message to a dry cleaner asking for a reduction in your bill because your clothes were not clean when you picked them up.

Notice the difference between the *I* or *we* attitude and the *you* attitude in the following example. The *you* attitude sounds friendlier and more positive. The *you* attitude stresses how a customer can benefit from buying a home from Mountain View Homes. Using the *you* approach is psychologically smart as a motivator, and it makes a good sales pitch.

Manufactured Home Dealer

***I* or *we* attitude:**

Do we, at Mountain View Homes, have deals! Our 14 × 70 single-wides have been marked down 20%. And our 14 × 80s can be purchased with a rebate of $1,000!

***You* attitude:**

You can find a real deal at Mountain View Homes. You can purchase our 14 × 70 single-wides at 20% off the regular price. And you can receive a rebate of $1,000 on a brand new 14 × 80.

To use the *you* attitude, simply consider the situation from your reader's viewpoint. What is the advantage to him or her? Then, where appropriate, add more *you*'s and *your*'s to your message and take out some of the *I*'s, *we*'s, or company names. Point out the benefit of your message to your reader.

THE INSIDE TRACK: *YOUR TURN*

1. Rewrite these sentences to reflect a stronger *you* attitude. Remember, you cannot eliminate uses of *I*, *we*, and company names, but you can slant the writing to be more reader-centered. Add any information that will help the reader see the advantages.
   a. We will ship the rest of your order next week.
   b. Powell Insurance Company is reliable. We have been in business at the same location for more than 50 years.

COMMUNITY CONNECTION encourages students to work on projects outside the classroom to gather information from their community.

NEW: EXPLORE THE NET focuses on students using the Internet to research information.

THE INSIDE TRACK, which is located at the end of the book, contains 24 pages of suggestions and tips for improving technical writing style.

ABOUT THE AUTHORS

Darlene Smith-Worthington is currently enjoying retirement after 30-plus years of teaching at Pitt Community College. Having served as Interim Director of the Developmental Studies Department, Coordinator of Developmental Reading and English, and Director of PCC Abroad, Darlene misses her colleagues and students. However, she is finding new challenges in building a house and supporting other family projects. Darlene has enjoyed diverse employment experiences, including managing a poultry farm and editing a weekly newspaper, and recreation opportunities, including world travel, scuba diving, and gardening/farming. In retirement, she hopes to cook more, travel more, and enjoy times with friends and family more. And she may even decide to teach some more!

Sue Jefferson currently chairs the English and Humanities Department at Pitt Community College, where she teaches composition, critical thinking, mythology, and literature. Early in her teaching career, she taught grades 7–12 and more recently spent seven months teaching English at the Wuxi Institute of Technology in China. In addition to teaching, Sue has managed a restaurant, edited a weekly newspaper, and directed a choir. Traveling, yoga, t'ai chi, and swimming provide balance for her busy life. Sue's best writing is done on her porch overlooking the Pamlico River.

REVIEWERS

Julie Book
Oklahoma Panhandle State University

Michael P. Collins
Arizona State University

Lisa J. G. Karney
Fortis Institute (Pennsylvania)

Joseph McCallus
Columbus State University (Georgia)

Rochelle Morris
Bethune Cookman University (Florida)

James W. Savage
Ivy Tech Community College (Indiana)

NEW TO THIS EDITION

New Features

Writing in the Disciplines

A **new feature,** "Writing in the Disciplines," immediately follows each chapter's "Writing@Work" feature and is tied to the same career cluster discipline that is featured in the related "Writing@Work" profile.

Explore the Net

A **new end-of-chapter activity,** Explore the Net (based on previous-edition Net Bookmarks), focuses on students using the Internet to research information.

Chapter Updates

Chapter 1: What Is Technical Writing?

- Restructured chapter to include a variety of technical writing models up front
- Added new topic: following standard conventions of the genre
- Updated models and discussion to differentiate academic, technical, and imaginative writing

Chapter 2: Audience and Purpose

- Included brief segments on rhetorical situation, need for rhetorical sensitivity, and appeals to ethos, pathos, kairos, and logos
- Included segments illustrating context for traditional media (print, TV, radio) and online media (social media, web presence); new graphic illustrating how traditional and nontraditional media can complement each other
- Updated terms in the exercises

Chapter 3: Technical Research

- Updated opening Working Bibliography, including recent research on the topic, and used ACS style, appropriate to the topic of the research
- Included sections on Write the Survey Results, Write the Interview Results, Write the Observation Results, and Write the Experiment Results
- Added references, tips, and uses of newer electronic devices for research
- Updated information on research resources, such as WorldCat and Deep Web
- Updated reference materials and Communication Technologies
- Revised Communication Dilemma
- Included information on APA, CSE, and Chicago Manual of Style
- Included notetaking software and survey-generating sites
- Revised model survey for electronic delivery

- Added enhanced interviewing guides
- Updated instructions in "Build Your Foundation" to use any style guide instructor requires

Chapter 4: Writing Process

- Added new topic: analysis of rhetorical situation
- Added new topic: using Collaboration Tools section with technology focus (wikis, coauthoring software, online meetings)
- Added concept map
- Updated Communication Technologies and Communication Dilemma

Chapter 5: Brief Correspondence

- Updated opening models and added an e-mail message as a third sample
- Included electronic correspondence, such as instant messages, blogs, and e-mail
- Updated Communication Dilemma

Chapter 6: Document Design and Graphics

- Added new visual aids including horizontal bar graph, divided column graph, histogram, information graphic (infographic), and poster board presentations
- Updated bar and line graphs in Theresa's story to be more realistic
- Updated Communication Technologies and Communication Dilemma
- Updated exercises and technology discussion

Chapter 7: Writing for the Web

- Updated webpage screen shots
- Added new topic: writing script for an informative video
- Updated Communication Technologies

Chapter 8: Informative Reports

- Added a scientific technical process description and revised the mechanical technical process description
- Changed Example of a Mechanism description

Chapter 9: Investigative Reports

- Updated Example of Trip Report
- Revised Communication Dilemma and end-of-chapter activities

Chapter 10: Instructions

- Changed opening model, Sample Instructions
- Changed Instructions Using Images (Pictures) Only
- Revised Communication Technologies
- Revised and expanded information on online instructions

Chapter 11: Employment Communication

- Updated models
- Added new topic: video resume
- Added new topic: creating a web presence using ePortfolio and social media
- Added new models: About Me example and ePortfolio home page

Chapter 12: Presentations

- Changed opening model, Sample Presentation Graphics
- Updated to discuss recent presentation software

Chapter 13: Recommendation Reports

- Revised opening model, Sample Recommendation Report, to use real 2016 hybrid vehicles
- Added a brief section to include references in recommendation reports
- Revised Communication Technologies

Chapter 14: Proposals

- Updated opening model, Sample Internal Proposal, for dates and costs
- Added a brief section on collaboration
- Revised the Formal Proposal model to suggest replacing metal halide lamps with LED bulbs and fixtures (a more current and realistic discussion)

Chapter 15: Ethics in the Workplace

- Updated most accounts of unethical practice to include more current examples
- Added new topic: healthy work environment including Title VII of the Civil Rights Act
- Added new topic: ethical challenges of emerging technology, including discussions of gene therapy, electronic surveillance, and artificial intelligence

Chapter 16: Technical Reading

- Updated most reading excerpts and graphics
- Added new topic: how to read online including how to evaluate a website
  Added new topic: how to “read” a video

SUPPLEMENTAL TEACHING AND LEARNING MATERIALS

MindTap: Empower Your Students

MindTap is a platform that propels students from memorization to mastery. It gives you complete control of your course, so you can provide engaging content, challenge every learner, and build student confidence. Customize interactive syllabi to emphasize priority topics, then add your own material or notes to the eBook as desired. This outcomes-driven application gives you the tools needed to empower students and boost both understanding and performance.

Access Everything You Need in One Place

Cut down on prep with the preloaded and organized MindTap course materials. Teach more efficiently with interactive assignments, quizzes, and more. Give your students the power to read, listen, and study on their phones, so they can learn on their terms.

Empower Students to Reach Their Potential

Twelve distinct metrics give you actionable insights into student engagement. Identify topics troubling your entire class and instantly communicate with those struggling. Students can track their scores to stay motivated towards their goals. Together, you can be unstoppable.

Control Your Course—and Your Content

Get the flexibility to reorder textbook chapters, add your own notes, and embed a variety of content including Open Educational Resources (OER). Personalize course content to your students' needs. They can even read your notes, add their own, and highlight key text to aid their learning.

Get a Dedicated Team Whenever You Need Them

MindTap isn't just a tool, it's backed by a personalized team eager to support you. We can help set up your course and tailor it to your specific objectives, so you'll be ready to make an impact from day one. Know we'll be standing by to help you and your students until the final day of the term.

Instructor Companion Website

Spend less time planning and more time teaching. The instructor companion website to accompany *Technical Writing* allows you "anywhere, anytime" access to all of your resources.

- The online Instructor's Manual contains various resources for each chapter of the book, including lesson plans and solutions to core text activities.
- The Computerized Testbank makes generating tests and quizzes a snap, with many questions and different styles to choose from.
- Customizable PowerPoint® presentations focus on key points for each chapter.

To access the instructor companion site materials, go to login.cengage. com, then use your SSO (single sign on) login to access the materials.

1 WHAT IS TECHNICAL WRITING?

Goals

- Define technical writing and its importance in the workplace
- Identify the characteristics of technical writing
- Compare and contrast technical writing to other types of writing

Terms

academic writing, p. 17
ambiguous, p. 20
expository, p. 17
field research, p. 10
imaginative writing, p. 20
inferences, p. 20
jargon, p. 12
persuasive writing, p. 17
standard conventions, p. 15
style, p. 12
technical communication, p. 7
technical writing, p. 7
tone, p. 13

Write to Learn

Think about the different types of writing you engage in at school, at work, at home, or online. With what kind of writing are you most comfortable? What kind of writing do you find most difficult? Explain the differences in your reactions. Do you think any of your pieces could be described as technical writing? How would you define the term *technical writing*?

on Technical Writing

Read Figures 1.1, 1.2, and 1.3 on the following pages and answer these questions about each document:

- What is the subject and purpose of each document?
- For whom was the document likely produced?
- How difficult is it to follow the organization of material?
- How would you describe the style of writing? Which documents are easier to read?
- Are there differences in tone in any of the documents? What role does the writer seem to adopt in each?
- Which kinds of design features does the document use (for example, boldfacing, numbering, color, visual aids)?
- Where did these documents most likely first appear?
- Are any of these types of documents familiar to you?

ABOUT *THE HEART TRUTH®*

To make women more aware of the danger of heart disease, the National Heart, Lung, and Blood Institute (NHLBI) is sponsoring a national program called *The Heart Truth®*, in partnership with many national and community organizations. The program's goal is to raise awareness about heart disease and its risk factors among women and educate and motivate them to take action to prevent the disease and control its risk factors.

National Symbol

The centerpiece of *The Heart Truth* is the *Red Dress®*, which was introduced as the national symbol for women and heart disease awareness in 2002 by the NHLBI. The *Red Dress®* reminds women of the need to protect their heart health and inspires them to take action to lower their risk for the disease.

Download PDF (PDF, 347 KB)
HTML

Program Objectives

Primary Objectives

1. Increase awareness that heart disease is the leading cause of death among women.
2. Increase awareness of the risk factors for heart disease.
3. Increase awareness that having risk factors can lead to heart disease, disability, and death.
4. Increase perceived susceptibility to heart disease (e.g. an individual's perception she may be at personal risk for heart disease).
5. Increase the number of women who intend to take action to prevent heart disease and/or control its risk factors.

Secondary Objective

1. Increase the frequency of conversations between women and their health care provider about risk for heart disease and importance of taking preventive action.

Figure 1.1 Heart Truth Webpage Source: National Institutes of Health, https://www.nhlbi.nih.gov/health/educational/hearttruth/about/

Million Hearts: Prevalence of Leading Cardiovascular Disease Risk Factors — United States, 2005–2012

Matthew D. Ritchey, DPT1, Hilary K. Wall, MPH1, Cathleen Gillespie, MS1, Mary G. George, MD1, Ahmed Jamal, MBBS2

Each year, approximately 1.5 million U.S. adults have a heart attack or stroke, resulting in approximately 30 deaths every hour and, for nonfatal events, often leading to long-term disability (*1*). Overall, an estimated 14 million survivors of heart attacks and strokes are living in the United States (*1*). In 2011, the U.S. Department of Health and Human Services, in collaboration with nonprofit and private organizations, launched Million Hearts (http://www.millionhearts.hhs.gov), an initiative focused on implementing clinical and community-level evidence-based strategies to reduce cardiovascular disease (CVD) risk factors and prevent a total of 1 million heart attacks and strokes during the 5-year period 2012–2016 (*2,3*). . . .

ABCS [for aspirin, blood pressure, cholesterol, smoking] Clinical Measures

In 2009–2010, prevalence of recommended aspirin use was greater among men (58.5%) than women (48.0%) and greater among non-Hispanic whites (55.7%) compared with Hispanics (43.6%) (Table 1). The prevalence of blood pressure control improved from 43.4% in 2005–2006 to 51.9% in 2011–2012 (Figure 1); in 2011–2012, the prevalence was greater among women (54.6%) than men (48.9%) and greater among adults aged 45–64 years (56.3%) compared with those aged 18–44 (42.2%) and ≥75 years (41.7%).

The prevalence of cholesterol management increased from 33.0% in 2009–2010 to 42.8% in 2011–2012 (Figure 1); in 2011–2012, the prevalence was greater among adults aged 65–74 years (59.6%) and lower among those aged 20–44 (11.6%) compared with those aged 45–64 years (44.1%) (Table 1). . . .

Community-Level Risk Factor Measures

Current tobacco product (cigarettes, cigars, or a pipe) smoking prevalence decreased from 28.2% in 2005–2006 to 25.1% in 2011–2012 (Figure 2). This 11% decline corresponded with a decrease of 11% in current cigarette smoking prevalence from 20.9% in 2005–2006 to 18.5% in 2011–2012, measured using National Health Interview Survey data.††† In 2011–2012, current tobacco product smoking was greater among men (30.3%) than women (20.4%), adults aged 18–44 years (30.5%) compared with those aged 45–64 (24.6%) or ≥65 years (11.4%), and non-Hispanic whites (27.1%) compared with non-Hispanic blacks (26.2%) and Hispanics (18.1%) (Table 2). . . .

References

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics—2014 update: a report from the American Heart Association. Circulation 2014;129:e28–292.
2. Frieden TR, Berwick DM. The "Million Hearts" initiative—preventing heart attacks and strokes. N Engl J Med 2011;365:e27.
3. CDC. CDC Grand Rounds: the Million Hearts initiative. MMWR 2012;61:1017–21. . . .

Figure 1.2 Million Hearts Medical Report Source: Centers for Disease Control and Prevention, https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6321a3.htm

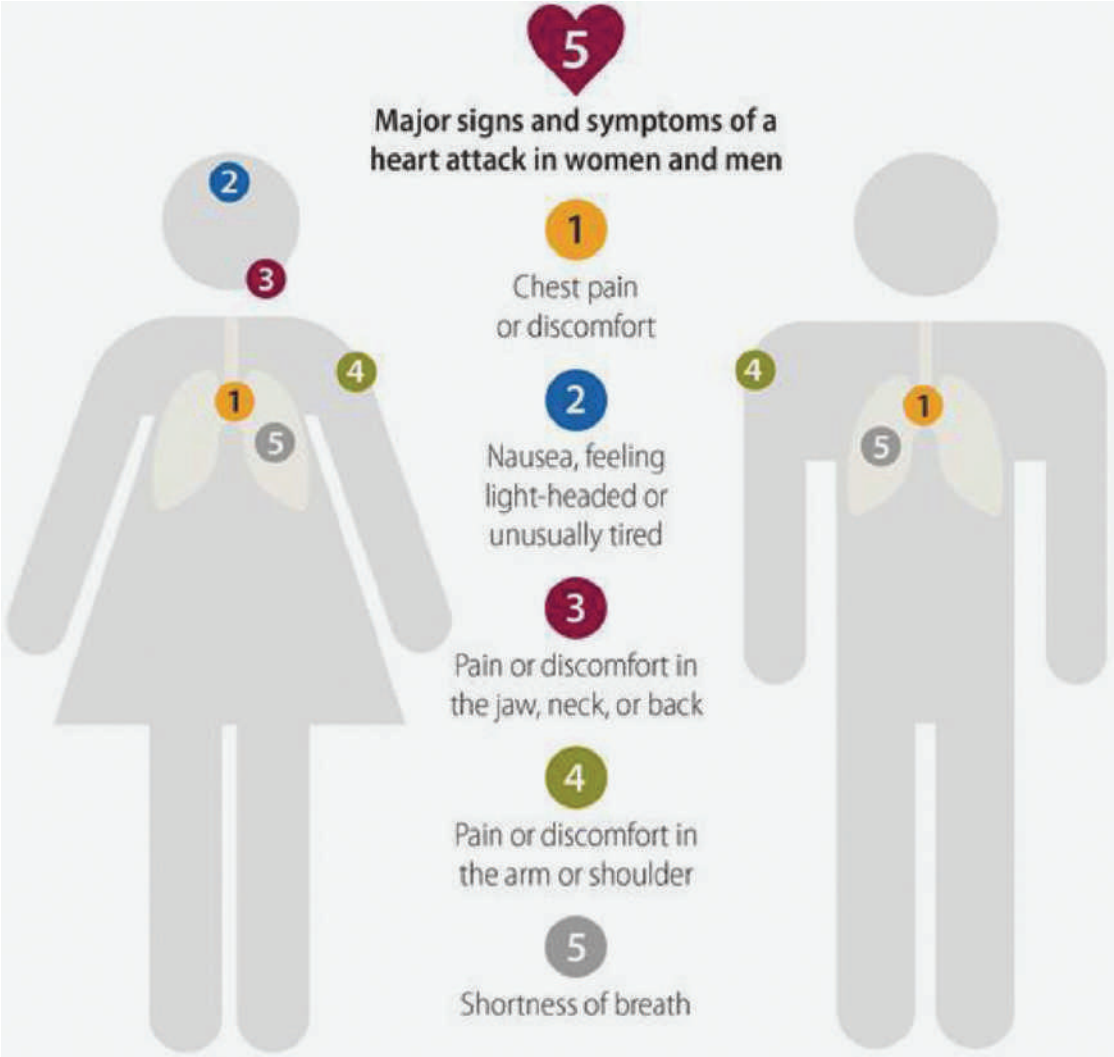


Figure 1.3 Heart Truth Web Page Source: https://www.cdc.gov/heartdisease/images/quiz_4.jpg

Writing @Work

Courtesy of Mark Overbay

CareerClusters® PATHWAYS TO COLLEGE & CAREER READINESS
Agriculture, Food & Natural Resources

Source: The Center to Advance CTE

Mark Overbay manages marketing and communications for Counter Culture Coffee, a Durham, North Carolina–based specialty coffee organization. His many responsibilities include producing product copy, white papers, advertisements, packaging copy, online content, thematic signage, and tradeshow displays.

"Marketing is a form of storytelling," says Mark, who believes that marketing copy must be "short and sweet." "You only have a few words or phrases to 'hook' your readers, whether they are journalists reading a press release or grocery shoppers glancing at the coffee bags on a shelf. Good marketing copy must tell an interesting, sometimes even romantic story, but it should never be long-winded."

Mark's biggest technical writing challenge involves presentation and style: "Developing a Counter Culture Coffee 'voice' that authentically represents our company and all that we do is the most difficult aspect of my professional writing. When I write for our online news section or blog, I can write as Mark Overbay; but most of my professional writing is in the voice of Counter Culture Coffee, which represents not just me, but more than 40 staff members and hundreds of partnering coffee farmers."

Mark relies heavily on e-mail. "E-mail, for all its limitations and sterility, is invaluable in my professional life. Not only does it allow for structured written communication and instant delivery, but it also provides a permanent record of every e-conversation."

Mark advises aspiring technical writers to hone three skills in particular: (1) work ethic to constantly improve their writing; (2) preparation and care for each assignment because "every word and detail matters. Successful communicators take the time to research their subjects thoroughly"; and (3) clarity because "successful communicators keep things simple—not dumbed down—and to the point. Be clear, concise, and confident in your message."

Think Critically

1. Search for the Counter Culture Coffee website and sample some of the writing. Does the writing tell stories, as Mark claims? Do you hear a distinctive "voice" in the writing? Explain.
2. What is a white paper? Research the origin of this term. What are some topics about which Mark might write papers?

Printed with permission of Mark Overbay

Writing in Agriculture, Food, & Natural Resources

Conservation scientists work to preserve our natural resources, such as our farmland, rivers, and forests.

As scientists, conservationists understand the rigor imposed by the scientific method and thus the necessity for objective reporting and accurate data entry using the tools of forestry. A forester, for example, may estimate tree growth using clinometers to measure tree heights or may measure forest density by using remote sensing technology. Accurate record keeping enables conservationists to make informed recommendations such as sustainable practices for harvesting timber. The records also ensure compliance with government regulations.

In addition, conservationists engage in other kinds of writing—from the practical to the political. They may negotiate terms for land use management and assist in writing contracts with land owners. Conservationists write grants, such as the $300,000 grant from the Renewable Resources Extension Act to restore Strentzel Meadow, part of the John Muir National Historic Site. They also argue for environmental responsibility with new recycling or tree conservation initiatives. Luke Wallin suggests a three-part structure for such scientific journalism: Articles should establish a bond with the reader through shared values, present new information, and then call for an action—a request for money or a letter to a senator for political support (124).

1.1 YOU ARE A TECHNICAL WRITER!

WARM UP

Think about a profession in which you are interested. What kinds of documents would you write in this profession?

Have you ever given someone written directions or drawn a map to your home? Have you ever set up an event on Facebook or told someone how to make French toast? If you answered yes to any of those questions or have had similar experiences, you have already engaged in technical communication or technical writing.

In today's business environment, readers can easily be overwhelmed by information overload, with information competing for their attention from every direction—print and electronic news sources and books, not to mention e-mail, social media, podcasts, and television, all clamoring for attention. To navigate through the maze of information, readers must be able to read documents quickly and efficiently, understand them the first time they read them, and know the reports are accurate. Writers help readers sort through information overload by assimilating material from a variety of places and then presenting what readers need—often reframing and repurposing (but *never* misrepresenting) that data to be of use to a different audience. Up-to-date information provides companies with a competitive edge, speeding critical decision making and allowing job specialization.

Definition of Technical Writing

Candace, a saxophonist in her high school band, began teaching saxophone lessons to sixth graders to earn some extra money. For the first lesson, she drew a diagram of an alto sax and created a step-by-step guide explaining how to take the instrument apart and reassemble it. When she saw how easily students could follow her instructions, she was pleased to know her words were helping them do something she enjoyed. Candace might have been surprised to learn she was using **technical communication**, or communication associated with the workplace.

© ksalt/iStockphoto.com

Technical communication, used in technical, scientific, or business fields, has a clear purpose and specific audience. Candace's purpose was to teach, to offer her students information that would enable them to do something—to play the saxophone. When she referred to the diagram and explained the procedure aloud to her students, answering their questions, she was using technical communication. When she wrote the instructions to accompany her diagram, she was using technical writing. The better Candace did her job, the better the students did theirs. Respect for Candace's teaching skills in the community grew, giving her credibility as a teacher—and, consequently, more students.

A form of technical communication, **technical writing** is also associated with the workplace, whether the workplace is an office, a construction site, or a kitchen table. Like Candace's diagram and step-by-step instructions, the writing is functional, practical, and written carefully for an identified audience for a particular purpose. Technical documents can range from a half-page memo announcing the winner of a sales competition to a 500-page research grant proposal requesting money to test a new drug for treating obesity. The term *technical writing* describes a variety of documents produced in areas such as business, science, social science, engineering, and education.

Sales catalogs, business letters, financial reports, standard operating procedures, medical research studies, lab reports—all of these and more are examples of technical writing. Technical documents are not only written but also designed to integrate visual elements to enhance the message.

Today, technical writers work at the helm of a creative, robust technological environment with many media outlets for their messages. Kurstin used paper and text to start a neighborhood fundraiser to help struggling pet owners obtain pet food. In a few weeks, some of that text was inserted into a desktop publishing template, and newsletters and flyers were circulated in the small town. Public response was positive. As a result, in a few months text from the flyer was used in a slide presentation with art and video and presented to the Chamber of Commerce. As the fundraiser gained momentum, Kurstin researched turning her charitable effort into a nonprofit and moved online with her text, photos, and video. She refined her online presence with a slogan, pet-adoption blog, pet health hyperlinks, and donation forms. Soon her website had a following and was linked to social media sites. As Kurstin's experience shows, the many possible combinations of text and media enable writers to reach an ever-widening audience.

Technical Writing Is Essential in the Workplace

Written communication is essential in the workplace. It allows readers to read and study at their convenience, pass along information to others, contribute to a body of shared knowledge, keep a permanent record for future reference, and, if done well, establish healthy working relationships.

Different careers generate different kinds of reports. Figure 1.4 shows some possibilities. Perhaps one of your career choices is represented here.

PROFESSIONALS	WRITE THIS	FOR THIS PURPOSE
Nurses	Patient charts	To continue patient care
Police officers	Accident reports	To use as evidence
Chemists/ engineers	Document procedures	To comply with government regulations
Accountants	Financial reports	To assist decision making
Sales representatives	Sales proposals	To compete in a market economy
Professors	Grant proposals	To secure funding for a research project
Claims adjusters	Incident reports	To determine fair payment
Public relations officers	Brochures, letters, speeches	To market an idea or product

Figure 1.4 Writing in Careers

When you write, you demonstrate your credibility as an employee with your ability to analyze, solve problems, and understand technical processes. For example, Matheus Cardoso, personnel director for Osgood Textile Industries, impresses his supervisor and earns his colleagues' respect when his proposal for tax-deferred retirement plans is approved. On the other hand, the drafting crew at Stillman Manufacturing is frustrated with Jeff Danelli's instructions for

installing wireless computing at the industrial site. The crew must take extra time to redraft plans because Jeff's instructions are vague and incomplete. When writing is not clear, the thinking behind the writing may not be clear either.

Regardless of the career you choose, you will write in the workplace. According to "Writing: A Ticket to Work . . . Or a Ticket Out," writing is a "threshold skill," necessary to get over the "threshold," through the door, and into gainful employment. Applicants submitting poorly written letters of application do not get interviews. Employees lacking writing skills are not promoted. According to the National Commission on Writing, in corporate America,

- two-thirds of salaried employees are required to write
- over half of companies surveyed require employees to write technical or formal reports, and "communication through e-mail and PowerPoint presentations is almost universal."
- Eighty percent of companies in service industries—finance, insurance, and real estate—evaluate writing ability as part of the hiring process. (3–4)

As you can see, writing is truly your "ticket" to meaningful employment and advancement.

All careers rely on technical communication to get the job done. Technical writing is the written link—connecting technology to user, professional to client, colleague to colleague, supervisor to employee, and individual to community. No matter what career you choose, you can expect to read and compose e-mail, send accompanying attachments, explain procedures, and write short reports.

In addition to work-related writing, the responsibilities of being a community and family member require technical communication. Figure 1.5 shows how Sergeant Thomas Hardy of the Palmer City Police Department, father of two and concerned citizen, uses technical communication on the job and at home.

READER	TYPE OF COMMUNICATION
Colleagues	e-mail, collaborative incident reports
Boy Scout parents	fundraiser announcements, directions to jamboree, ad for bake sale
Victims	incident reports, investigative reports
Legislators	letter and e-mail in favor of clean-air regulations
Court officials, lawyers	depositions, testimonies, statements (possibly televised)
State FBI office	letter of application and resume
Community	safety presentation at the local high school
Employees	performance evaluations, letters of reference, training procedures
Newspaper editor	letter thanking community for help with jamboree, press release announcing purchase of state-of-the-art police car

Figure 1.5 Technical Writing on the Job and at Home

STOP AND THINK 1.1

How important is technical writing in the workplace? How can writing affect your chances for advancement? How is workplace writing impacted by technology?

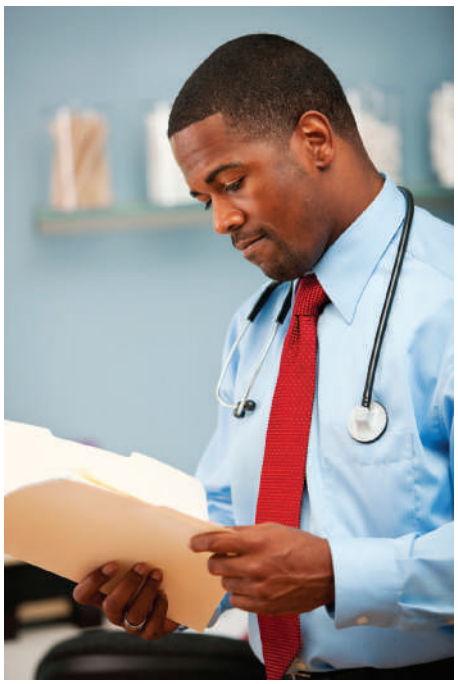
WARM UP 1.2 CHARACTERISTICS OF TECHNICAL WRITING

Review the three documents at the beginning of the chapter, in Figures 1.1, 1.2, and 1.3. Have you written or read similar types of documents? If so, why? What was the situation? Which of the documents would you use to make a decision or to perform an action? Which type of document would you prefer to write? Why?

While technical writing shares some characteristics with other kinds of writing, it is also significantly different. From the factual treatment of the subject to audience considerations, technical writing is unique. A clear purpose, easy-to-follow organization, current and relevant research, concise style, objective tone, attractive and interesting design, appropriate media, and dependence on established formats all characterize the kind of writing designed for the workplace.

Clear Purpose

The subject, heart health, of the models at the beginning of this chapter is from medical science. Cardiovascular disease is one of the leading causes of death in the world and is the number one killer of American women. It is within the larger context of this medical crisis that all three of these documents were created. The situation—heart disease—prompts a variety of responses from individuals as well as organizations who want to change this statistic. While the larger context—the threat of cardiovascular disease—is the same for all the documents, the purpose is different in each because the approach to meeting the crisis is different.



© sjlocke/iStockphoto.com

Each responder in our opening models adds a voice, establishes a point of view, and develops a message with a clear purpose. The purpose of Figure 1.1, the "Heart Truth" webpage, is to announce an initiative from the National Heart, Lung, and Blood Institute to raise women's awareness of the risk factors associated with heart disease. The purpose of Figure 1.2, "Million Hearts: Prevalence of Cardiovascular Disease Risk Factors," is to summarize medical data to investigate new areas of research. Each document fulfills a need for information, but Figure 1.3, "Major Signs and Symptoms of a Heart Attack," fulfills an immediate and compelling need: saving the life of an unconscious victim. All three pieces offer information, but the red heart, simple diagrams, and color-coded numbered list in "Major Signs" propel the reader into action. In each case, the writer has answered a call for information.

Accurate and Relevant Research

Technical writers must incorporate accurate, current, and relevant research—library research, scientific observation, statistical analyses, or **field research** (research done in the field, especially through surveys, experiments, and interviews). The research required depends on the needs of the reader or the community of readers. Whether to inform or persuade, technical writing relies on data—often factual data researched by others—presented with precision and accuracy.

Figures 1.1 and 1.2, the "Heart Truth" webpage and the "Million Hearts" medical report, present research that impacts lives, research others need to fulfill their roles in preventing heart disease. The medical report cites data from other sources and includes a numbered list of references, which adds to

Communication Technologies

Technical writers must be familiar with desktop publishing software. Using programs such as Page Plus, Microsoft® Publisher, Adobe® PageMaker®, and QuarkXPress®, technical writers can apply special features (for example, boldfaced type, different fonts, bulleted lists, sidebars) to their documents. In addition, they can add visual aids such as diagrams, charts, and graphs to enhance the message.

Think Critically

Does your composing process change when you lack knowledge of software? For example, if you do not know how to insert tables or bulleted lists in a document, do you approach the writing differently? Explain.

the veracity of the report. Figure 1.3, "Major Signs," is written to provide an ordinary citizen with a quick guide to an emergency procedure.

If any information in these documents is out of date or inaccurate, readers may take action based on the misinformation—and do more harm than good. In this instance, the reader trusts the writer to give him sound life-saving advice. To give such advice, a writer must be trustworthy. Hence, writers have an ethical responsibility to present readers with the most up-to-date information available.

Relevant research is also timely, well-positioned research. Since heart disease is a major killer, the "Heart Truth" webpage and the "Million Hearts" report are presented through appropriate online and print media at a critical time in our medical history. The placement of the "Major Signs" visual, possibly as a larger poster, is also a factor. A school office and hospital waiting room, for example, are physical spaces where a poster is likely to be seen by ordinary citizens. When, where, and how to position relevant research are decisions you make as a technical writer.

Identified Audience

Technical writers do not write in a vacuum: They write *to* someone, either a specific reader or a group of readers, to fill a need for information. The writer of "Heart Truth" uses text, color, and symbolism to address a general audience of women. The red color is reminiscent of a red heart while the dress symbolizes a movement initiated for the benefit of women. Plus, the audience, women, is addressed directly in the first sentence.

The "Million Hearts" medical report and "Major Signs," however, are directed to a more selective group. The statistical data analysis is not written for the general audience of women but for a community of medical professionals with specialized training. The signs and symptoms graphic is directed toward the most specific audience of all—someone already experiencing a medical emergency. The statistical data in "Million Hearts" will not help the person experiencing a heart attack now but may assist professionals attempting to educate the public.

In each model, writers are conscious of the reader on the other side of the communication exchange and work hard to present information in an easy-to-follow format. In technical writing, one rule dominates: *The needs of the reader dictate every decision the writer makes.*

Clear Organization

Technical documents make their organizational plan clear to their readers from the start.

Headings separate information into easily digestible bits for a reader. They draw attention to information even before someone reads it, and they give readers an opportunity to read only what they want or need to read. In organizing technical communication, the writer should ensure there will be no surprises for the reader.

In technical writing, headings—appropriately named and set apart—help readers skim through a lot of information quickly. If you want to know mortality statistics in "Heart Truth," you can see them easily in the graph to the right where heart disease deaths have been highlighted in red. If you want to know the secondary objective of this program, it is easy to spot at the end of the document because it appears after a heading. "Million Hearts" also offers headings that separate the *risk factors studied* under Clinical Measures and *risk factors by communities* under Community-Level Risk Factor Measures.

Similarly, the "Major Signs and Symptoms" visual is designed to direct the reader's attention quickly. Numbered warning signs are color coded to correspond to specific areas of the body. Short, terse descriptions of each symptom allow readers to identify the type of discomfort quickly. Because the body drawings are light gray with few details except for the dress and pants, the eye is drawn to the numbers. At a glance, it's clear that women can experience more signs and different signs from men, and it's clear where the symptoms are felt. The most pressing information, vertically presented in the middle, tells a responder or a victim only what she needs to know. From here a person can make a decision about calling 9-1-1.

In each case the organizational pattern is not something the reader has to think about because the *writer thought about it*—and figured out the best plan *so the reader would not have to*. This way the reader gets to concentrate on the message without the distraction of figuring out where pertinent information is located.

Direct Style

The **style** of a document, the way an author uses words and sentences, usually gives the audience an idea of the type of document they are reading. To be easily understood, technical documents tend to employ a simple, concise, straightforward style. Often information is presented in lists. Sentences are relatively short, not overly complex, and the sentence order is predictable. **Jargon,** the highly specialized language of a particular discipline or technical field, is used when appropriate.

Each model opening this chapter uses a style accessible to its readers. "Heart Truth" and "Major Signs" are written in simple language for anyone to read—regardless of educational background. The most difficult word in

Communication Dilemma

Isabel was recently assigned as lead technical communicator on a team that is developing a high-profile software known as SpeedQuest. She is responsible for coordinating communication between the programming team and the marketing team. Because this position is likely to result in a promotion and career advancement, Isabel is eager to do a good job.

One evening Isabel overhears the lead computer programmer tell the project manager that SpeedQuest is not as advanced as advertised in the company's marketing materials. The programmer recommends delaying the launch date, but the project manager ignores the suggestion, deciding to issue a second release after the product is complete.

The next day in the meeting to discuss SpeedQuest's marketing materials, Isabel struggles to decide whether she should include in the brochure those features still in development. She knows the new features would help sales of SpeedQuest. On the other hand, she knows if she tells the truth and decides not to publish information about the features, she may not get the promotion she is counting on. What should Isabel do?

Think Critically

What resources might Isabel use to better understand and resolve this situation?

"Heart Truth," "susceptibility," has been defined for the general reader. In the "Major Signs" graphic, there are no difficult words. Indeed, the terse phrases can be skimmed in a few seconds, thus removing the guess work for anyone trying to decide whether to call 9-1-1.

The style of a technical document can be more complex, however, depending on the audience's expectations and its ability to comprehend. The writers summarizing medical research for medical personnel in "Million Hearts" can use more complex sentence structures and specialized language: research terms such as "community-level evidence-based strategies" as well as abbreviations such as "CVD" for cardiovascular disease and "ABCS" for aspirin, blood pressure, cholesterol, and smoking. The style here relies heavily on the use of numbers, yet it is still clear and direct.

As you can see, technical writing is always directed *to* someone. That someone determines how complex the language and style should be.

Objective Tone

Tone refers to emotional overtones—the emotional character of a document, or the way the words make a person feel. The tone of a document also hints at the kind of document the audience is reading. Generally, a more serious topic adopts a more objective tone. The tone in technical writing is best described as objective or businesslike.

The opening models convey little, if any, emotion. "Heart Truth" announces a new program, explaining its symbol and setting up objectives. While the language is positive and the outcome is hopeful, the tone is still objective. The medical research presents its findings in the neutral, detached language of numbers. The signs and symptoms graphic does imply a sense of urgency but still bypasses emotion associated with an emergency and, instead, assists the reader in making a rational decision.

Design Elements

Technical writers use special features such as boldface, italics, capital letters, columns, underlining, and bulleted lists to draw readers' attention to certain words and to help important information stand out. Also, the use of graphics such as tables, graphs, pictures, and diagrams helps the audience grasp complex material quickly.

All the opening models use design features. "Heart Truth" uses color, a graph, two major headings, two second-level headings, and a numbered list. The logo of the red dress, though small, catches the reader's eye. The least attractive of the three models, "Million Hearts" is nonetheless set up with headings to visually separate the data. The signs and symptoms visual includes the most innovative design of the three models with less text and more carefully placed graphics.

Technical documents require more visual effort if they are to grab and hold the readers' attention. Writers use some of the following design features to make their documents more effective for the audience:

DESIGN FEATURE	THINGS TO CONSIDER
Font size, style, boldface	What size is readable for the targeted audience? How many styles are appropriate? How much boldface is effective?
Numbered or bulleted lists	Which is more appropriate? What kind of bullets should be used?
Highlights	What information should stand out? Should I boldface, underline, or italicize?
Columns and headings	What is the best way to divide the major ideas? Into two or three columns? With several boldfaced headings?
Color	Which colors? How much color? Is there already a logo with a color scheme? Should I create one?
Graphs and tables	What's the best way to present to my audience: one-, two-, or three-dimensional? Horizontal or vertical? Number of columns? Color or no color?
Photos and drawings	What is the subject of the art? What style works best? Should photos and drawings be black and white or color? Do I need permission to use the art?
Sidebars	What information deserves attention, and where should I place it?

Technical writers face a double challenge. They not only must write with clear, accurate, and specific words, but also must design the document to look inviting and attractive. Therefore, technical writers are production artists—writing with precision to locate the best word and sentence structure for the message and designing pages which combine a professional image with a user-friendly approach. To do so, writers use a tool of their trade: desktop publishing software. The software allows writers to craft documents that meet their readers' needs.

Standard Conventions

You have grown up in a multimedia world and are used to reading, seeing, and hearing messages on paper, bulletin boards, TV, radio, websites, video, online magazines, and blogs. Some of these media outlets have evolved into familiar sights. Indeed, readers today expect certain things from a website, just as they expect certain things from a map or a restaurant menu. A Facebook page, a medium now familiar worldwide, uses an online environment to reach thousands of readers. The Heart Truth page in Figure 1.6 follows **standard conventions**—expectations for content, organization, and design—which have evolved over Facebook's short life span. Readers expect to see the cover and profile photos representing the organization or person. They are used to Like, Haha, and Wow buttons; Comment, Message, and Share buttons; and the newsfeed and year-by-year or special-day history. Organizations and individuals posting on Facebook insert text and art using these already-established conventions.

Figure 1.6 Heart Truth Facebook Page Source: https://www.facebook.com/hearttruth/

Consider the established writing conventions in something as simple as a recipe. The recipe for Mom's Heart-Healthy Chili in Figure 1.7 meets the reader's expectations for recipes: a list of ingredients, directions for assembling the ingredients, and instructions for cooking or processing these ingredients.

Mom's Heart-Healthy Chili

When Grandma had her heart attack, Mom turned our family favorites into heart-healthy choices. Sometimes Mom would substitute tofu sprinkles for turkey meat (unbeknownst to Grandma). Whatever Mom did worked: Grandma lived to be 86.

Ingredients

1 lb. ground turkey
1 medium green bell pepper, chopped
1 medium onion, chopped
1 medium jalapeño pepper, chopped
4 cloves garlic, chopped
1 1/2 Tbsp. chili powder
1 Tbsp. ground cumin
1 Tbsp. ground black pepper
1 Tsp. coriander
1 15.5 oz. can drained, rinsed kidney or pinto beans
1 14.5 oz. can diced, no salt tomatoes
¾ cup favorite salsa (low sodium, if possible)

Directions

1. Spray a large saucepan with cooking spray. On medium heat, cook turkey and onion for 5-6 minutes stirring to break up the turkey.
2. Add the bell pepper, chili powder, cumin, and black pepper. Simmer for 20 minutes.
3. Add all remaining ingredients and bring to a boil. Then reduce, cover, and simmer for 40 minutes.

Figure 1.7 Mom's Heart-Healthy Chili

But do all recipes look the same? No. Some include photos, some nutritional information, and some a short motivational introduction or history of the dish. Others will tell a cook how long it will take to prepare the dish, where ingredients can be found, or which ingredients can be substituted. Thus, while recipes can be different, they do have common elements, certain conventions we all expect to see in a recipe.

A good technical writer knows the established conventions of the type of document he is writing and also knows how to adjust the document to accommodate more or less or different information. A writer adjusting a recipe might take the basic format (ingredients and process) and expand it (add nutrition information), condense it (leave out the family story), or change it (write in Spanish and use metric measurements). The writer makes these decisions based on the complexity of the topic, the needs of the audience, and the limitations of the media.

Different disciplines have adopted a range of conventions for relaying a message based on the needs of the field of study. Science uses the scientific method; business adopts a problem-solving/solution approach. E-mail shares the To/From/Subject/Date formatting of the memo, and a resume calls for

Focus on Ethics

Technical communicators can face thorny issues when they provide a service for a company or an organization that may expect results a technical writer finds questionable or problematic. For instance, Joel is a technical writer working for Energy Battery Company. He is asked to write a press release announcing the plant's unexpected two-week shutdown but is told not to include information about the chemical spill which could have leaked into the local estuary. In this case the writer is torn between meeting management's expectations (and keeping his job) or serving the public good. Writers need to be thoroughly aware of their ethics and explore all possible actions and outcomes in such situations.

Think Critically

To whom does Joel hold himself accountable? Energy Battery Company? his wife and children? his readers? his conscience?

standard headings such as education and employment experience. These conventions, ranging from style to organization to content, are repeated over the course of time, standardizing them into a kind of genre. With them, there is no need to reinvent the wheel, as the saying goes. Things are already in place—an organization creating certain expectations for content. This way a writer can focus on the message without developing the form, and readers can relax into familiar texts. For a writer, familiarity with the type of document means understanding the basic conventions and adjusting them as needed. As you will see, flexibility is an asset in any rhetorical situation.

STOP AND THINK 1.2

Drawing from the activities in this section's Warm Up, come up with your own definition of *technical writing*. Make sure you incorporate concepts from this section, such as subject, organization, audience, style, tone, and special features.

1.3 HOW TECHNICAL WRITING COMPARES TO OTHER WRITING

WARM UP

From your experience with writing, what characteristics does high-quality writing share? In other words, how would you describe an effective piece of writing?

Technical writing has much in common with the academic writing or personal writing you have experienced in school and at home. Technical writing also shares aspects of literature you have read. The differences, however, set technical writing apart from other writing with which you are familiar.

Technical Writing and Academic Writing

Academic writing (for example, research papers, analyses, and arguments) is the **expository** (writing to explain) and **persuasive writing** (writing to convince others) produced in academic circles. It must be unified, coherent,

and well organized. Technical writing also must be unified, coherent, and well organized. Style and standard usage (the spoken and written English expected in business communication) are important in academic and technical writing. Both types of writing rely on a process of thinking and writing that takes place over a few hours, a few days, or several weeks. The purpose is often the same—to inform or persuade. Figure 1.8 shows an excerpt from a typical academic research paper.

DRIVERLESS CARS?

Imagine sitting in the driver's seat texting, answering e-mail, reading the newspaper, even taking a nap while your car drives you to work. The self-driving car, says Thomas Weber, in charge of development for Mercedes-Benz Cars, "is set to become a reality much more quickly than the public thinks" and predicts Mercedez-Benz will have an autonomous vehicle by 2020 ("Mercedez Will Offer"). Tesla CEO Elon Musk claims his company will produce an autonomous car by 2018 ("Toyota Show"), while Toyota Corporation has set a goal for 2020 (Charlton). To test their prototypes, fifteen major auto companies each paid a million dollars to help build MCity, a 32-acre make-believe city at the University of Michigan. With so much interest, is a self-driving car really a good idea? Apparently, there are a number of intriguing advantages to driverless roadways.

Proponents say self-driving cars are safer. Research by the U.S. Department of Transportation attributes over 90% of cars crashes to human error. Data suggest 41% of those errors were recognition errors including inattention, internal and external distractions, and inadequate surveillance (USDOT 2). The ability of technology already installed on Chevrolet Traverse, Ford Edge, and Jeep Cherokee to warn of a forward collision or an overlooked blind-spot has the potential to lower these statistics ("Avoiding Crashes"). So if the technology currently installed in some vehicles is already making our roadways safer, can the truly driverless car be far behind?

Figure 1.8 Academic Research Paper Excerpt

The difference between academic writing and technical writing is in the presentation, audience, and approach. Academic writing includes paragraphs—usually at least one introductory paragraph with a stated thesis or argument (like the "number of advantages to driverless roadways"), paragraphs that develop the thesis or prove the argument, and a concluding paragraph or two. In many English classes, students document their research using the in-text citations required by the Modern Language Association (MLA) style guide, as illustrated in our excerpt, and provide a Works Cited page. Academic writing is written for an academic audience—an instructor, classmates, or a group of interested scholars.

Generally, the purpose of academic writing is to argue a point, expand on an idea, or make observations about human experience. For example, Francis Bacon's essay entitled "On Reading" elaborates on the benefits of reading. In "Two Views of the Mississippi," Mark Twain observes that while a close study of the river is necessary to reveal its dangers, such knowledge also takes away the river's mystery.

Like academic writing, technical writing also includes paragraphs. It, too, often begins with an introduction and closes with a conclusion. However, there is less flexibility in the subject matter, style, and tone of a technical document. Written for a specific audience, the subject is generally technical, business-related, or scientifically oriented. Often the intent is to clarify and consolidate rather than expand. Technical writing (with its headings, itemized lists, boldfaced type, and graphics) looks different from academic writing.

You might wonder: Does academic writing cross over into technical writing? The answer is yes. The writer of "Driverless Cars?" could have set up the paper with another style guide; used headings, graphs, and photos; and shifted the focus from advantages of autonomous vehicles to a technical discussion of safety or economic issues. This way, the paper would look and feel more like a technical document.

Technical Writing and Personal Writing

The expressive nature of a personal essay can display a range of emotions—sadness, excitement, irony, humor. However, the aim of research papers and technical documents is not to convey emotion. In fact, emotion can interfere with a person's understanding of an academic or technical document.

Readers of technical documents read for information, not for entertainment. They read to learn something or to take action. Some people say that technical writing is boring because of its lack of emotion. Yet, for the target audience, the person needing or wanting that information, the topic is rarely boring.

The following excerpt in Figure 1.9 could have been written by a student in an English class or by a blogger bewailing the difficulties of car ownership. As a personal essay, the tone is conversational, almost humorous. The audience is anyone who has owned a car and had a similar experience. In some ways, the writer is writing as much to herself as she is to another reader.

CAR OWNERSHIP: THE REAL DEAL

Owning a car is not all it's cracked up to be. My parents offered to make the down payment on a used Ford Mustang, but I was responsible for the monthly payments, half the insurance premium, and the cost of maintenance. Sure, a job waiting tables at Schooner's promised to cover all my expenses—that is, until the restaurant closed for repairs. And then my "maintenance-free" Ford sprang a leak when the radiator rusted out. Oil changes, inspections tickers, a headlight out, a fuse blown—I began to wish I lived in a big city with public transportation, or maybe in a very small town where my bike could get me where I wanted to go. . . .

Figure 1.9 Personal Essay Excerpt

Technical Writing and Imaginative Writing

Imaginative writing also adheres to principles of unity, coherence, and standard conventions. Imaginative writers allow their ideas to evolve over time. However, compared to technical and academic writing, imaginative

writing is less academic and more artistic, with writers taking creative license with some rules for a particular effect.

Imaginative writing includes novels, short stories, drama, and poetry whose situations grow out of fantasy or imagination. Events and people are fictional, although the themes may reveal universal truths. Imaginative writing is often **ambiguous** and can be interpreted in more than one way. A single passage can mean different things to different people. Imaginative writing also requires the reader to draw **inferences,** judgments about the reading that the writer does not make for the reader.

As you read "Goodbye" in Figure 1.10, you probably have some questions. Who is the friend? Male? Female? This friend has been on stage. Is this person a musician? And then you wonder, maybe the friend is a pet, a dog or cat. In the last sentence, we learn the subject of the poem is a car, the ten-year companion the author is personifying here. While this approach is applauded in imaginative writing, it does not work in technical communication. Readers of technical communication should not be left to wonder who or what is the subject of the document under review.

GOODBYE

Today I say goodbye to an old friend.

Our adventures have taken us from Wrightsville Beach to Ocean Beach.
We've climbed the Rockies and braved Death Valley.
We've peered over the edge of the Grand Canyon.
We've found ourselves buried in snow, caked in Playa dust.
We've fallen asleep to the sound of rain on the roof.

You've been a stage for musical performances and a sanctuary for quiet conversation.
Twice you were taken from me, but you always found your way back.
For the last ten years, you've been a constant, daily presence in my life—
Not something I can say about any other person, place, or thing.

So cheers, Rhonda the Honda. May your odometer roll on.

Figure 1.10 Imaginative Writing

Technical writing should be unambiguous and direct. A work of literature may be rich because it means different things to different readers. A reader might ponder the different meanings of the old man's voyage in Hemingway's *The Old Man and the Sea*, but W. Earl Britton says "that the primary, though not the sole, characteristic of technical and scientific writing lies in the effort of the author to convey one and only one meaning in what he says" (114). The meaning of a sentence in technical writing must be clear. "Turn there," Mr. Ybarra said, and his daughter turned left when he meant

for her to turn right. The word *there* can have different meanings to different people. However, "Turn right at Nottingham Road, the next paved road," has only one meaning.

Imaginative writing such as Emily Dickinson's "Because I could not stop for Death—He kindly stopped for me" often requires you to make inferences. Who is the driver of the carriage in Dickinson's poem? Why is he kind? You do not expect to make inferences about technical writing. Leaving it up to the reader to infer whether circumstances warrant a call to 9-1-1 could waste precious time.

We are not saying technical writers have all the answers. Sometimes their task is to present the known facts so readers can make their own decisions. And we are not implying technical writing is not creative. All writing is a creative act. The writer of the best-selling novel and the writer of the user-friendly manual both channel their talents to serve a purpose. One helps us reflect, to examine what it means to be human; the other helps us do things, to apply our expertise in practical and meaningful ways.

We'd like to tell you writing has distinct categories that never overlap, but we can't. Any subject can be turned into a technical document, depending on the treatment of that subject. Likewise, any subject can be turned into a personal essay or imaginative piece. When heart topics are medical, they fall under the realm of technical writing. When heart topics become emotional—such as advice for healing from a broken relationship or a poem lamenting a loss—they morph into personal or imaginative writing. When heart topics become the subject of a psychological study to determine the causes of divorce, the topic uses elements of both personal stories *and* social science research. The mark of a good writer, then, is how well he or she adjusts to the rhetorical situation at any given moment. Certainly, flexibility is key to a writer's success.

STOP AND THINK 1.3

Compare technical writing to academic, personal, and imaginative writing.

1 CHAPTER REVIEW

Summary

1. You have probably used technical writing if you have given someone directions, planned an event, explained closing procedures at work, or done many other everyday activities.
2. Technical communication, whether a written document or an oral presentation, presents technical information with a specific purpose and audience and a clear, straightforward approach.
3. Required in all professions, technical writing is critical in the workplace. Recent research describes writing as a "threshold skill."
4. Technical writing exhibits the following characteristics:
   - Subject and purpose: technical factual subject, clear purpose
   - Audience: carefully considered, targeted
   - Organization: predictable, apparent
   - Style: concise, direct, specialized vocabulary
   - Tone: objective, businesslike, detached
   - Design features: visual elements—headings, boldface, color graphics
   - Standard conventions: knowledge of familiar structures, format, and content
5. Technical writing differs from academic and personal writing in its presentation, approach to subject matter, and audience, and from imaginative writing in its "one-meaning-and-one-meaning-only" intent.

Checklist

- Can I define technical writing?
- Can I list the characteristics of technical writing?
- Can I give examples of technical writing in the workplace?
- Can I explain how technical writing differs from academic, personal, and imaginative writing?
- Can I identify ways in which technical writing is similar to academic, personal, and imaginative writing?

Build Your Foundation

1. What characteristics does technical writing share with other types of writing?
2. Which of these subjects would most likely be written about in a technical style? Which of these subjects would most likely be written about in an academic style?

a sunset	homelessness	a first pet
electric circuits	graduation	a wedding
a computer screen	a close friend	flowers

3. Which of the following statements would you expect to come from a technical writing document? Which would come from personal writing or imaginative literature? How can you tell? What are your clues?

   a. My memory of her will never fade. She brought music into my life.
   b. A neutral pH range between 6.5 and 7.5 provides a healthy environment for most community fish in a freshwater aquarium.
   c. The bandwidth of a telecommunications medium is measured in Mbps, which stands for millions of bits per second or megabits per second.
   d. The mist peeked over the marshland.
   e. Once upon a time there was a princess who ruled a vast country.
   f. To meet International Building Code requirements, stair risers must measure a maximum height of 7 inches and a minimum height of 4 inches.

4. In a role you have held, such as chairperson of an organization or a committee, employee, or team member, describe the kinds of communication required of you in that role. Would you describe the communication you did as technical communication? Why or why not?
5. Find a piece of technical writing (or another kind of writing) you think is ineffective. Write a brief analysis of the writing, focusing on the characteristics that make it ineffective. Then analyze a piece of writing you believe is effective. Compare the two pieces of writing for subject, audience, organization, style, tone, and special features.
6. Read each statement and identify the audience you think the writer is targeting.

   a. As instructed by the dentist, oxygenate the patient 5 minutes for every 15 minutes of nitrous oxide exposure to prevent diffusion hypoxia.
   b. Here at the office, when nitrous oxide is used, the oxygen administered with it prevents headaches, grogginess, nausea, and that “hung-over” feeling.
   c. Make no bones about it—*City Dogs* is a gentle, funny movie that your entire family will enjoy!

d. When booking train reservations in Spain, be aware that INTERCITY is the standard day time service, while TALGOS offers more amenities and is more expensive.
e. Come and see Big Bear at Ayden Centre on Saturday morning. Have your picture taken with him and take home one of the balloon animal she makes for you.

7. Examine the information found on a box or can of your favorite packaged food or beverage. In particular, notice the nutrition information. Write an explanation of why the information on the package is considered technical communication.

Your Turn

1. What skills do you need to improve your technical writing? How can you acquire those skills?
2. Conduct an Internet search for the keywords *technical writing, technical editing,* and *technical communication.* Write a summary of your findings and share your summary with the class.
3. Find an article in a professional journal, either in print or online. Read the article to understand the organizational strategy used. Because obvious organization is one of the characteristics of technical communication, analyze the article to determine whether its organization is obvious and is easy for readers to follow. Write a report of your findings and attach a copy of the article.
4. Collect brochures or pamphlets from credible online organizations or from a local government agency such as the health department or parks and recreation office. Use the headings and subheadings to create an outline. Then compare the outline you have created to the overall message of the document. Write a brief description of how effectively (or ineffectively) the system of headings and subheadings provides emphasis for important information in the document.
5. Read an article in your favorite magazine or textbook. Choose special features of technical writing. How do those features make the writing easy to read?
6. Write a short report describing the writing skills required in three of the following careers. You may need to research some of the job titles so you know the kinds of writing the jobs require. Or choose three careers that interest you and write a short report describing the writing skills those careers require.

physical therapist	computer network administrator	medical assistant
audiologist	agricultural extension agent	veterinary care aide
research scientist	food service manager	electrical technician
real estate broker	construction project manager	insurance adjustor

7. Search the Internet for an example of technical writing written by someone who holds a job you might like to have someday. Explain the purpose of the example and the way the author used technical writing characteristics to achieve the purpose.
8. Visit the websites of two competing organizations, such as PepsiCo and the Coca-Cola Company or AT&T and Verizon. Can you determine the audience each site targets? Why or why not? Is the site designed to reach consumers or shareholders or both? How effectively does each site use the principles of technical communication?

Community Connection

1. Interview a business person about technical writing on the job. What types of documents does this person write most often? Ask if you may bring a sample of the writing to class.
2. Ask a technician or scientist about technical writing on the job. Ask what mistakes may have been made as a result of imprecise reporting.

EXPLORE THE NET

Visit the U.S. Department of Labor, Bureau of Labor Statistics website to research employment opportunities over the next 10 years for technical writers. Write an ad for a technical writer based on your findings.

Works Cited

Britton, W. Earl. "What Is Technical Writing?" *College Composition and Communication*. May 1965: 113–116.

The National Commission on Writing for America's Families, Schools, and Colleges. *Writing: A Ticket to Work . . . Or a Ticket Out: A Survey of Business Leaders*. September 2014: 3–4.

Wallin, Luke. *Conservation Writing: Essays at the Crossroads of Nature and Culture*. Center of Policy Analysis, University of Massachusetts–Dartmouth. 2006.

2 AUDIENCE AND PURPOSE

Goals

- Determine how to meet the needs of a specific audience and a multiple audience
- Plan a document's purpose, scope, and medium

Terms

accommodate, p. 32
artifact, p. 29
culture, p. 34
demographics, p. 32
ethos, p. 29
format, p. 42
jargon, p. 33
kairos, p. 29
logos, p. 29
medium, p. 40
multiple audience, p. 31
pathos, p. 29
primary audience, p. 36
purpose, p. 39
rhetorical act, p. 29
rhetorical sensitivity, p. 32
rhetorical situation, p. 29
role, p. 33
scope, p. 40
secondary audience, p. 36
specific audience, p. 31
target audience, p. 31

Write to Learn

Think of something you did recently about which you told a number of people. Consider how your description of the incident changed depending on whom you talked to. In one page, explain how you described this incident to (1) authority figures (for example, parents, instructors, or employers) and (2) close friends (who may include sisters and brothers). Did the purpose of your conversation change when you switched audiences? If so, how? How did each audience affect your tone, your body language, your choice of words, and the information you chose to include or omit?

on Audience and Purpose

Read Figure 2.1 on the next page and answer these questions:

- Who is the audience for this web page?
- Who is the writer, and what does the writer want the reader to do?
- What has the writer done to show an understanding of this reader?
- What kind of information has the writer provided to convince the reader to give blood? Do you think the writer has done a good job? Explain.

What If?

How might the model change if . . .

- The reader did not have access to the Internet?
- The reader is a regular donor, but he does not have transportation to the Blood Mobile site?
- The reader is a willing first-time donor but wonders if it is all right to give blood on her way home after lifting weights at the gym?
- The reader might be willing to donate but is legally blind?

Top 10 Reasons People Don't Give Blood

1. I don't like needles / I am scared of needles / I am afraid to give blood
   Nearly everyone feels that way at first. However, most donors will tell you that you feel only a slight initial pinch, and 7–10 minutes later, you are finished and headed for the canteen. If you take the time (and courage) to make one donation, you'll wonder why you ever hesitated.
2. I am too busy
   The entire process takes about an hour, and the actual blood donation time is only 7–10 minutes. If you stop to think that an hour of your time could mean a lifetime for a premature baby, someone with cancer undergoing chemotherapy, or someone who's had an accident, you might decide that you can make the time to give the gift of life.
3. No-one ever asked me . . . I didn't realize my blood was needed
   Consider yourself asked! There is simply no other way to supply the blood needs of hospital patients but for the generous donations of people like you. Every two seconds someone in America needs blood. More than 38,000 donations are needed every day in communities across the U.S.
4. I already gave this year
   You can give every 56 days. Many donors give 5 times a year!
5. I am afraid I'll get AIDS
   It is not possible to get AIDS by donating blood to the American Red Cross. A new sterile needle is used for each donor and discarded afterwards.
6. My blood isn't the right type
   Every type of blood is needed daily to meet patient needs. If you have a common blood type, there are many patients who need it, so it is in high demand. If you have a less common blood type, there are fewer donors available to give it, so it is in short supply.
7. I don't have any blood to spare
   The average adult body has 10–12 pints of blood. Doctors say that healthy adults may give regularly because the body quickly replaces the blood you donate.
8. I don't want to feel weak afterward
   Donating blood should not affect adversely a healthy adult because your body has plenty of blood. You will donate less than one pint, and your body, which constantly makes new blood, will replace the donated volume within 24 hours. Most people continue their usual activities after donating.
9. They won't want my blood (I am too old / I've had an illness)
   If you have doubts, check with your physician. The qualified staff on duty at a blood drive or donor center will also review your medical history with you. There is no upper age limit to donate blood with the American Red Cross, and a great many medical conditions do not prevent you from donating blood, or may have done so only temporarily in the past.
10. I have a rare blood type, so I'll wait until there is a special need
    Blood that is rare or special is almost always in short supply. There is a constant need for these blood types in order to avoid having to recruit specific blood types in a crisis.

Figure 2.1 Document Written for a Specific Audience Source: www.givelife.org/donor/top10excuses.asp

Writing @Work

Courtesy of Christopher Blackwell

CareerClusters® PATHWAYS TO COLLEGE & CAREER READINESS
Human Services

Source: The Center to Advance CTE

Dr. Christopher Blackwell is an assistant professor at the University of Central Florida's College of Nursing. He teaches graduate-level nursing courses, serves on several faculty committees, and researches health and social disparities in vulnerable patient populations.

When Christopher needs to persuade fellow faculty members to make a change to their graduate program, he knows that he has to do more than simply speak up: He must produce documented evidence to support his case. "Verbally, I am able to communicate my opinion to my colleagues, but when I present effectively written documentation based on research, my points of view are validated by others."

Christopher's gift for speaking comes in handy in the classroom, where he has a different audience: nursing students. "To help students remember essential information," he says, "I use real clinical scenarios that I have experienced and also tell jokes. Students appreciate these types of communication." In addition to instructive anecdotes and humor, Christopher believes that body language, or nonverbal cues, is important to effective classroom communication.

While he teaches for a student audience, he researches and publishes writing for a professional scholarly audience. Christopher strongly believes that "the one thing that is most essential when preparing formal writing is focus." To focus his writing for an academic audience, Christopher writes an article's abstract—or a summary of the article—first and then uses this synopsis as an outline for the longer piece.

Think Critically

1. The profile describes three types of communication in which Christopher engages. What are they? How are they different? How are they similar? How does Christopher prepare to communicate effectively in each situation?
2. Are you surprised to read that a nursing professor tells jokes in class? Why does Christopher use humor?

Printed with permission of Dr. Christopher Blackwell

Writing in Human Services

Employed in every state and county in schools, hospitals, and service-related agencies, social workers match clients' needs with services such as foster care, food stamps, counseling, and healthcare. They serve as protectors of at-risk populations including the elderly and children. As social scientists, case workers not only observe human behavior but also employ the objectivity of scientific analysis. Writing consists mainly of factsheets, intake interviews, and invoices. Letters and e-mails to providers and clients help set up and track services. Sometimes a social worker is required to testify in court.

The intake interview forms the basis of any case. A case worker investigates the *who*, *what*, *why*, and *how* of an allegation and writes a narrative of the findings. Accurate and thorough documentation is imperative, for it is used to justify critical-care services such as the referral of a surgical patient to a rehabilitation facility or a military veteran to counseling. Information must be clear, concise, and organized for other readers, who may be another social worker assigned to the case, a supervisor making a referral, or a judge mandating a child to foster care. Most items on an intake form are prescriptive and routine, for example, "What brought you here today?" and "Tell me about your family." However, a perceptive case worker might add information regarding a client's mental state.

An interviewer's approach should be neutral, objective, sympathetic, and sensitive to cultural differences in communication styles. A Hispanic family may resist eye contact, for example, or a family from a large city may be more direct.

2.1 MEETING THE AUDIENCE'S NEEDS

WARM UP

Suppose your younger brother or sister did something that made you unhappy. How would you talk to your brother or sister about the problem? Now suppose the person who offended you was a coworker. How would the change in your audience affect what you say?

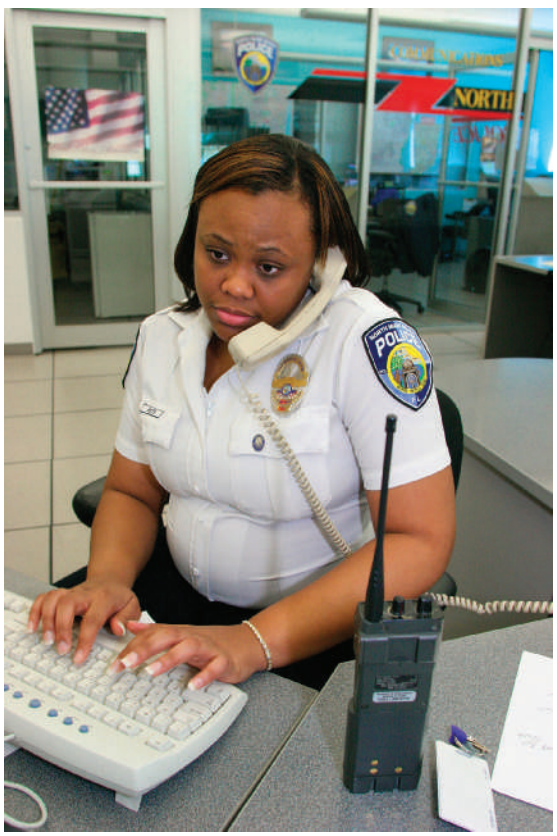
Audience, reader, and *viewer* are nearly interchangeable terms. As technical communication channels expand to include a host of multimedia, *audience* has a broader meaning. Sometimes the audience is not a reader but a listener or an observer. On the Web, the reader is also an active participant. In any case, technical writers must know who the members of their audience are and what those readers, viewers, and listeners need or want to know.

In Figure 2.1, the writer knows who the audience is—potential blood donors. The focus is on the reader, and the writing shows an understanding of the reader's point of view. The Red Cross knows this reader well, obviously having heard these reasons many times. After identifying this audience, the writer systematically counters any objections with objective, precise, factual information.

Technical writing is written for both internal and external audiences. When Roweena, a dispatcher, composes an e-mail announcing pay increases to the police officers in her district, she is writing to the members of her organization—an internal audience. The author of "Top 10 Reasons People Don't Give Blood" is writing for an external audience—people outside the organization.

An expression of personal, social, or professional culture, a communication **artifact** can be a document, video, tool, painting, sculpture, or any item representing a message created by and for human beings. A **rhetorical act**, or communication process designed to influence another's point of view, requires a speaker or writer to think through the **rhetorical situation**, the real-life event prompting the need for some kind of response. To examine the situation, a writer considers who's involved (the audience), the purpose (the reason for the message), and any constraints—what circumstances (time, money, attitude, knowledge) affect the way a message is delivered. Aristotle, a Greek philosopher in the 4th century BCE, declared a good writer's task is to ascertain "in any given case, the available means of persuasion." He claimed communicators have four means of persuasion, or four ways to appeal to an audience:

- **Logos:** appeal to logic; use of evidence and a well-reasoned argument
- **Ethos:** appeal to ethics; use of the speaker's or writer's credibility and good character
- **Pathos:** appeal to emotion; identification with or sympathy for an audience or cause
- **Kairos:** appeal to the opportune moment, the best time to deliver a message.



© Jeff Greenberg/ The Image Works

Any communication artifact has the potential to include all four of Aristotle's appeals. Nonetheless, as you saw in Chapter 1, technical and academic communication is primarily an appeal to logos, ethos, and kairos: logical arguments, credible authorship, and a message offered

when and where it will do the most good. Personal and imaginative writing are more suitable venues for pathos. As also suggested in Chapter 1, it is important not to compartmentalize communication: A good advertising campaign employs logic, credibility, timeliness, *and* emotion to sell a product. The lines among different forms of discourse are often blurred, yet a given text tends to lean toward one appeal more than another.

Technical communicators work through the rhetorical situation while maintaining transparency. A technical writer is like a member of a stage crew, a behind-the-scenes operator, whose primary obligation is to satisfy the audience's desire for a memorable performance. In a good play, the audience is barely aware of the crew who is moving sets and producing sound on cue; but without the crew, the show would not go on. Similarly, good writers produce work without drawing undue attention to their role, relying on logos, ethos, pathos, and kairos to carry their message.

Types of Audiences

You may write a poem or short story without the intention of sharing it with anyone. However, technical writing implies an audience, often a very specific audience, and sometimes a more varied audience. Your readers may be customers, coworkers, managers, subordinates, or the general public. Usually, your relationship to your readers determines how you write your document—the tone you use, the formality of the language, and its medium. A memo to the chief executive officer (CEO), for example, would be more formal than a memo to a coworker.

As you are planning your document, consider whether your readers fall into one of these categories:

- **Lay reader:** a general reader without expert knowledge but with an interest in a subject. Readers of newspapers and magazines such as *Psychology Today* and *Popular Science* are lay readers.

Communication Technologies

The BBC, the British Broadcasting Corporation, has two versions of the news on its website, a United Kingdom version and an international version. Users logging on are automatically taken to the broadcast deemed most relevant based on their geographic locations. Thus, a person from the Middle East will see news from the Middle East; a person from South Asia will see news from South Asia. Other news websites including Voice of America (VOA) and Google News offer news in similar formats. As you can see, these organizations have designed websites to reach out to many different audiences.

Think Critically

How might news about an event reported in India be different from the news about the same event reported in the United States?

- **Technician:** a person with skilled training who implements the ideas or plans of the expert. Technicians, like lathe operators and network administrators, operate equipment, repair machinery, and train others. They read manuals, schematics, blueprints, and technical reports.
- **Expert:** an authority in a particular field who is highly skilled and professional, perhaps with an advanced degree. Leaders in their fields, they design equipment, conduct research, and create new products. Experts such as medical doctors and engineers learn from and contribute to publications such as the *Journal of the American Medical Association* and the *Journal of Applied Physics*, respectively.
- **Manager:** a person who organizes personnel and is responsible for the day-to-day operations as well as long-range planning. Upper-level managers are leaders who create a vision and move the organization forward. Depending on their level of expertise, managers may read feasibility reports, research reports, financial reports, or professional articles.

A reader can fall into more than one category. Thinking through the categories will help you make decisions about how best to communicate with your audience.

Meeting the Needs of a Specific Audience

Do you understand the following message? It is written in Morse code—letters as a series of dots and dashes transmitted as sounds, lights, or electrical pulses. Unless you are a ham radio operator or in an aeronautical field, you probably have no need to know Morse code. You are not the target audience; therefore, the message fails to communicate.

−.− −. −−− .−−

−.−− −−− ..− .−.

.− ..− −.. .. . −. −.−. .

A Navy radio operator during World War I would have understood this code. The operator's audience shared a common mission: to transmit classified military messages over long distances. In short, the Navy radio operator communicated in Morse code to another military operator whose job it was to decode the message. The military operator is the **target audience,** the audience for which the message is written.

To communicate successfully, you must speak the "language" of your audience. Failure to speak in terms your reader understands creates a barrier that prevents communication, much the same way the Morse code keeps you from understanding its message. To know how best to communicate with your reader, you must know who your audience is. Your audience may be a **specific audience** (a single person or a group whose point of view is the same), or your audience may be a **multiple audience** (readers whose points of view differ). Once you know your audience, you can plan ways to appeal to your reader(s).

© Digital Vision/Getty Images

To help you target the needs of a specific group, gather information about the **demographics** of the group—information such as the age, sex, income, and educational level of your group. If you are planning to advertise a new day care center, for example, your target audience would be working parents with young children. You might look at census data to find out where to advertise your new center. If you are designing a website for amateur astronomers, for instance, explore topics astronomers are interested in—for example, star charts, planetary events, observatory information, and recommendations for telescopes.

As a writer, the relationship with your readers is also important. Are they customers, managers, peers, or subordinates? Your relationship will determine how you write your document—the tone you use, the formality of your document, and its medium.

The reader's needs determine what kind of information the writer supplies. When your manager needs to know the cost of hiring an administrative assistant, you provide cost. When the maintenance crew wants to know which mosquito repellent to use, you research repellents and send the crew members an e-mail with your recommendation. When the audience is unsure of its needs, the writer helps the audience think through the communication situation.

In technical writing, one rule dominates: *The needs and wants of your audience dictate every decision you make as a writer.* To make effective decisions, writers exercise **rhetorical sensitivity,** adapting a message to the audience's needs and wants and framing it within a relevant context. Sometimes the writer's position is a precarious one: A writer must balance the needs of her audience without sacrificing the integrity and intent of her message. Lionel may want a higher line of credit, but if the customer representative researching his request determines his income does not warrant a higher line, she must refuse his request.

Analyze Your Target Audience

Sometimes your audience is a specific person or a group with a common interest. After you identify the readers in your target audience, consider how their knowledge level, roles, interests, cultural background, and personalities may influence what you write and how you write it. Age, experience, attitude, organizational distance, income, and politics may affect the language you choose to communicate successfully. Targeting the special needs of a specific audience requires a writer to consider several factors at once. Understanding your audience's knowledge level, role, interests, cultural background, and personality is the first step to successful communication.

Attending to the needs and wants of your audience is much like attending to a special guest in your home. You are aware of this person's presence, and you make every effort to make this person feel welcomed. For example, a Spanish-speaking exchange student from Chile spoke English moderately well and enjoyed playing the guitar. His American host family attended to his needs and wants by defining unfamiliar words and borrowing a guitar for him to play. Just as the host family gave special consideration to the Chilean student, you should consider your audience by making every effort to **accommodate** (adjust to, make concessions for) your audience's needs and wants.

Knowledge Level

What people know and how well they know it varies widely from one person to the next. As such, knowledge level can be high, low, or moderate. It can be technical or nontechnical. Ask yourself what your readers know or do not know about your subject. If you tell them what they already know, you risk wasting their time (not to mention yours). Yet if you omit something they need to know, you have not done your job.

For example, the knowledge level of Josh's parents prevented them from understanding a medical report. After two-year-old Josh fell down a flight of stairs at home, his distraught parents took him to the emergency room. Josh's emergency room report read: "The child suffered from contusions and lacerations." *Contusions* and *lacerations* are familiar terms to doctors and nurses. For Josh's parents, however, the medical **jargon** (the highly specialized language of a discipline or technical field) did not communicate as effectively as these everyday terms familiar to most parents: *The child suffered from cuts and bruises*. The medical jargon was confusing, making Josh's injury seem worse than it was.

Experience, age, and expertise can affect how much someone knows. Josh's parents lacked the experience and background of a doctor or nurse. And because of his age, Josh did not understand medical terms. Likewise, the technician who X-rayed Josh's finger knew how to position it to get the best picture but lacked the expert knowledge of the engineer who designed the machine.

Role

Consider your reader's **role** or area of responsibility before you begin writing. What is your reader's job or position in the workplace? Role or job title affects not only knowledge level but also the information your reader thinks is important.

© Yuri Arcurs, 2009/Shutterstock

Understand your reader's role and accommodate it. Accountants are concerned about their company's finances. If you write a recommendation to the accounting office about a planned purchase, you should accommodate the accountant's role by including information about cost. The technician who reads the same report may be more interested in how to operate equipment being purchased, having little concern about the cost. For the technician, you should include sufficient information about the technical specifications of the equipment.

Interest

When your readers are interested in your subject, they read with greater motivation and enthusiasm. Where you find common interest, your writing task is easier, for your reader becomes your automatic ally. Where there is no apparent interest, look for ways to identify with readers and offer an objective yet focused message.

Interest can be affected by age, experience, cultural background, and role. Your interests now are different from what they were ten years ago because you have a wider range of experiences. The camping and fishing trips you

enjoyed as a child may have been replaced by long motor trips and concerts as a young adult. If everyone in your family enjoys eating black beans and rice, you may have a taste for those foods because of your background. Now your role is to be a student. When you join the workforce, your interests will be determined in part by your professional role.

Cultural Background

Culture—the special beliefs, customs, and values specific to a particular group of people or to a particular region—affects what an audience considers to be proper behavior. Many beliefs regarding human relations are affected by an individual's cultural background. By failing to consider someone's cultural background, you risk offending your reader and erecting barriers to communication. Your goal is to open the lines of communication and reach out to all of your readers.

In the United States, regional cultural differences affect communication. In the South, many parents insist that their children say, "Yes, ma'am" and "No, sir" to their elders as a sign of respect and proper etiquette. Other regions of the country do not rely as heavily on these endearments. While "Yes, ma'am" and "Yes, sir" are expected as polite gestures in one region of the country, the expressions may sound out of place—even offensive—in another region. Some people begin a telephone conversation with small talk, asking a person about his family as a prelude to conducting business. Yet other people consider such small talk too personal or an inefficient use of time.

U.S. businesses are becoming increasingly global. U.S-based businesses have interests abroad in countries such as Mexico, Argentina, Turkey, and India. Many documents are read by audiences outside the United States whose cultural differences affect communication. Where U.S business personnel perceive directness as a sign of open and honest business dealings, other cultures consider this approach brash and insensitive. Where U.S business relies heavily on written agreements ("put it in writing" and "read the fine print"), other cultures trust oral communication. Understanding these differences is imperative to accommodating your audience's cultural background.

Personality

Personality can be affected by culture, heredity, age, experience, and role. Also, someone's personality can shape his or her work habits. A legal researcher who prefers to work alone may appreciate receiving instructions via e-mail. Someone who prefers working in a group may want to receive oral instructions in a meeting so he can share his reaction with others. For him, e-mail may be a nuisance. When communicating, you may not know your readers well enough to make judgments about their personalities. But if you do, you can tailor your communication style appropriately.

Mayur is a successful manager. Part of his success comes from analyzing the personalities of his subordinates and supervisors. He knows his supervisor likes to make decisions based on credible research. When Mayur talks to her, he is direct and presents only the facts. When Mayur writes to her, his tone is objective, and he includes ample statistical data. In fact, the

company's new medical plan is the result of Mayur's detailed proposal. Mayur's line manager, on the other hand, is easygoing and wants to know the bottom line. E-mails to him are short, infrequent, and friendly. The line manager is not interested in details, prefers a visit to an e-mail, and is hurt if the tone is too formal. Mayur has a good relationship with this line manager, who might otherwise be suspicious of a supervisor.

Before you begin to write a technical document, analyze your audience to determine their special needs. Use the questions in Table 2.1 to help you decide what to remember about your reader(s). When you have answered the questions, summarize what is most important to your audience. Then follow the suggestions in the second column for adjusting to your audience's needs.

Table 2.1

ASK THESE QUESTIONS	MAKE THESE ACCOMMODATIONS
Knowledge Level	
What does my reader already know about the topic? Is my reader an expert, a technician, or a lay reader? What does my reader need to know? What does my reader want to know?	Add particular knowledge that your audience does not have. Leave out or quickly summarize knowledge your audience already has. Decide how much technical language to include. Use informal definitions or a glossary if necessary. Present complex information visually.
Interests	
How strong is my reader's interest in my topic? Are my reader's priorities different from mine or the same as mine? Is my reader likely to agree with my point of view?	Appeal to known interests or try to create interest. Express agreement with and understanding of a point of view when possible. Provide evidence to help sway others to your point of view.
Role	
Is my reader's role • to make decisions or implement a plan? • to operate equipment, encode data, train others? • to create or design or invent? Is my communication going to management, to a peer, or to a supervisee?	Include knowledge the role requires—planning parameters for managers, technical details for technicians. Write different sections for different roles. Be diplomatic with management, courteous yet straightforward with a peer, and respectful and direct with someone you supervise.
Cultural Background	
What is my reader's cultural background? What are my reader's beliefs? Are my reader's beliefs different from mine or the same as mine?	Understand how culture affects someone's beliefs and decisions. Learn about the cultural background of your audience and adhere to the cultural norms of that audience as much as possible.
Personality	
What kind of personality does my reader have? Is my reader analytical, quiet, or outgoing? Does my reader prefer having details or seeing the big picture?	Adjust tone and medium to personality. Provide facts, order, and evidence for the analytically minded; a personal touch for facilitators; and ideas and the overall picture for creative thinkers.

Meeting the Needs of a Multiple Audience

Shakespeare was arguably the greatest writer who ever lived. His success depended on his wit, knowledge of theater, and understanding of his audience. As a businessperson, Shakespeare knew he had to please England's royal family as well as the peasants who came to see his plays. He had to appeal to young and old, to men and women, to the educated and the uneducated. In the sixteenth century, Shakespeare wrote successfully to a multiple audience, an audience made up of multiple interests, with members whose needs and wants sometimes conflicted with one another.

Typical Reader

A person or group of people who want or need specific information.

Today technical writers face a similar challenge writing to an audience that can include executives, managers, and administrative assistants. In his day, Shakespeare was clever—he wrote different parts of the same play for different people. Today his "different parts for different folks" strategy is used by technical writers too. But technical writers go one step further. They "label" the parts with headings, short titles preceding sections of the document to alert readers to the information written for them.

Writer's Focus

Analyzing the rhetorical situation and the audience's needs and providing information in the best possible way for the audience to understand.

Another strategy for meeting the diverse needs of a multiple audience is to determine who comes first—whose needs are most important. To decide what data to focus on as you write, divide your audience into two groups: **primary audience** and **secondary audience**. Think of the primary audience as readers or listeners to whom you are responsible first and the secondary audience as readers or listeners to whom you are responsible after having met the needs of the primary audience. Both audiences are important, but as a writer, you must organize your tasks according to some kind of priority.

PRIMARY AUDIENCE	SECONDARY AUDIENCE
• Asked for or authorized the writing of the document	• Will be affected by the document in some way
• Will make decisions based on the information in the document	• Is interested in the decisions made or the information in the document
• Will request or take action based on information in the document	• May use some information for a purpose different from the document's purpose
• Will likely read the entire document	• May read selected portions

Walsh Plastics is considering building a plant in Thailand. Suppose you are the writer of the feasibility report analyzing the move for the company. Walsh's executives and the company lawyer who must decide whether to open a factory in a foreign country constitute the primary audience. The architect who will design the new plant, the sales representatives who will move, and the managers who will train new workers make up the secondary audience. How will you address each audience's needs and wants?

The following criteria may help identify the primary and secondary audiences for your writing projects.

Magdalena, a software engineer, faced the challenging task of writing a proposal and developing the software for the inventory management system of a local school system. The primary audience, the director, contracted

services with Magdalena, specified what the software needed to do, and decided who would be trained to use it. The secondary audience included assistants who would key data, the programmer who would modify the software as needed, and the superintendent who would confirm that Magdalena had fulfilled her contract terms. How would Magdalena write a document for readers with such diverse backgrounds, professional roles, and technical expertise? To accommodate all of their needs, she wrote different parts of the report for different people. Table 2.2 reveals the adjustments Magdalena made to accommodate the needs of the multiple audience. Chapters 12 and 13 will cover long reports with different headings written to accommodate a multiple audience.

Table 2.2

READER'S ROLES AND NEEDS	MAGDALENA'S ADJUSTMENT TO READER
As the *approver,* the **superintendent** needs to know whether the money spent on the programmer's services was responsibly invested and whether the terms of the contract have been completed.	Magdalena writes a *cover memo* briefly summarizing the report, describing the program, and outlining advantages to the school system. She uses little or no technical language, carefully defining any technical terms.
As the *decision maker* and *manager,* the **director** needs an overview of the program to see whether the specifications agreed upon have been met and to receive a demonstration of the product.	Magdalena writes the **Executive Summary**, which presents the most important information in the report. She includes some technical language and gives a formal demonstration of the program.
Despite *varied roles,* **all of the readers** need to understand the purpose of the manual and those parts that will help each of them.	In the **Introduction**, Magdalena explains the purpose of the proposal and its organization. She uses little or no technical language.
As the *technician,* the **programmer** needs to understand the program structure, to know how best to extend the functionality of the program, and to know how users interface with the program.	Magdalena documents her programming with UML diagrams and places this information in the **Appendix**. She invites the programmer to the training session for assistants.
As *end users,* the **administrative assistants** need to understand how to key, manipulate, and find data as quickly as possible.	Magdalena writes **procedures** that explain how to use the program. She uses short commands, occasional explanations, and screen shots. She then follows up with a training session on how to use the program.
Magdalena's audience is **diverse,** including a range of ages and technological experience.	Magdalena stores the report, the documentation, and presentation on Google Docs, giving everyone access so her readers have options for reviewing the material.

Sometimes, though, when a document is short, you can simply revise it for each audience and send it separately. For example, an e-mail from the director of information systems to the network administrators telling them to bring down the network Friday afternoon for routine maintenance specified

in detail what the staff should do. At the end of the email, the director reminded her staff that users would be notified to log off by noon.

Before the director sent the e-mail to users, however, she shortened the message. Instead of specifying the work to be done, she asked users to log off by noon, announced that the maintenance was routine, and thanked them for their cooperation and patience. The reminder of the network outage in the bimonthly newsletter was even briefer. By the time she finished, she had revised her message for three different audiences.

Writing to a multiple audience, then, requires careful analysis of each possible audience member followed by a workable plan. Writing "different parts for different folks," focusing on the needs of the primary audience, and rewriting short documents are all strategies available to the technical writer. Remember, too, that an audience that you did not consider could read your document. Therefore, you must anticipate every possible audience member and adjust accordingly.

Focus on Ethics

As a writer, to avoid biased language, you must be aware of stereotypes in your writing. Sometimes the stereotype is so engrained in the culture that you do not realize you are using biased language. You probably know you should avoid sexist language in your writing (referring to men and women differently), but stereotypes include more than gender. People also can be stereotyped because of race, sexual orientation, age, physical or mental abilities, religion, ethnicity, and weight.

In your writing, strive to present everyone as being equal. First, avoid sexist language by referring to men and women the same way. For example, do not assume that all doctors are men and that all nurses are women. Avoid using examples that reinforce stereotypes.

Second, do not mention a person's physical characteristics if they are not relevant. If you would not say, "Our new software developer is Max, a smart white man without disabilities," then do not say, "Our new software developer is Sandra, a smart white woman with physical disabilities."

Sometimes you are not aware of the biased language. If you are not sure whether you have used stereotypes in your writing, ask another person to look over the document.

Think Critically

What are the possible consequences of stereotyping people?

STOP AND THINK 2.1

Think of an issue about which you feel passionate—your candidate for Student Government Association president, pet adoptions, a political issue, or something else that is important to you. Suppose you had to convince the entire student body to agree with you. What kinds of adjustments would you make to appeal to your multiple audiences?

2.2 PLANNING YOUR DOCUMENT'S PURPOSE, SCOPE, AND MEDIUM

WARM UP

Suppose a local newspaper reporter had interviewed you about the incident you wrote about in the Write to Learn activity. How does knowing the story will appear in print for a wider audience affect what you say and do not say? Suppose you were being interviewed before a live television audience. What adjustments would you make for a live broadcast?

Understanding who your audience is and what they need and want is an important part of your job as a writer. However, you have other decisions to make before you are ready to write. Early in the writing process, determine the purpose of your document, its scope, and the medium you will use.

Purpose

Purpose is defined as a specific end or outcome. It is what a writer wants a reader to do after reading a document. In technical writing, the purpose is to inform and/or persuade. Because much technical writing is intended to persuade, you need to consider your topic from the readers' points of view. How will your readers react to the information you provide? For them, is the information good or bad news? With whom or what are you competing for your readers' attention? Is there a time limit for responding? Are your readers required to read your document? In other words, how hard must you work to get and keep your readers' attention? You should address these and other concerns as you think about the purpose of your document.

To determine the specific purpose of your writing assignment, ask yourself some basic questions:

- What do I want to inform my readers about?
- What do I want to persuade or convince them of?
- What do I want to happen as a result of this message?

To determine the purpose of your writing, ask additional questions to figure out what you want to happen when someone reads your document. What do you want your readers to do? What do you want them to know, to buy, to believe, to give? What would you like them to learn to do or change their minds about? Would you like them to stop doing something or start doing something? When you answer those questions, you will know the purpose of your document.

A statement of purpose may be to inform citizens of the latest employment trends or to convince the public to purchase smoke alarms. The persuasive purpose also implies providing information. Thus, a purpose to persuade becomes a purpose to inform, too. To convince bank customers to invest their money in money market accounts, you also must inform them about the advantages of such accounts. To convince the public to purchase smoke alarms requires evidence that smoke alarms save lives.

A statement of purpose on the same topic can vary for each audience. Consider the new employee evaluation system at Fabre Perfume Industries. Every employee is evaluated. Therefore, the purpose of the new *Employee Evaluation Manual* is to describe the procedure so that all employees understand how they will be evaluated.

However, because supervisors must conduct the evaluations, they receive the new *Employee Evaluation Manual* and the *Evaluation Procedures Manual*. The purpose of the *Procedures Manual* is to inform supervisors