# Technical
# Communication
# Today

RICHARD JOHNSON-SHEEHAN

# Technical Communication Today

## Seventh Edition

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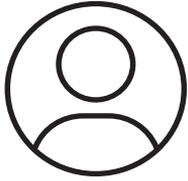
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*To Tracey, Emily, and Collin*

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# Preface

The seventh edition of *Technical Communication Today* brings into focus the major shift that began with the sixth edition. In the previous edition, I began shifting *Technical Communication Today* toward entrepreneurship and innovation as the central themes in the book. Until that point, the book's signature feature had been its emphasis on networked computers as the central nervous system of the scientific and technical workplace. That emphasis on networked computers is still the foundation of this book. But the idea that digital devices, from mobile phones to mainframes, are the infrastructure of today's workplace is no longer as revolutionary as it was two decades ago. Though digital infrastructure is absolutely vital to our workplaces, it is now almost invisible. Digital technologies are as common in the workplace as electricity and water are in our homes—we only notice when they aren't working. That said, the digital infrastructure is, if anything, more vital than ever in our lives and workplaces.

In the sixth edition of *Technical Communication Today*, I took a gamble on what I strongly believed was an emerging revolutionary shift in our society: the rise of entrepreneurship and innovation in scientific and technical workplaces. Today, I'm more convinced than ever that entrepreneurship and innovation are as essential as the air we breathe in our technology-centered and information-based workplaces. Even traditional manufacturing sectors, such as automotive, steel, and industrial machinery, have incorporated highly flexible and adaptable innovation-based practices. Meanwhile, people who work in advanced manufacturing and information technology must always be looking over the horizon to see what is next. Innovation will be in constant demand if we want to keep up with automation, artificial intelligence, high-performance computing, information technologies, medical device manufacturing, 3D printing, control systems, and environmental and sustainable practices. Those trends are only accelerating in a global economy and a transcultural reality.

Entrepreneurship is now the dominant ideology of our economy. Whatever field you work in, you will need to always think like an entrepreneur, whether you are helping to launch a start-up tech company, working for a large enterprise tech company, or doing research in a laboratory. Entrepreneurship is a mindset that blends together creativity, leadership, self-reliance, resilience, and persuasive communication. This innovation-centered mindset is a recognition that the workplace is always fluid and flexible, continuously adapting to new ideas and technologies. In the workplace, you will be working on teams that often include people from around the world, who are being brought in because they have specialized skills and knowledge. Like an entrepreneur, you will need to know how to work independently and in teams, adapting quickly to new people, new tasks, and new workplace environments.

To meet this new reality, I incorporated or strengthened eight supertrends in this seventh edition:

Supertrend 1: Innovating with Design Thinking and User Experience (UX) Design

Supertrend 2: Working in the Start-up Culture

Supertrend 3: Using Mobile Communication Technology

Supertrend 4: Responding to the Climate Crisis

Supertrend 5: Incorporating Virtual Reality and Information Architecture

Supertrend 6: Enhancing Cybersecurity

Supertrend 7: Improving Diversity, Equity, and Inclusion

Supertrend 8: Expanding Global and Transcultural Communications

With these supertrends in mind, my prediction is that we will soon see a new generation of information and communication technologies that go far beyond social networking, cloud storage, video conferencing, and real-time collaboration in scientific and technical workplaces. Not all that long ago, major tech companies fought to control services like internet browsers, Wi-Fi and broadband, and phone apps. Today, these technologies are mostly given away for free. My guess is that many of today's dominant technologies, including social media platforms, cloud storage, video conferencing, and real-time collaboration have peaked and have become normalized. These technologies will continue to improve, but they will essentially be better (and mostly free) versions of what we already have. A new revolution is on its way. My guess is that artificial intelligence, automation, and virtual working will drastically change how we live our lives. My hope is that a rising awareness of the climate crisis will revolutionize the energy sector in a dynamic and positive way. I'm also hoping for an increasingly diverse, fair, and welcoming workplace and society.

Interestingly, something that hasn't changed since I first wrote *Technical Communication Today* is the importance of writing clearly, speaking persuasively, and designing functional and attractive texts. These "legacy" communication technologies keep being re-invented over and over again, and they are as vital or more vital to our lives and work than ever.

As I write this preface, we are emerging from a pandemic. A senseless and brutal war is raging in Europe. The climate crisis is causing destruction worldwide. Authoritarian governments are challenging our democratic institutions and values. Despite these challenges, I'm optimistic and excited about the future—a future in which science and technology will have central roles to play. I believe we are on the cusp of revolutionary change, driven by new technologies that are just now beginning to emerge. Let's enjoy the ride.

# What's New in the Seventh Edition?

The continued focus on innovation and entrepreneurship in *Technical Communication Today* 7e has brought about many improvements and new features. Here are some of the major changes in the book.

Improvements throughout *Technical Communication Today* include:

- Major changes incorporating design thinking throughout multiple chapters.

- An entirely new chapter on Business Models and Plans.

- Adding coverage of Institute of Electrical and Electronics Engineers (IEEE) citation style.

Chapter-by-chapter improvements include:

- **Revised Chapter 1 "Technical Communication in the Entrepreneurial Workplace" & Chapter 2 "Profiling Your Readers"** includes more colorful diagrams enhance students' abilities to envision the technical writing process as a design process.

- **Chapter 3 "Working in Teams"** features more emphasis on the use of calendars for working in collaborative and entrepreneurial teams. Additional updated coverage of working in virtual teams.

- **Chapter 5 "Starting Your Career"** emphasizes new and improved coverage for preparing application letters, resumes, and e-portfolios for students exploring careers through the internet.

- **Chapter 9 "Proposals"** presents enhanced coverage of the use of proposals and pitches

for entrepreneurship. A completely new major proposal example.

- **Chapter 10 "Brief Reports"** sets forth new brief reports examples from various fields (laboratory, manufacturing, governmental reports).

- **Chapter 11 "Formal Reports"** includes new major formal report example for students to model.

- **NEW Chapter 12 "Business Models and Plans"** is a completely new chapter on writing business models and business plans.

- **Chapter 13 "Thinking Like an Entrepreneur"** introduces design thinking principles as a process for designing new products, services, and solutions in STEM workplaces.

- **Chapter 15 "Researching in Technical Workplaces"** features enhanced discussion of summarizing and synthesizing sources.

- **Chapter 16 "Organizing and Drafting"** includes new examples of outlining and an enhanced discussion of organizational strategies.

- **Chapter 17 "Using Plain and Persuasive Style"** updates coverage discussing translator sites to write and revise transnational documents.

- **Chapter 18 "Creating and Using Graphics"** presents example documents that demonstrate the abilities of today's design software.

- **Chapter 21 "Presenting and Pitching Your Ideas"** features new slide deck example that features cybersecurity in virtual meetings.

- **Appendix C:** Addition of IEEE Documentation Style. Conversion to APA Documentation Style, 7th edition.

## Guiding Themes

In this book, I have incorporated the newest technology in workplace communication, but the basics have not been forgotten. *Technical Communication Today* is grounded in a solid core of rhetorical principles that have been around since the beginning. These core principles have held up well and, in fact, are even more relevant as we return to a more visual and oral culture.

## Entrepreneurship as a Mindset

This edition features innovation and entrepreneurship as central motivators in the scientific and technical workplace. Students learn how to "think like an entrepreneur," always looking for ways to be creative, self-reliant, and resilient.

## Computers as Thinking Tools

This book's long-standing theme is that networked computers and mobile devices are integral and indispensable in technical communication. *Technical Communication Today* shows students how to fully use computers and succeed in a complex and fast-moving technical workplace.

## Visual-Spatial Reading, Thinking, and Composing

Documents are "spaces" where information is stored and flows. Visual-spatial reading, thinking, and composing involve interacting with text in real time. *Technical Communication Today* shows students how to engage, compose, and interact with texts in four important ways:

- It shows students how to use visual-spatial techniques to research, invent, draft, design, and edit their work.

- It teaches students how to write and speak visually, while designing highly navigable documents and presentations.

- It provides guidance on composing visual-spatial multimodal documents and presentations.

- It practices what it preaches by providing information in an accessible, visual-spatial format.

## The International, Transcultural Workplace

As with each edition, international and transcultural issues have been expanded as the world becomes more globalized. These issues have been woven

into the main chapter discussion rather than placed on their own because issues of globalization are not separable from technical communication.

## The Activity of Technical Communication

*Technical Communication Today* continues to stress the activity of technical communication—producing effective documents and presentations. Each chapter follows a step-by-step process approach that mirrors how professionals in the technical workplace communicate. As someone who has consulted and taught technical communication for over two decades, I know that students today rarely read their textbooks but, instead, raid them for specific information. For this reason, like any good technical communicator, I have tried to make this book as "raidable" as possible. That way, students can get in the book, get what they need, and get things done.

## Resources for Instructors

### Instructor's Manual

The *Instructor's Manual*, available online at www.pearsonhighered.com, offers chapter-specific teaching strategies, prompts for class discussion, strategies for improving students' writing and presentations, in-and-out-of-class activities, and quizzes (with suggested answers).

### PowerPoint Presentations

A downloadable set of PowerPoint slides can be used by instructors who want to accompany chapter readings and discussions with presentable visuals. These slides illustrate each learning objective and key idea in the text.

## Acknowledgments

Every edition of *Technical Communication Today* has given me the opportunity to work with many people at Pearson and at colleges around the country. I wish to thank the following individuals for their insight and support: Teresa Aggen, Pikes Peak Community College; Sherrie L. Amido, California Polytechnic State University—San Luis Obispo; James Baker, Texas A&M University; Lauri M. Baker, University of Florida; Russell Barrett, Blinn College; Eric Bateman, San Juan College; Jenny Billings Beaver, Rowan-Cabarrus Community College; Patricia Boyd, Arizona State University; Norman Douglas Bradley, University of California—Santa Barbara; Lee Brasseur, Illinois State University; Jonathon Briggs, Central New Mexico Community College; Stuart Brown, New Mexico State University; Ellie Bunting, Edison College; Maria J. Cahill, Edison State College; Tracy L. Dalton, Missouri State University; Roger Friedman, Kansas State University; Timothy D. Giles, Georgia Southern University; Mark Gula, Northern Arizona University; Charlotte Hyde, Purdue University; Jeffrey Jablonski, University of Nevada—Las Vegas; Rebecca Jackson, Texas State University; Leslie Janac, Blinn College—Bryan Campus; Miles A. Kimball, Texas Tech University; Christy L. Kinnion, Wake Technical Community College; Jamee Larson, North Dakota State University; Barry Lawler, Oregon State University; Arthur Leal, University of Florida; Barbara L'Eplattenier, University of Arkansas—Little Rock; Anna Maheshwari, Schoolcraft College; Barry Maid, Arizona State University; Jodie Marion, Mt. Hood Community College; Steve Marsden, Stephen F. Austin State University; Mary S. McCauley, Wake Technical Community College; Sheryl McGough, Iowa State University; Kenneth Mitchell, Southeastern Louisiana University; Jacqueline S. Palmer, Texas A&M University; Andrea M. Penner, San Juan College; Cindy Raisor, Texas A&M University; Sherry Rankins-Robertson, Arizona State University; Mark S. Rideout, University of Tulsa; Mark T. Rooze, Florence-Darlington Technical College; Carlos Salinas, The University of Texas at El Paso; Teryl Sands, Arizona State University; Paul R. Sawyer, Southeastern Louisiana University; Jennifer Sheppard, New Mexico State University; Rick

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# Chapter 1

# Technical Communication in the Entrepreneurial Workplace

## In this chapter, you will learn to:

**1.1**  Develop a writing process that is suitable for the technical workplace.

**1.2**  Recognize how genres in technical workplaces are used to innovate and turn new ideas into documents.

**1.3**  Identify the features that technical communication and entrepreneurship have in common.

**1.4**  Identify the key characteristics of technical communication.

**1.5**  Identify eight traits of a successful entrepreneur.

**1.6**  Recognize the importance of effective written and spoken communication to your career.

When new employees begin their technical and scientific careers, they are often surprised by the amount of writing and speaking required in their new jobs. Of course, they knew technical communication would be important, but they never realized it would be so crucial to their success.

They also quickly discover that today's technical workplace is more entrepreneurial than ever. You will need to be innovative and self-motivated. To succeed in today's technical workplace, you will need to think critically and creatively. And, you will need to use strategic planning and resilience to develop new products, services, and solutions.

The purpose of this book is to help you develop the communication skills and entrepreneurial know-how to succeed and thrive in today's dynamic and evolving technical workplace.

# Technical Communication: The Workplace's Central Nervous System

**1.1**  **Develop a writing process that is suitable for the technical workplace.**

One of the major differences between workplace communication and college writing is the pace at which you need to work. Networks of computers, including mobile phones, tablets, workstations, and mainframes are the central nervous system of the technical workplace. These communication networks have greatly increased the speed of the technical workplace, and they allow people to work globally and around the clock. So, you need to know how to work smarter, using these networks to enhance your abilities.

To help you work smarter, this book will teach you a *genre-based approach* to technical communication. Genres are patterns that reflect how communities, including people in technical workplaces, get things done. A genre shapes a project's content, organization, style, and design, as well as the medium in which it is delivered.

## Communication Is the Central Nervous System of the Workplace
Your ability to communicate with others through computer networks will be critical to your career.



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For example, a proposal is a commonly used genre in the technical workplace (Figure 1.1). Proposals are used to present new projects, pitch new products and services, and pursue new opportunities. If you tell people you are sending them a proposal, they will have specific expectations about its content, organization, style, and design. Figure 1.1 shows a typical organizational pattern for a proposal that would be familiar to readers in technical workplaces.

Genres do much more than help you organize your ideas. They help you interpret workplace situations and make sense of what is happening around you. Genres are not formulas or recipes to be followed mechanically. Instead, they reflect the everyday activities and practices of technical workplaces. Genres are flexible, allowing them to be adapted to many different kinds of projects.

In this book, you will also learn how to use *microgenres*. A microgenre, like the elevator pitch shown in Figure 1.1, helps you achieve a more targeted goal. An elevator pitch is a miniature proposal that can be stated in only two minutes (a short elevator ride). Elevator pitches can be used in a stand-alone way, or they can be used as a stepping-stone to writing and presenting a full proposal. In this way, microgenres are useful tools for doing these kinds of limited but important tasks.

**Figure 1.1** Genres: The Elevator Pitch and the Proposal

Each genre has its own content, organization, style, and design. Here are typical ways to organize an elevator pitch (a microgenre) and a proposal (the full genre).

| **Elevator Pitch** | **Proposal** |
| --- | --- |
| Introduce Yourself | Introduction |
| Grab Readers with Story | Describe Current Situation |
| Present Your Big Idea | Explain Project Plan |
| Give 2–3 Reasons | Describe Qualifications |
| Distinguish Your Idea | Discuss Costs and Benefits |
| Discuss Costs and Benefits | Conclusion |
| Memorable Conclusion | Budget |
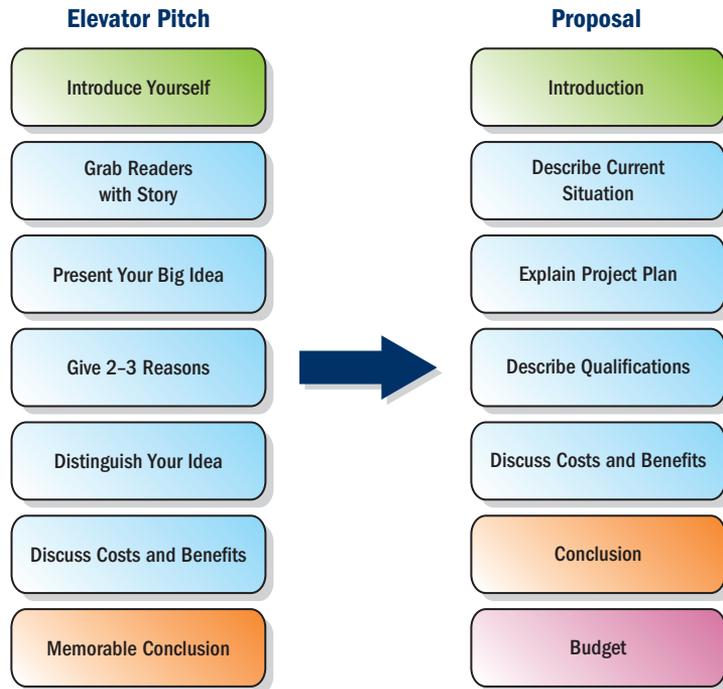
# Innovation, Genres, and the Technical Writing Process

**1.2**    **Recognize how genres in technical workplaces are used to innovate and turn new ideas into documents.**

Genres also help you be more creative. In the technical workplace, writing a document or developing a presentation is an innovative process. New ideas don't just happen. Instead, innovative people use genres to generate those new ideas and deliver them through effective documents, websites, podcasts, and presentations. This genre-centered process can be divided into five stages:

Stage 1: Researching and Planning

Stage 2: Organizing and Drafting

Stage 3: Improving the Style

Stage 4: Designing

Stage 5: Revising and Editing

**Figure 1.2** The Technical Writing Process

The technical writing process involves moving back and forth among several stages. Each stage is shaped by the genre of the document.
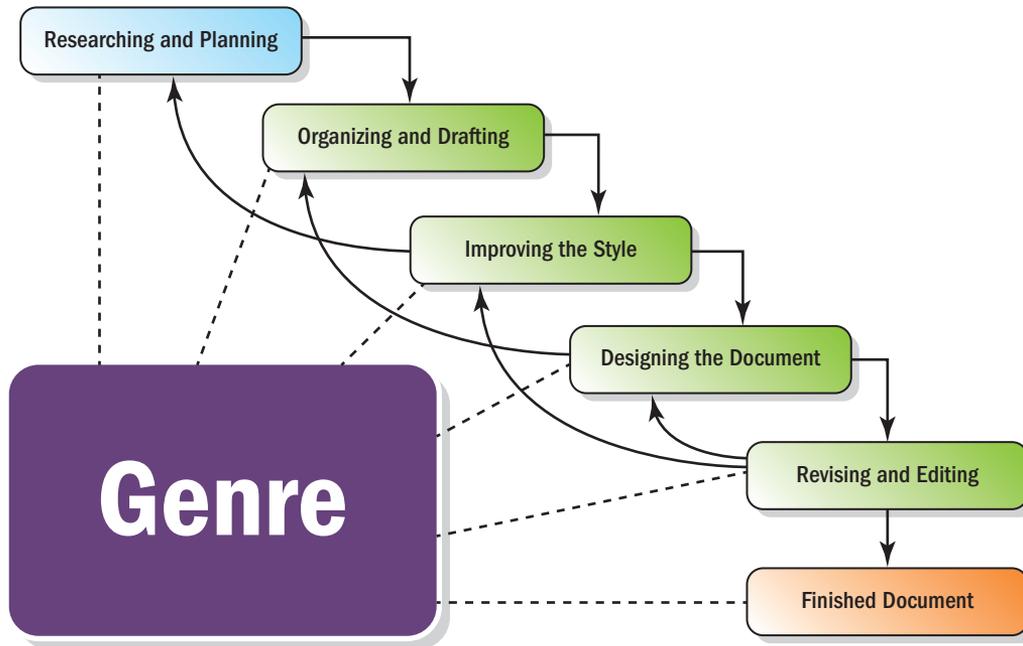


You don't need to follow these stages in lockstep. Instead, you should move back and forth among the stages as you work toward finishing the project (Figure 1.2).

Here is where genres can help you be more creative and entrepreneurial. As shown in Figure 1.2, the genre of your document guides you through each stage in your writing process. As you work on a project, the genre you are using will help you make good decisions about its content, organization, style, and design, as well as the most appropriate medium for presenting your ideas. Let's look at each stage more closely.

## Stage 1: Researching and Planning

Every project should start with solid research and good planning. When starting a new project, you first need to figure out what you and others already know about your topic and then use your creativity and resourcefulness to come up with a plan for achieving your goals.

**RESEARCH YOUR TOPIC**   In the technical workplace, people use two types of research to collect evidence:

> **Start-Up Research**—This kind of research allows you to develop a quick overview of your topic. You can begin your research by putting keywords

related to your topic into a search engine like Google, Bing, Baidu, or Yahoo. You can also find videos about your topic on YouTube, Vimeo, and Dailymotion. Jot down the key terms and big issues that keep popping up. Identify the major people involved and figure out what kinds of sources are available on your topic.

**Formal Research**—Formal research methodically answers a research question or hypothesis, using factual or data-based evidence from electronic, print, and empirical sources about your topic. While doing formal research, you should pay close attention to where and how evidence was acquired, while determining your sources' level of bias. You should also generate your own empirical evidence through observations, surveys, experiments, and interviews.

You will learn more about start-up and formal research in Chapter 15, "Researching in Technical Workplaces."

**DEFINE YOUR PURPOSE** Now that you know more about your topic, ask yourself, "What exactly do I want this project to achieve?" Here's an easy way to help you define your purpose: Finish the sentence, "The purpose of my [insert genre] is to . . . ." For example,

> The purpose of my report is to explore how underwater sonar is affecting whales and other marine wildlife.

> The purpose of my proposal is to pitch a location-based augmented reality game that lets people play Humans vs. Zombies simultaneously in the virtual and real world.

You might find it helpful to identify a specific action verb and then build your purpose statement around it. Here are some common action verbs that can be used as an anchor for your purpose statement.

| INFORMATIVE DOCUMENTS | PERSUASIVE DOCUMENTS |
|---|---|
| inform | persuade |
| describe | convince |
| define | influence |
| review | support |
| demonstrate | change |
| instruct | advocate |
| advise | recommend |
| announce | defend |
| explain | justify |
| notify | urge |

**DEVELOP A PROFILE OF YOUR READERS** You should also spend some time doing research on your readers so you can develop a *reader profile* that identifies their needs, values, and attitudes. Specifically, you will want to have answers to the following questions:

**Needs**—What kinds of information do your readers need to make a decision or take action? What kinds of products or services do they need to solve a problem or get something done?

**Values**—What outcomes, standards, or ideals do your readers consider most important? Specifically, what do they value above other things?

**Attitudes**—How do your readers feel about you, your company, and the topic you are writing about? Are they already leaning your way, or are they skeptical about what you are telling them?

Developing a reader profile will help you make better decisions about the kinds of information to include in your document or presentation. You will learn more about how to develop a reader profile in Chapter 2, "Profiling Your Readers."

**TAP INTO YOUR CREATIVE SIDE**   Creativity is a skill that can be learned; it's not something people are born with. You, too, can be a highly creative and innovative person. But, like anything else, learning to be creative takes some practice.

When you begin a project, start off with an activity that gets your creativity flowing. Some people like to use *concept mapping* to throw their ideas on a whiteboard, glass board, screen, or blank sheet of paper. Others prefer to use brainstorming lists where they list everything that comes to mind about a topic. Workplace teams often use rapid-fire brainstorming techniques to get ideas on the table for consideration.

One simple trick is to keep asking yourself, "What has changed recently about this topic that makes it new or interesting *right now*?" This question will help you approach the topic from a new angle or perspective, allowing you to see it from different and even competing perspectives.

The secret to being creative is giving yourself enough time to be creative. When you start a new project, you should set aside a block of time, at least an hour, to do some concept mapping, brainstorming, freewriting, storyboarding, or whatever gets you into a creative zone. You will learn more about being creative in Chapter 13, "Thinking Like an Entrepreneur."

**DEVISE YOUR STRATEGIC PLAN**   You will learn how to do strategic planning in Chapter 13, "Thinking Like an Entrepreneur." So, here is a quick overview. To create a strategic plan, you should do the following:

**Identify Your Top Rank Objective and Secondary Objectives**—Your *top rank objective* (TRO) is the ultimate outcome your project will strive to achieve. Your project's TRO will be similar to your purpose statement, though it is usually stated in more concrete terms. Your *secondary objectives* are the other goals (usually three to five items) that your project will also strive to achieve as you and your team pursue the TRO.

**Link**

To find more information about how entrepreneurs use creativity, refer to Chapter 13.

Being Creative Is a Process

Teams often use concept mapping to get their ideas out in the open where they can talk about them and explore the options available.



Drazen Zigic/Shutterstock

**Create a Task List**—Now, convert those secondary objectives into a list of tasks that will be completed by you or your team. This is your *task list* for the project. Each major and minor task will be assigned to a team member and given a completion date. That way, everyone knows who is doing what and when each part of the project will be completed.

**Create a Project Timeline**—The *project timeline* is an action plan or overview that lists the completion dates for your project's tasks. That way, you and your team can keep track of the project's progress and focus on meeting important deadlines.

## Stage 2: Organizing and Drafting

When you are finished doing research and strategic planning, you're ready to start organizing and drafting your document or presentation. At this stage, you are essentially doing two things at the same time:

**Choose a Genre to Organize the Content**—The genre will help you shape your ideas into patterns that will be familiar to your readers.

**Generate Your First Draft**—The genre will also help you generate the text you need by helping you weave together facts, examples, data, reasoning, and other evidence.

## Figure 1.3 A Sample Genre: Instructions

A genre follows a pattern that readers will find familiar. Readers would immediately recognize this document as a set of instructions and be able to use it.

**SOURCE:** Courtesy of Abong Inc.

The genre you choose will help you figure out what to do, because it works like a map that helps you organize and structure your ideas. You have a destination in mind (your purpose); the genre will help you figure out the possible pathways for getting to that destination. For example, the document shown in Figure 1.3 is easily recognizable as a set of instructions. The writers of these instructions used this specific genre to help them make good decisions about how to lead the readers from a starting place to a final destination.

Chapters 5 through 12 will teach you how to use the most common genres in technical workplaces.

## Stage 3: Improving the Style

More than ever, style is a major feature of today's entrepreneurial workplace. Good style will make your documents and presentations clear and persuasive, helping others understand your ideas while gaining their trust.