CHAPTER
5

Analyzing Your Audience and Purpose

DIGITAL STRATEGIST Jason Falls writes frequently about how companies can use social media to develop relationships with customers. What does he say is the key to using social media for business? Knowing your audience. The analytics report shown in Figure 5.1 provides basic information about the people who have visited a specific Facebook page in the previous four weeks: their gender, age, and geographic location. If you want more detailed information, you can purchase sophisticated tools and software that allow you to analyze the data

FIGURE 5.1   Analysis of Facebook Users
Information from Facebook, 2016: www.facebook.com.

on your own, or you can hire an expert to do it for you. Understanding your followers — your audience — can help you tailor your page to the people who are already visiting and broaden or adjust your content to reach more people.

Organizations of all sorts, not just businesses, analyze their audiences. Government agencies that want to appeal to the general public — to urge people to eat better, get vaccinated, or sign up for health insurance, to name just a few activities — start by analyzing their audiences to learn how to motivate them. Political campaigns analyze voters to determine the issues they want to see addressed. Charities such as the March of Dimes analyze their audiences to improve the effectiveness of their communications.

Understanding Audience and Purpose

Projects of all sizes and types succeed only if they are based on an accurate understanding of the needs and desires of their audiences and have a clear, focused purpose. Because the documents and other communication you produce in the workplace will, more often than not, form the foundations of these projects, they too will succeed only if they are based on an accurate understanding of your audience and have a clear purpose.

Although you might not realize it, you probably consider audience in your day-to-day communication. For example, when you tell your parents about a new job you've landed, you keep the discussion general and focus on the job details you know they care most about: its location, its salary and benefits, and your start date. But when you email a former internship supervisor with the same news, you discuss your upcoming duties and projects in more detail.

As you produce documents for this technical-communication course, you will of course consider your instructor's expectations, just as you do when you write anything for any other course. But keep in mind that your instructor in this course is also playing the role of the audience that you would be addressing if you had produced the document outside of this college course. Therefore, to a large extent your instructor will likely evaluate each of your course assignments on how effectively you've addressed the audience and achieved the purpose specified in the assignment.

Analyzing an audience means thinking about who your audience is, what they already know about your subject, how they feel about it, and how they are going to use the information you present. You analyze your audience as you plan your document so that it appeals to their interests and needs, is easy for them to understand, and motivates them to pay attention to your message and consider your recommendations.

The word *purpose* refers to what you want to accomplish with the document you are producing. Most often, your purpose is to explain to your audience how something occurs (how regenerative braking systems work in hybrid cars), how to carry out a task (how to set up a Skype connection), or why some situation is either good or bad (why the new county guidelines for water use will help or hurt your company). When your purpose is to explain why a situation is either

good or bad, you are trying to reinforce or change the audience's attitudes toward the situation and perhaps urge them to take action. As you will see, in many cases your technical communication will have multiple purposes.

Before you can start to think about writing about your *subject*, analyze your audience and purpose. Doing so will help you meet your readers' needs — and your own. For instance, you're an engineer working for a consulting company. One document to which you might contribute is a report to the city planning board about how building a housing development would affect the natural environment as well as the city's roads, schools, and sanitation infrastructure. That's the *subject* of the report. The *purpose* is to motivate the planning board to approve the project so that it can begin. How does the audience affect how you analyze your purpose? Think about who the board members are. If most of them are not engineers, you don't want to use specialized vocabulary and advanced engineering graphics and concepts. You don't want to dwell on the technical details. Rather, you want to use general vocabulary, graphics, and concepts. You want to focus on the issues the board members are concerned about. Would the development affect the environment negatively? If so, is the developer including a plan to offset that negative effect? Can the roads handle the extra traffic? Can the schools handle the extra kids? Will the city have to expand its police force? Its fire department? Its sewer system?

In other words, when you write to the planning board, you focus on topics they are most interested in, and you write the document so that it is easy for them to read and understand. If the project is approved and you need to communicate with other audiences, such as architects and contractors, you will have different purposes, and you will adjust your writing to meet each audience's needs.

What can go wrong when you don't analyze your audience? McDonald's Corporation found out when it printed takeout bags decorated with flags from around the world. Among them was the flag of Saudi Arabia, which contains scripture from the Koran. This was extremely offensive to Muslims, who consider it sacrilegious to throw out items bearing sacred scripture. As a result, McDonald's lost public credibility.

Throughout this chapter, the text will refer to your *reader* and your *document*. But all of the information refers as well to oral presentations, which are the subject of Chapter 21, as well as to nonprint documents, such as podcasts or videos.

Using an Audience Profile Sheet

As you read the discussions in this chapter about audience characteristics and techniques for learning about your audience, you might think about using an audience profile sheet: a form that prompts you to consider various audience characteristics as you plan your document. For example, the profile sheet can help you realize that you do not know much about your primary reader's work history and what that history can tell you about how to shape your document. Figure 5.2 shows an audience profile sheet that provides important information about one of a writer's most important readers.

FIGURE 5.2 Audience Profile Sheet

Assume that you work in the drafting department of an architectural engineering firm. You know that the company's computer-assisted design (CAD) software is out of date and that recent CAD technology would make it easier and faster for the draftspeople to do their work. You want to persuade your company to authorize buying a CAD workstation that costs about $4,000. Before getting started with your document, you fill out an audience profile sheet for your primary reader, Harry Becker, the manager of your company's Drafting and Design Department.

<table>
<tr><td colspan="2">**AUDIENCE PROFILE SHEET**</td></tr>
</table>

Reader's Name: Harry Becker

Reader's Job Title: Manager, Drafting and Design Department

Kind of Reader: Primary _X_ Secondary ___

Education: BS, Architectural Engineering, Northwestern, 1992. CAD/CAM Short Course, 1992; Motivating Your Employees Seminar, 1997; Writing on the Job Short Course, 2002

Professional Experience: Worked for two years in a small architecture firm. Started here 16 years ago as a draftsperson. Worked his way up to Assistant Manager, then Manager. Instrumental in the Wilson project, particularly in coordinating personnel and equipment.

Job Responsibilities: Supervises a staff of 12 draftspeople. Approves or denies all requests for capital expenditures over $2,000 coming from his department. Works with employees to help them make the best case for the purchase. After approving or denying the request, forwards it to Tina Buterbaugh, Manager, Finance Dept., who maintains all capital expenditure records.

Personal Characteristics: N/A

Personal Preferences: Likes straightforward documents, lots of evidence, clear structure. Dislikes complicated documents full of jargon.

Cultural Characteristics: Nothing of note.

Attitude Toward the Writer: No problems.

Attitude Toward the Subject: He understands and approves of my argument.

Expectations About the Subject: Expects to see a clear argument with financial data and detailed comparisons of available systems.

Expectations About the Document: Expects to see a report, with an executive summary, of about 10 pages.

Reasons for Reading the Document: To offer suggestions and eventually approve or deny the request.

Way of Reading the Document:

Skim it ___ Study it _X_ Read a portion of it ___ Which portion?

Modify it and submit it to another reader ___

Attempt to implement recommendations ___

Use it to perform a task or carry out a procedure ___

Use it to create another document ___

Other ___ Explain.

Reading Skill: Excellent

Reader's Physical Environment: N/A

You should modify this form to meet your own needs and those of your organization. For a printable version of Fig. 5.2, see the downloadable forms in LaunchPad.

If your document has several readers, you must decide whether to fill out only one sheet (for your most important reader) or several sheets. One technique is to fill out sheets for one or two of your most important readers and one for each major category of other readers. For instance, you could fill out one sheet for your primary reader, Harry Becker; one for managers in other areas of your company; and one for readers from outside your company.

When do you fill out an audience profile sheet? Although some writers like to do so at the start of the process as a way to prompt themselves to consider audience characteristics, others prefer to do so at the end of the process as a way to help themselves summarize what they have learned about their audience. Of course, you can start to fill out the sheet before you begin and then complete it or revise it at the end.

Determining the Important Characteristics of Your Audience

When you analyze the members of your audience, you are trying to learn what you can about their technical background and knowledge, their reasons for reading or listening to you, their attitudes and expectations, and how they will use the information you provide.

WHO ARE YOUR READERS?

For each of your most important readers, consider seven factors:

- **The reader's education.** Consider the person's degree as well as any formal education or training the person completed while on the job. Also keep in mind when the education and training occurred, since methods and practices can change over time.

  Knowing your reader's educational background helps you determine how much supporting material to provide, what level of vocabulary to use, what kind of sentence structure to use, what types of graphics to include, how long your document should be, and whether to provide such elements as a glossary or an executive summary.

- **The reader's professional experience.** A nurse with a decade of experience might have represented her hospital on a community committee to encourage citizens to give blood and might have contributed to the planning for the hospital's new delivery room. These experiences would have provided several areas of competence or expertise that you should consider as you plan your document.

- **The reader's job responsibility.** Consider the major job responsibility of your reader and how your document will help that person accomplish it. For example, if you are writing a feasibility study on ways to cool the air for a new office building and you know that your reader, an upper-level manager, oversees operating expenses, you should explain how you are estimating future utility costs.

- **The reader's reading skill.** Consider whether you should be writing at all or whether it would be better to use another medium, such as a video, an oral presentation, or a podcast. If you decide to write, consider whether your reader will be able to understand how to use the type of document you have selected, handle the level of detail you will present, and easily comprehend your graphics, sentence structure, and vocabulary.

- **The reader's cultural characteristics.** Understanding cultural characteristics can help you appeal to your reader's interests and avoid confusing or offending him or her. As discussed later in this chapter (pp. 96–103), cultural characteristics can affect virtually every aspect of a reader's comprehension of a document and perception of the writer.

- **The reader's personal characteristics.** Does your reader have any other personal characteristics that you should consider as you write and design your document? One important consideration is accessibility. For example, in your videos you may need to provide closed captioning to accommodate the hearing impaired, or in a diagram you may want to use not just various colors but also various shapes to accommodate those with deficient color vision.

- **The reader's personal preferences.** One person might hate to see the first-person pronoun *I* in technical documents. Another might find the word *interface* distracting when the writer isn't discussing computers. Does your reader prefer one type of application (such as blogs or memos) over another? Try to accommodate as many of your reader's preferences as you can.

WHY IS YOUR AUDIENCE READING YOUR DOCUMENT?

For each of your most important readers, consider why he or she will read your document. Some writers find it helpful to classify readers into categories—such as primary, secondary, and tertiary—that identify each reader's distance from the writer. Here are some common descriptions of these three categories of readers:

- A *primary audience* consists of people to whom the communication is directed; they may be inside or outside the writer's own organization. For example, they might include the writer's team members, who assisted in carrying out an analysis of a new server configuration for the IT department; the writer's supervisor, who reads the analysis to decide whether to authorize its main recommendation to adopt the new configuration; and an executive, who reads it to determine how high a priority the server project should have on a list of projects to fund. If you were producing text or videos for the Hewlett-Packard website, your primary audience would include customers, vendors, and suppliers who visit the site.

- A *secondary audience* consists of people more distant from the writer who need to stay aware of developments in the organization but who will not

directly act on or respond to the document. Examples include managers of other departments, who are not directly involved in the project but who need to be aware of its broad outlines, and representatives from the marketing and legal departments, who need to check that the document conforms to the company's standards and practices and with relevant legal standards, such as antidiscrimination or intellectual-property laws. External readers who are part of a secondary audience might include readers of your white paper who are not interested in buying your product but who need to stay current with the new products in the field.

- A *tertiary audience* consists of people even further removed from the writer who might take an interest in the subject of the report. Examples include interest groups (such as environmental groups or other advocacy organizations); local, state, and federal government officials; and, if the report is made public, the general public. Even if the report is not intended to be distributed outside the organization, given today's climate of information access and the ease with which documents can be distributed, chances are good that it will be made available to outsiders.

Regardless of whether you classify your readers using a scheme such as this, think hard about why the most important audience members will read your document. Don't be content to list only one purpose. Your direct supervisor, for example, might have several purposes that you want to keep in mind:

- to learn what you have accomplished in the project
- to determine whether to approve any recommendations you present
- to determine whether to assign you to a follow-up team that will work on the next stage of the project
- to determine how to evaluate your job performance next month

You will use all of this information about your audience as you determine the ways it affects how you will write your document or plan your presentation. In the meantime, write the information down so that you can refer to it later.

WHAT ARE YOUR READERS' ATTITUDES AND EXPECTATIONS?

In thinking about the attitudes and expectations of each of your most important readers, consider these three factors:

- **Your reader's attitude toward you.** Most people will like you because you are hardworking, intelligent, and cooperative. Some won't. If a reader's animosity toward you is irrational or unrelated to the current project, try to earn that person's respect and trust by meeting him or her on some neutral ground, perhaps by discussing other, less volatile projects or some shared interest, such as gardening, skiing, or science-fiction novels.

- **Your reader's attitude toward the subject.** If possible, discuss the subject thoroughly with your primary readers to determine whether they are

TABLE 5.1 Responding to Different Attitudes

IF . . .	TRY THIS . . .
Your reader is neutral or positively inclined toward your subject	Write the document so that it responds to the reader's needs; make sure that vocabulary, level of detail, organization, and style are appropriate.
Your reader is hostile to the subject or to your approach to it	• Find out what the objections are, and then answer them directly. Explain why the objections are not valid or are less important than the benefits. For example, you want to hire an online-community manager to coordinate your company's social-media efforts, but you know that one of your primary readers won't like this idea. Try to find out why. Does this person think social media are a fad? That they are irrelevant and can't help your company? If you understand the objections, you can explain your position more effectively.
	• Organize the document so that your recommendation follows your explanation of the benefits. This strategy encourages the hostile reader to understand your argument rather than to reject it out of hand.
	• Avoid describing the subject as a dispute. Seek areas of agreement and concede points. Avoid trying to persuade readers overtly; people don't like to be persuaded, because it threatens their egos. Instead, suggest that there are new facts that need to be considered. People are more likely to change their minds when they realize this.
Your reader was instrumental in creating the policy or procedure that you are arguing is ineffective	In discussing the present system's shortcomings, be especially careful if you risk offending one of your readers. When you address such an audience, don't write, "The present system for logging customer orders is completely ineffective." Instead, write, "While the present system has worked well for many years, new developments in electronic processing of orders might enable us to improve logging speed and reduce errors substantially."

positive, neutral, or negative toward it. Table 5.1 provides some basic strategies for responding to different attitudes.

• **Your reader's expectations about the document.** Think about how your readers expect to see the information treated in terms of scope, organizational pattern, and amount of detail. Consider, too, the application. If your reader expects to see the information presented as a memo, use a memo unless some other format would clearly work better.

HOW WILL YOUR READERS USE YOUR DOCUMENT?

In thinking about how your reader will use your document, consider the following three factors:

• **The way your reader will read your document.** Will he or she
— file it?
— skim it?
— read only a portion of it?
— study it carefully?

— modify it and submit it to another reader?
— try to implement its recommendations?
— use it to perform a test or carry out a procedure?
— use it as a source document for another document?

If only 1 of your 15 readers will study the document for details such as specifications, you don't want the other 14 people to have to wade through them. Therefore, put this information in an appendix. If you know that your reader wants to use your status report as raw material for a report to a higher-level reader, try to write it so that it can be reused with little rewriting. Make sure the reader has access to the electronic file so that passages can be merged into the new document without needing to be retyped.

• **The physical environment in which your reader will read your document.** Often, technical documents are formatted in a special way or constructed of special materials to improve their effectiveness. Documents used in poorly lit places might be printed in larger-than-normal type. If documents are to be used on ships, on aircraft, or in garages, where they might be exposed to wind, water, and grease, you might have to use special waterproof bindings, oil-resistant or laminated paper, color coding, and unusual-sized paper.

• **The digital environment in which your reader will read your document.** If you are writing a document that will be viewed online, consider the platforms on which it will be accessed. Will readers be viewing it on mobile devices? Desktop computers? Both? How can you design the document so that it is easy to access—easy to get to, to see, to navigate, and to use—in these environments?

Techniques for Learning About Your Audience

To learn about your audience, you figure out what you do and do not already know, interview people, read about them, and read documents they have written. Of course, you cannot perform extensive research about every possible reader of every document you write, but you should learn what you can about your most important readers of your most important documents.

DETERMINING WHAT YOU ALREADY KNOW ABOUT YOUR AUDIENCE

Start by asking yourself what you already know about your most important readers: their demographics (such as age, education, and job responsibilities); their expectations and attitudes toward you and the subject; and the ways they will use your document. Then list the important factors you *don't* know. That is where you will concentrate your energies. The audience profile sheet shown in Figure 5.2 (p. 88) can help you identify gaps in your knowledge about your readers.

INTERVIEWING PEOPLE

For your most important readers, make a list of people who you think have known them and their work the longest or who are closest to them on the job. These people might include those who joined the organization at about the same time your readers did; people who work in the same department as your readers; and people at other organizations who have collaborated with your readers.

Prepare a few interview questions that are likely to elicit information about your readers and their preferences and needs. For instance, you are writing a proposal for a new project at work. You want to present return-on-investment calculations to show how long it will take the company to recoup what it invested, but you're not sure how much detail to present because you don't know whether an important primary reader has a background in this aspect of accounting. Several of this reader's colleagues will know. Interview them in person, on the phone, or by email.

READING ABOUT YOUR AUDIENCE ONLINE

If you are writing for people in your own organization, start your research there. If your primary reader is a high-level manager or executive, search the organization's website or internal social network. Sections such as "About Us," "About the Company," and "Information for Investors" often contain a wealth of biographical information, as well as links to other sources.

In addition, use a search engine to look for information on the Internet. You are likely to find newspaper and magazine articles, industry directories, websites, and blog posts about your audience.

SEARCHING SOCIAL MEDIA FOR DOCUMENTS YOUR AUDIENCE HAS WRITTEN

Documents your readers have written can tell you a lot about what they like to see with respect to design, level of detail, organization and development, style, and vocabulary. If your primary audience consists of those within your organization, start searching for documents they've produced within the company. Then broaden the search to the Internet.

Although some of your readers might have written books or articles, many or even most of them might be active users of social media, such as Facebook. Pay particular attention to LinkedIn, a networking site for professionals. LinkedIn profiles are particularly useful because they include a person's current and former positions and education, as well as recommendations from other professionals. Figure 5.3 is an excerpt from the LinkedIn entry written by Mike Markley, a technical communicator at Aquent.

Markley begins his LinkedIn profile with this summary:

> For over twenty years, I have worked as a consultant, practitioner, project manager, university instructor, and senior manager in the fields of technical communication

Mike Markley 3rd

Professional and Technical Communication Leader and Educator | Organizational Capacity Builder | Entrepreneur

Boise, Idaho | Writing and Editing

Current	Aquent, Boise State University, Markley, LLC
Previous	Sakson & Taylor, Inc., Lionbridge Technologies, Inc.
Education	Boise State University

Send Mike InMail ▼

500+ connections

https://www.linkedin.com/in/mikemarkley   Contact Info

FIGURE 5.3   A LinkedIn Bio
Reprinted by permission of Mike Markley.

and marketing communication. I have managed large teams; recruited, trained, and supervised professionals at all levels; and directed strategy for large consulting engagements. I have a passion for projects that expand the capacity of organizations and communities, provide opportunities for youth, create enterprise, and increase quality of life.

> This summary is followed by a much more detailed description of Mike Markley's professional history and education. Even this brief summary suggests that Markley has extensive experience.

This paragraph suggests that Markley has an extensive background, not only in technical communication but also in various levels of management. You can expect that he knows project management, budgeting, and human resources. He understands both how to make documents and how to lead teams that make documents. The summary also indicates the types of projects that interest him most as a manager and consultant. You can guess that he has a strong interest in working with community organizations.

A typical LinkedIn entry directs you to a person's websites and blogs and to the LinkedIn groups to which the person belongs. You can also see the person's *connections* (his or her personal network). And if you are a LinkedIn member, you can see whether you and the person share any connections.

In addition, the person you are researching might have a social-media account on which he or she posts about matters related to his or her job. Reading a person's recent posts will give you a good idea of his or her job responsibilities and professionalism, as shown in Figure 5.4.

ANALYZING SOCIAL-MEDIA DATA

Private companies and public agencies alike analyze social media to better understand their audiences. Private companies use these data primarily to determine who their customers are, how they feel about various marketing messages, and how these messages influence their buying behavior. Public agencies use these data to help them refine their own messages.

This excerpt from Mike Markley's tweet history shows a variety of types of posts: a tweet about a course taught by his company, another about a job opening at his company, and a rare personal tweet, urging his followers to donate to community radio. Also in Markley's history are tweets about news items and thank-you tweets to speakers at conferences.

Mike Markley @mmboise · 11 Dec 2013
Interested in Responsive Web Design? Check out this excerpt from our RWD course and learn something about Responsive…bit.ly/19ihUEb

Mike Markley @mmboise · 8 Jul 2013
We're looking for a project manager in our Boise office. lnkd.in/7PQyQY

Mike Markley @mmboise · 29 Apr 2013
Matching gift opp on the @RadioBoise radiothon…donate from 12-1p today…@bethmarkley will match it (up to $500)…bit.ly/16du2Vu

FIGURE 5.4 **Excerpt from a List of Tweets**
Reprinted by permission of Mike Markley.

For instance, the Centers for Disease Control and Prevention (CDC), a U.S. federal agency, analyzes social media to improve the quality and effectiveness of its public health information. The agency starts by classifying people into various categories by age (such as tweens, teens, baby boomers) and determining which media each group uses most. On the basis of these data, the agency designs and implements health campaigns on such topics as cancer screening, HIV/AIDS prevention and treatment, vaccines, and smoking cessation.

Then the CDC monitors social media to determine how many people are seeing the agency's information, how they are engaging with the information (whether they share the information or follow links to other sites), and whether the information is changing their behavior (Centers for Disease Control, 2013). Among the data the CDC analyzes each month are the following:

- the number of visitors to each of the CDC web pages
- the most popular keywords searched on CDC pages as well as on selected other sites and popular search engines such as Google
- the numbers of Facebook fans and Twitter followers
- the number of click-throughs to CDC web pages from Facebook and Twitter

On the basis of these data, the CDC adjusts its social-media campaigns to use its campaign resources most effectively.

Communicating Across Cultures

Our society and our workforce are becoming increasingly diverse, both culturally and linguistically, and businesses are exporting more goods and services. As a result, professionals often communicate with individuals from different cultural backgrounds, many of whom are nonnative speakers of English, both in the United States and abroad, and with speakers of other languages who read texts translated from English into their own languages.

The economy of the United States depends on international trade. In 2015, the United States exported over $2.5 trillion of goods and services (U.S. Census Bureau, 2016). In addition, the population of the United States itself is truly multicultural. Each year, the United States admits about a million immigrants (U.S. Department of Homeland Security, 2016).

Effective communication requires an understanding of culture: the beliefs, attitudes, and values that motivate people's behavior.

UNDERSTANDING THE CULTURAL VARIABLES "ON THE SURFACE"

Communicating effectively with people from another culture requires understanding a number of cultural variables that lie on the surface. You need to know, first, what language or languages to use. You also need to be aware of political, social, religious, and economic factors that can affect how readers will interpret your documents. Understanding these factors is not an exact science, but it does require that you learn as much as you can about the culture of those you are addressing.

A brief example: Microsoft's search engine had trouble catching on in China, in part because of its name—*Bing*—which means "sickness" in Chinese (Yan, 2015).

In *International Technical Communication*, Nancy L. Hoft (1995) describes seven major categories of cultural variables that lie on the surface:

- **Political.** This category relates to trade issues and legal issues (for example, some countries forbid imports of certain foods or chemicals) and laws about intellectual property, product safety, and liability.

- **Economic.** A country's level of economic development is a critical factor. In many developing countries, most people cannot afford devices for accessing the Internet.

- **Social.** This category covers many issues, including gender roles and business customs. In most Western cultures, women play a much greater role in the workplace than they do in many Middle Eastern and Asian cultures. Business customs—including forms of greeting, business dress, and gift giving—vary from culture to culture.

- **Religious.** Religious differences can affect diet, attitudes toward individual colors, styles of dress, holidays, and hours of business.

- **Educational.** In the United States, 40 million people are only marginally literate. In other countries, the rate can be much higher or much lower. In some cultures, classroom learning with a teacher is considered the most acceptable way to study; in others, people tend to study on their own.

- **Technological.** If you sell high-tech products, you need to know whether your readers have the hardware, the software, and the technological infrastructure to use them.
- **Linguistic.** In some countries, English is taught to all children starting in grade school; in other countries, English is seen as a threat to the national language. In many cultures, the orientation of text on a page and in a book is not from left to right.

In addition to these basic differences, you need to understand dozens of other factors. For instance, the United States is the only major country that has not adopted the metric system. Whereas Americans use periods to separate whole numbers from decimals, and commas to separate thousands from hundreds, much of the rest of the world reverses this usage.

UNITED STATES	3,425.6
EUROPE	3.425,6

Also, in the United States, the format for writing out and abbreviating dates is different from that of most other cultures:

UNITED STATES	March 2, 2018	3/2/18
EUROPE	2 March 2018	2/3/18
JAPAN	2018 March 2	18/3/2

These cultural variables are important in obvious ways: for example, you can't send an electronic file to a person who doesn't have access to the Internet. However, there is another set of cultural characteristics—those beneath the surface—that you also need to understand.

UNDERSTANDING THE CULTURAL VARIABLES "BENEATH THE SURFACE"

Scholars of multicultural communication have identified cultural variables that are less obvious than those discussed in the previous section but just as important. Writing scholars Elizabeth Tebeaux and Linda Driskill (1999) explain five key variables and how they are reflected in technical communication.

- **Focus on individuals or groups.** Some cultures, especially in the West, value individuals more than groups. The typical Western employee doesn't see his or her identity as being defined by the organization for which he or she works. Other cultures, particularly those in Asia, value groups more than individuals. The typical employee in such cultures sees himself or herself more as a representative of the organization than as an individual who happens to work there.

  Communication in individualistic cultures focuses on the writer's and reader's needs rather than on those of their organizations. Writers use the pronoun *I* rather than *we*. Letters are addressed to the principal reader and signed by the writer.

Communication in group-oriented cultures focuses on the organization's needs by emphasizing the benefits to be gained through a cooperative relationship between organizations. Writers emphasize the relationship between the writer and the reader rather than the specific technical details of the message. Writers use *we* rather than *I*. They might address letters to "Dear Sir" and use their organization's name, not their own, in the complimentary close.

- **Distance between business life and private life.** In some cultures, especially in the West, many people separate their business lives from their private lives. When the workday ends, they are free to go home and spend their time as they wish. In other cultures, particularly in Asia, people see a much smaller distance between their business lives and their private lives. Even after the day ends, they still see themselves as employees of their organization.

  Cultures that value individualism tend to see a great distance between business and personal lives. In these cultures, communication focuses on technical details, with relatively little reference to personal information about the writer or the reader.

  Cultures that are group oriented tend to see a smaller distance between business life and private life. In these cultures, communication contains much more personal information—about the reader's family and health—and more information about general topics—for example, the weather and the seasons. The goal is to build a formal relationship between the two organizations. Both the writer and the reader are, in effect, on call after business hours and are likely to transact business during long social activities such as elaborate dinners or golf games.

- **Distance between ranks.** In some cultures, the distance in power and authority between workers within an organization is small. This small distance is reflected in a close working relationship between supervisors and their subordinates. In other cultures, the distance in power and authority between workers within an organization is great. Supervisors do not consult with their subordinates. Subordinates use formal names and titles—"Mr. Smith," "Dr. Jones"—when addressing people of higher rank.

  Individualistic cultures that separate business and private lives tend to have a smaller distance between ranks. In these cultures, communication is generally less formal. Informal documents (emails and memos) are appropriate, and writers often sign their documents with their first names only. Keep in mind, however, that many people in these cultures resent what they view as inappropriate informality, such as letters or emails addressed "Dear Jim" when they have never met the writer.

  In cultures with a great distance between ranks, communication is generally formal. Writers tend to use their full professional titles and to prefer formal documents (such as letters) to informal ones (such as memos and emails). Writers make sure their documents are addressed

to the appropriate person and contain the formal design elements (such as title pages and letters of transmittal) that signal their respect for their readers.

- **Need for details to be spelled out.** Some cultures value full, complete communication. A written text must be comprehensive, containing all the information a reader needs to understand it. These cultures are called *low-context cultures*. Other cultures value documents in which some of the details are merely implied. This implicit information is communicated through other forms of communication that draw on the personal relationship between the reader and the writer, as well as social and business norms of the culture. These cultures are called *high-context cultures*.

  Low-context cultures tend to be individualistic; high-context cultures tend to be group oriented. In low-context cultures, writers spell out all the details. Documents are like contracts in that they explain procedures in great detail and provide specific information that indicates the rights and responsibilities of both the writer and the readers. In high-context cultures, writers tend to omit information that they consider obvious because they don't want to insult the reader. For example, a manual written for people in a high-context culture might not explain why a cell-phone battery needs to be charged because everyone already knows why.

- **Attitudes toward uncertainty.** In some cultures, people are comfortable with uncertainty. They communicate less formally and rely less on written policies. In many cases, they rely more on a clear set of guiding principles, as communicated in a code of conduct or a mission statement. In other cultures, people are uncomfortable with uncertainty. Businesses are structured formally, and employees use explicit procedures for communicating.

  In cultures that tolerate uncertainty, written communication tends to be less detailed. Oral communication is used to convey more of the information that is vital to the relationship between the writer and the readers. In cultures that value certainty, communication tends to be detailed. Policies are lengthy and specific, and forms are used extensively. Roles are firmly defined, and there is a wide distance between ranks.

As you consider this set of cultural variables, keep four points in mind:

- **Each variable represents a spectrum of attitudes.** Terms such as *high-context* and *low-context*, for instance, represent the opposite end points on a scale. Most cultures occupy a middle ground.

- **The variables do not line up in a clear pattern.** Although the variables sometimes correlate—for example, low-context cultures tend to be individualistic—in any one culture, the variables do not form a consistent pattern. For example, the dominant culture in the United States is highly individualistic rather than group oriented but only about midway along the scale in terms of tolerance of uncertainty.

- **Different organizations within the same culture can vary greatly.** For example, one software company in Germany might have a management style that does not tolerate uncertainty, whereas another software company in that country might tolerate a lot of uncertainty.

- **An organization's cultural attitudes are fluid, not static.** How an organization operates is determined not only by the dominant culture but also by its own people. As new people join an organization, its culture changes. The IBM of 2020 is not the IBM of 2000.

For you as a communicator, this set of variables therefore offers no answers. Instead, it offers a set of questions. You cannot know in advance the attitudes of the people in an organization. You have to interact with them for a long time before you can reach even tentative conclusions. The value of being aware of the variables is that they can help you study the communication from people in that organization and become more aware of underlying values that affect how they will interpret your documents.

CONSIDERING CULTURAL VARIABLES AS YOU WRITE

The challenge of communicating effectively with a person from another culture is that you are communicating with a person, not a culture. You cannot be sure which cultures have influenced that person (Lovitt, 1999). For example, a 50-year-old Japanese-born manager at the computer manufacturer Fujitsu in Japan has been shaped by the Japanese culture, but he also has been influenced by the culture of his company and of the Japanese computer industry in general. Because he works on an export product, it is also likely that he has traveled extensively outside of Japan and has absorbed influences from other cultures.

A further complication is that when you communicate with a person from another culture, to that person you are from another culture, and you cannot know how much that person is trying to accommodate your cultural patterns. As writing scholar Arthur H. Bell (1992) points out, the communication between the two of you is carried out in a third, hybrid culture. When you write to a large audience, the complications increase. A group of managers at Fujitsu represents a far more complex mix of cultural influences than one manager at Fujitsu.

No brief discussion of cultural variables can answer questions about how to write for a particular multicultural audience. You need to study your readers' culture and, as you plan your document, seek assistance from someone native to the culture who can help you avoid blunders that might confuse or offend your readers.

Start by reading some of the basic guides to communicating with people from other cultures, and then study guides to the particular culture you are investigating. In addition, numerous sites on the Internet provide useful guidelines that can help you write to people from another culture. If possible, study documents written by people in your audience. If you don't have

For books and other resources about writing to people from other cultures, see the Selected Bibliography, p. 698.

access to these, try to locate documents written in English by people from the culture you are interested in.

Figures 5.5 and 5.6 show excerpts from documents that provide useful glimpses into cultural variables. Figure 5.5 is part of a management-philosophy statement from a Japanese electronics company. Figure 5.6, from a training manual used by Indian Railways, describes a medical exam that prospective applicants are required to take.

Notice how the writers describe the company philosophy in terms of ever-expanding circles: from employees to society to humankind. This philosophy attempts to relate a fulfilling workplace environment to the "pursuit of mental riches as a human being."

The circle metaphor continues with the reference to how the company contributes to general welfare not only by creating "wonderful products" but also by paying taxes to support the society that enables the company to continue to flourish. This interdependence of the individual and society — and a balanced life of work and recreation — is deeply ingrained in many Asian cultures.

The Management Rationale of the Kyocera Group is: "To provide opportunities for the material and intellectual growth of all our employees, and through our joint efforts, contribute to the advancement of society and humankind." The "material and intellectual growth" that we aim for includes the pursuit of economic stability, and entails the pursuit of mental riches as a human being, in the shape of life with purpose and job satisfaction through self-fulfillment in the workplace.

Additionally, the steady refinement of our technology allows us to provide the world with wonderful products one after another, and thereby contribute to the advancement of science and technology. At the same time, by steadily raising profits as a company we aim to contribute to the improvement of common welfare, through increased tax payments and other means. The guidelines for action in pursuing the Management Rationale are set out in the Kyocera Philosophy. As a state of mind for leading wonderful lives, we are striving day by day to practice the Kyocera Philosophy.

FIGURE 5.5 Statement of Management Philosophy by a Japanese Electronics Company

Source: Kyocera Group, 2013: http://global.kyocera.com/ecology/philosophy.html.

The passage sounds as if it were written a hundred years ago, full of complicated sentences and formal vocabulary. The writing style is closer to that of the British (who colonized India) than that of the United States.

However, the explanation of why the exam is used is particularly candid: to save the government from having to support employees who become ill and therefore cannot perform the tasks for which they were hired.

The wording of this note, which follows a table showing the minimum height requirements for male and female applicants, would likely be considered offensive in most cultures. In India, a culture made of many ethnic groups and with a rigid caste system, most readers would not be offended.

501. Introduction: (1) The standards of physical fitness to be adopted should make due allowance for the age and length of service, if any, of the candidate concerned.

(2) No person will be deemed qualified for admission to the public service who shall not satisfy the Government, or the appointing authority, as the case may be, that he has no disease, constitutional affliction or bodily infirmity unfitting him, or likely to unfit him for that service.

(3) It should be understood that the question of fitness involves the future as well as the present and that one of the main objectives of medical examination is to secure continuous effective service, and in the case of candidates for permanent appointment, to prevent early pension or payment in case of premature death.

...

Note: The minimum height prescribed can be relaxed in case of candidates belonging to races such as Gorkhas, Garhwalis, Assamese, Nagaland tribal, whose average height is distinctly lower.

FIGURE 5.6 Statement from an Indian Railways Training Manual

Information from Indian Railways, 2000: www.indianrailways.gov.in/railwayboard/uploads/codesmanual/MMVol-I/Chapter5.pdf.

◢ **GUIDELINES** Writing for Readers from Other Cultures

The following eight suggestions will help you communicate more effectively with multicultural readers.

▶ **Limit your vocabulary.** Every word should have only one meaning, as called for in Simplified English and in other basic-English languages.

▶ **Keep sentences short.** There is no magic number, but try for an average sentence length of no more than 20 words.

▶ **Define abbreviations and acronyms in a glossary.** Don't assume that your readers know what a GFI (ground fault interrupter) is, because the abbreviation is derived from English vocabulary and word order.

▶ **Avoid jargon unless you know your readers are familiar with it.** For instance, your readers might not know what a graphical user interface is.

▶ **Avoid idioms and slang.** These terms are culture specific. If you tell your Japanese readers that your company plans to put on a "full-court press," most likely they will be confused.

▶ **Use the active voice whenever possible.** The active voice is easier for nonnative speakers of English to understand than the passive voice.

▶ **Be careful with graphics.** The trash-can icon on the Macintosh computer does not translate well, because trash cans might have different shapes and be made of different materials in other countries.

▶ **Be sure someone from the target culture reviews your document.** Even if you have had help in planning the document, have it reviewed before you publish and distribute it.

For a discussion of Simplified English, see Ch. 10, p. 241.

For more about voice, see Ch. 10, p. 229.

For more about graphics, see Ch. 12, p. 331.

USING GRAPHICS AND DESIGN FOR MULTICULTURAL READERS

One of the challenges of writing to people from another culture is that they are likely to be nonnative speakers of English. One way to overcome the language barrier is to use effective graphics and appropriate document design.

However, the most appropriate graphics and design can differ from culture to culture. Business letters written in Australia use a different size paper and a different format than those in the United States. An icon for a file folder in a software program created in the United States could confuse European readers, who use file folders of a different size and shape (Bosley, 1999). A series of graphics arranged left to right could confuse readers from the Middle East, who read from right to left. For this reason, you should study samples of documents written by people from the culture you are addressing to learn the important differences.

For more about design for multicultural readers, see Ch. 11, p. 284. For more about graphics for international readers, see Ch. 12, p. 331.

DOCUMENT ANALYSIS ACTIVITY

Examining Cultural Variables in a Business Letter

These two versions of the same business letter were written by a sales manager for an American computer company. The first letter was addressed to a potential customer in the United States; the second version was addressed to a potential customer in Japan. The questions in the margin ask you to think about how cultural variables affect the nature of the evidence, the structure of the letters, and their tone (see pp. 96–101).

Server Solutions
Cincinnati, OH 46539

Nadine Meyer
Director of Marketing

July 3, 2017

Mr. Philip Henryson, Director of Purchasing
Allied Manufacturing
1321 Industrial Boulevard
Boise, ID 83756

1 Dear Mr. Henryson:

Thank you for your inquiry about our PowerServer servers. I'm happy to answer your questions.

The most popular configuration is our PowerServer 3000. This model is based on the Intel® Xeon ES-4600 processor, ServerSure High-End UltraLite chipset with quadpeer PCI architecture, and embedded RAID. The system comes with our InstallIt system-management CD, which lets you install the server and monitor and manage your network with a simple graphical interface. With six PCI slots, the PowerServer 3000 is equipped with redundant cooling as well as redundant power, and storage expandability to 1.0TB. I'm taking the liberty of enclosing the brochure for this system to fill you in on the technical details.

The PowerServer 3000 has performed extremely well on a number of industry benchmark tests. I'm including with this letter copies of feature articles on the system from *PC World*, *CIO*, and *DigiTimes*.

It would be a pleasure for me to arrange for an on-site demo at your convenience. I will phone you on Monday to see what dates would be best for you. In the meantime, please do not hesitate to get in touch with me directly if you have any questions about the PowerServer line.

I look forward to talking with you next week.

Sincerely,

Nadine Meyer

Nadine Meyer
Director of Marketing

Attachments:
  "PowerServer 3000 Facts at a Glance"
  "Another Winner from Server Solutions"
  "Mid-Range Servers for 2017"
  "Four New Dual-Processor Workhorses"

Examining Cultural Variables in a Business Letter *(continued)*

Server Solutions
Cincinnati, OH 46539

Nadine Meyer
Director of Marketing

Mr. Kato Kirisawa, Director of Purchasing
Allied Manufacturing
3-7-32 Kita Urawa
Saitama City, Saitama Pref. 336-0002
Japan

1 Dear Sir:

2 It is my sincere hope that you and your loved ones are healthy and enjoying the pleasures of summer. Here in the American Midwest, the warm rays of the summer sun are accompanied by the sounds of happy children playing in the neighborhood swimming pools. I trust that the same pleasant sounds greet you in Saitama City.

3 Your inquiry about our PowerServer 3000 suggests that your company is growing. Allied Manufacturing has earned a reputation in Japan and all of Asia for a wide range of products manufactured to the most demanding standards of quality. We are not surprised that your company requires new servers that can be expanded to provide fast service for more and more clients.

4 For more than 20 years, Server Solutions has had the great honor of manufacturing the finest computer servers to meet the needs of our valued customers all over the world. We use only the finest materials and most innovative techniques to ensure that our customers receive the highest-quality, uninterrupted service that they have come to expect from us.

5 One of my great pleasures is to talk with esteemed representatives such as yourself about how Server Solutions can help them meet their needs for the most advanced servers. I would be most gratified if our two companies could enter into an agreement that would be of mutual benefit.

Sincerely,

Nadine Meyer

Nadine Meyer
Director of Marketing

Attachments:
  "PowerServer 3000 Facts at a Glance"
  "Another Winner from Server Solutions"
  "Mid-Range Servers for 2017"
  "Four New Dual-Processor Workhorses"

2017 July 3

1. How does the difference in the salutations (the "Dear…" part of the letter) reflect a cultural difference?

2. Does the first paragraph of the second letter have any function beyond delaying the discussion of business?

3. What is the point of telling Mr. Kirisawa about his own company? How does this paragraph help the writer introduce her own company's products?

4. To a reader from the United States, the third paragraph of the second letter would probably seem thin. What aspect of Japanese culture makes it effective in the context of this letter?

5. Why doesn't the writer make a more explicit sales pitch at the end of the second letter?

Applying What You Have Learned About Your Audience

You want to use what you know about your audience to tailor your communication to their needs and preferences. Obviously, if your most important reader does not understand the details of DRAM technology, you cannot use the concepts, vocabulary, and types of graphics used in that field. If she uses one-page summaries at the beginning of her documents, decide whether they will work for your document. If your primary reader's paragraphs always start with clear topic sentences, yours should, too.

The samples of technical communication shown in Figure 5.7 illustrate some of the ways writers have applied what they know about their audiences in text and graphics.

ETHICS NOTE

MEETING YOUR READERS' NEEDS RESPONSIBLY

A major theme of this chapter is that effective technical communication meets your readers' needs. What this theme means is that as you plan, draft, revise, and edit, you should always be thinking of who your readers are, why they will read your document, and how they will read the document. For example, if your readers include many nonnative speakers of English, you will adjust your vocabulary, sentence structure, and other textual elements so that readers can understand your document easily. If your readers will be accessing the document on a mobile device, you will ensure that the design is optimized for their screen

Meeting your readers' needs does *not* mean writing a misleading or inaccurate document. If your readers want you to slant the information, omit crucial data, or downplay bad news, they are asking you to act unethically. You should not do so. For more information on ethics, see Chapter 2.
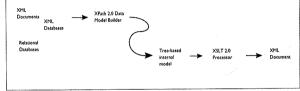
Writing for Multiple Audiences

Many documents are addressed to more than one reader. Often, an audience consists of people with widely different backgrounds, needs, and attitudes.

If you think your document will have a number of readers, consider making it *modular*: break it up into components addressed to different readers. A modular report might contain an executive summary for managers who don't have the time, knowledge, or desire to read the whole report. It might also contain a full technical discussion for expert readers, an implementation schedule for technicians, and a financial plan in an appendix for budget officers. Figure 5.8 shows the table of contents for a modular report.

What is XSLT?

XSL Transformations (XSLT 2.0) is a language for transforming XML documents into other XML documents, text documents or HTML documents. You might want to format a chapter of a book using XSL-FO, or you might want to take a database query and format it as HTML.

With XSLT 2.0, processors can operate not only on XML but on anything that can be made to look like XML: relational database tables, geographical information systems, file systems, anything from which your XSLT processor can build an XDM instance. In some cases an XSLT 2.0 processor might also be able to work directly from a database of XDM instances. This ability to operate on multiple input files in multiple formats, and to treat them all as if they were XML files, is very powerful. It is shared with XQuery, and with anything else using XPath 2.0:

a. Document presenting technical information to an expert audience
Information from World Wide Web Consortium, 2013: www.w3.org/standards/xml/transformation.html.

This excerpt from a technical description of a web coding language appears on the site of the World Wide Web Consortium (W3C).

Because the readers are coding experts, the writers use highly technical language and refer to advanced topics. Note, however, that the nontechnical information is written simply and directly.

Notice that the graphic is based on a simple flowchart and basic icons. Why? Because the readers are interested only in understanding the logic of the process illustrated in the flowchart.

Axon Blog

Struggling to Organize Terabytes of Evidence? We Can Help.

Adopting new technology can place an enormous burden on law enforcement agencies. Managing the massive amounts of data digital technology can produce is a time-consuming and complex task. Many agencies are already struggling to keep up with the demand, and most don't have long-term storage plans in place.

READ MORE →

b. Document motivating decision makers to learn about a product
Information from Axon, 2016: www.axon.io/blog.

This blog post, from Axon, focuses on a problem facing law enforcement agencies: the need to store large amounts of digital information efficiently. The post is addressed to law enforcement officers who need to access information quickly and remotely.

The writer aims to connect with the reader by acknowledging the "enormous burden" police officers face trying to keep up with new digital technologies and by pointing out that many agencies find themselves in a similar situation. The headline offers to help those who are struggling, and the photograph suggests that help will come in the form of a program that keeps terabytes of data organized and readily available at the tap of a finger. Although the solution isn't given on this page, the reader is led to believe that details can be found by clicking the "Read More" link.

FIGURE 5.7 Using Text and Graphics to Appeal to Readers' Needs and Interests

This excerpt from the Stay Healthy section of the American Cancer Society website shows several techniques for providing information to a general audience.

The page begins with a short video and brief text intended to motivate readers to find out more about how to stay healthy. The tone throughout — from the words to the images of the smiling man and woman — is encouraging: it says, "You can do this."
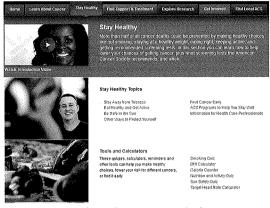
The page includes a set of seven links to detailed information on more specific topics about preventing cancer.

The Tools and Calculators section gives readers ways to learn more about how to improve their health. This section is consistent with the main point of this page: you can take steps to improve your health.

Notice that the writers use simple, direct language, as well as the second person (you), to maintain an informal tone.

The online transportation network company Uber faces opposition from some who believe that it is unsafe and illegal for drivers to provide what they call "pirate" taxi services without a special license. This page from the Uber website is part of the company's attempt to project a positive message.

The text emphasizes the benefits that Uber provides: drivers earn money, economies improve, riders have better access to transportation, and streets are safer. These are all difficult points to argue with. The page also focuses on "connections": Uber crosses borders, cultures, and languages when it brings drivers and riders together. The smiling faces of Uber drivers ("partners") and a rider show the human side of the company. The line "Your journeys inspire us. Thank you" is aimed at making the reader feel like a part of this global mission to connect people across cultures.

c. Document presenting educational resources to a general audience
Information from American Cancer Society, 2013: www.cancer.org/healthy/index.

d. Document reinforcing a brand
Information from Uber, 2016: www.uber.com/our-story/.

FIGURE 5.7 Using Text and Graphics to Appeal to Readers' Needs and Interests *(continued)*

This table of contents shows the organization of a modular document.

Few readers will want to read the whole document — it's almost 1,000 pages long.

Most readers will want to read the 18-page summary for policymakers.

Some readers will want to read selected sections of the technical summary or "annexes" (appendices).

FIGURE 5.8 Table of Contents for a Modular Report
Source: Solomon et al., 2007, p. xix.

Determining Your Purpose

Once you have identified and analyzed your audience, it is time to examine your purpose. Ask yourself this: "What do I want this document to accomplish?" When your readers have finished reading what you have written, what do you want them to *know* or *believe*? What do you want them to *do*? Your writing should help your readers understand a concept, adopt a particular belief, or carry out a task.

In defining your purpose, think of a verb that represents it. (Sometimes, of course, you have several purposes.) The following list presents verbs in two categories: those used to communicate information to your readers and those used to convince them to accept a particular point of view.

Communicating verbs	Convincing verbs
authorize	analyze
define	argue
describe	assess
explain	conclude
illustrate	determine
inform	evaluate
outline	forecast
present	propose
review	recommend
summarize	request

This classification is not absolute. For example, *review* could in some cases be a *convincing verb* rather than a *communicating verb*: one writer's review of a complicated situation might be very different from another's.

Here are a few examples of how you can use these verbs to clarify the purpose of your document (the verbs are italicized).

- This wiki *presents* the draft of our policies on professional use of social media within the organization.
- This letter *authorizes* the purchase of six new tablets for the Jenkintown facility.
- This report *recommends* that we revise the website as soon as possible.

Sometimes your real purpose differs from your expressed purpose. For instance, if you want to persuade your reader to lease a new computer system rather than purchase it, you might phrase the purpose this way: *to explain the advantages of leasing over purchasing.* As mentioned earlier, many readers don't want to be *persuaded* but are willing to learn new facts or ideas.

In situations like this, stick to the facts. No matter how much you want to convince your readers, it is unacceptable to exaggerate or to omit important information. Trust that the strength and accuracy of your writing will enable you to achieve your intended purpose.

Gaining Management's Approval

After you have analyzed your audience and purpose, consider gaining the approval of management before you proceed. The larger and more complex the project and the document, the more important it is to be sure that you are on the right track before you invest too much time and effort.

For example, suppose you are planning a proposal to upgrade your company's computer-assisted-design (CAD) equipment. You already know your audience and purpose, and you are drafting a general outline in your mind. But before you actually start to write an outline or gather the information you will need, spend another 10 or 15 minutes making sure your primary reader, your supervisor, agrees with your thinking by submitting to him a brief description of your plans. You don't want to waste days or even weeks working on a document that won't fulfill its purpose. If you have misunderstood what your supervisor wants, it is far easier to fix the problem at this early stage.

Your description can also serve another purpose: if you want your reader's views on which of two strategies to pursue, you can describe each one and ask your reader to state a preference.

Choose an application that is acceptable to your reader, and then clearly and briefly state what you are trying to do in the project. Here is an example of the description you might submit to your boss about the CAD equipment. In composing this description of her plan, the writer drew on audience profile sheets for her two principal readers. She describes a logical, rational strategy for proposing the equipment purchase.

> Juan:
> Please tell me if you think this is a good approach for the proposal on CAD equipment.
>
> Outright purchase of the complete system will cost more than $1,000, so you would have to approve it and send it on for Tina's approval. (I'll provide leasing costs as well.) I want to show that our CAD hardware and software are badly out of date and need to be replaced. I'll be thorough in recommending new equipment, with independent evaluations in the literature, as well as product demonstrations. The proposal should specify what the current equipment is costing us and show how much we can save by buying the recommended system.
>
> I'll call you later today to get your reaction before I begin researching what's available.
> Renu

The purpose of the memo

A statement of the audience for the proposal

A statement of the purpose, followed by early statements of the scope of the document

A statement of how the writer intends to follow up on this memo

Once you have received your primary reader's approval, you can feel confident about starting to gather information.

Revising Information for a New Audience and Purpose

Chapter 2 introduced the concept of boilerplate information: standard text or graphics that are plugged into various documents published by your organization (see p. 24). Often, however, when you write to a new audience or have a new purpose, you need to revise the information.

Figure 5.9 shows an excerpt from a press release by Google (2013) about Project Loon. Figure 5.10 is an excerpt from an article based on the press release.

A press release is a statement distributed by a company to the news media to promote a new development at the company. The company hopes the news media will print the news release, thereby publicizing the development.

INTRODUCING PROJECT LOON: BALLOON-POWERED INTERNET ACCESS

The Internet is one of the most transformative technologies of our lifetimes. But for 2 out of every 3 people on earth, a fast, affordable Internet connection is still out of reach. And this is far from being a solved problem.

There are many terrestrial challenges to Internet connectivity — jungles, archipelagos, mountains. . . .

The writer sketches in the technical problems.

Solving these problems isn't simply a question of time: it requires looking at the problem of access from new angles. So today we're unveiling our latest moonshot from Google: balloon-powered Internet access.

The writer then announces his belief that his company has solved the problem by looking at it from a new angle. His use of the word *moonshot* suggests that Google is proud of how ambitious the program is.

We believe that it might actually be possible to build a ring of balloons, flying around the globe on the stratospheric winds, that provides Internet access to the earth below. It's very early days, but we've built a system that uses balloons, carried by the wind at altitudes twice as high as commercial planes, to beam Internet access to the ground at speeds similar to today's 3G networks or faster. As a result, we hope balloons could become an option for connecting rural, remote, and underserved areas, and for helping with communications after natural disasters. The idea may sound a bit crazy — and that's part of the reason we're calling it Project Loon — but there's solid science behind it.

The writer refers to previous attempts to use high-altitude platforms and explains why the new approach is different.

Balloons, with all their effortless elegance, present some challenges. Many projects have looked at high-altitude platforms to provide Internet access to fixed areas on the ground, but trying to stay in one place like this requires a system with major cost and complexity. So the idea we pursued was based on freeing the balloons and letting

---

FIGURE 5.9 Press Release

them sail freely on the winds. All we had to do was figure out how to control their path through the sky. We've now found a way to do that, using just wind and solar power: we can move the balloons up or down to catch the winds we want them to travel in. . . .

Now we need some help — this experiment is going to take way more than our team alone. This week we started a pilot program in the Canterbury area of New Zealand with 50 testers trying to connect to our balloons. This is the first time we've launched this many balloons (30 this week, in fact) and tried to connect to this many receivers on the ground, and we're going to learn a lot that will help us improve our technology and balloon design. . . .

This is still highly experimental technology and we have a long way to go — we'd love your support as we keep trying and keep flying! Follow our Google+ page to keep up with Project Loon's progress.

Onward and upward.

The writer describes the role his company hopes the public will play. The tone throughout this press release is that this is an ambitious project to address a problem that we can solve if we all work together.

FIGURE 5.9 Press Release *(continued)*
Source: Google, 2013: http://googleblog.blogspot.com/2013/06/introducing-project-loon.html.

GOOGLE'S LOON PROJECT PUTS BALLOON TECHNOLOGY IN SPOTLIGHT

Google's Project Loon aims to bring remote parts of the globe online with a ring of floating balloons. The balloons will drift through the stratosphere — which is about twice as high as commercial planes fly — to deliver 3G service to off-the-grid areas.

The writer begins with a description of the project, largely based on the information from the Google press release, as well as a link to the press release.

The ambitious project's recent test launch on New Zealand's South Island has generated a lot of media buzz, but it turns out that high-altitude platforms (HAP) have been around for a while.

A decade ago, the European Union funded the CAPANINA project to deliver broadband from high-altitude platforms in the stratosphere. Back in 2005, it successfully produced broadband wireless access at distances of up to 37 miles (60 kilometers) from a free-floating balloon in the stratosphere over northern Sweden.

The press release referred briefly to earlier attempts to use HAP. These earlier attempts will be a focus of this article.

Tim Tozer, an expert on wireless, satellite, and HAP communications at the University of York in Great Britain, was part of that effort. He spoke with National Geographic about the current state of the science — and the promising future beyond Google's balloons.

The writer introduces Tim Tozer, a HAP pioneer. The writer's interview with Tozer provides the focus of this article: an outsider's perspective on Project Loon.

Google's Loon Project has already been valuable in terms of getting people interested in what might be possible, says Tozer. "I'd be pretty amazed if this system developed into anything *per se*," he says. "I think projects like this are great in terms of encouraging somebody, somewhere, to get very serious about this and dedicate the funds to developing the kind of aerial craft that can do it properly.

"Many folks jumped the gun 15 years ago postulating about types of HAPs — 'wonder craft' that could stay up, roughly in one place, for months or years and carry all types of payloads and instruments. The problem is that as an aerospace project these things don't really exist yet. So what everybody has since realized is that you can't start big. It would be nice if you could, but you'll have to get there in an incremental way with small demonstrator and development projects which can kind of prove the technology."

The article presents much more analysis by Tozer. His philosophy of technological progress — that it works best if scientists take small, incremental steps — is very different from that of Google, which prefers to take giant steps.

FIGURE 5.10 Article Based on a Press Release
Source: Handwerk, 2013.

WRITER'S CHECKLIST

Following is a checklist for analyzing your audience and purpose. Remember that your document might be read by one person, several people, a large group, or several groups with various needs.

☐ Did you fill out an audience profile sheet for your primary and secondary audiences? *(p. 87)*

In analyzing your audience, did you consider the following questions about each of your most important readers:

☐ What is your reader's educational background? *(p. 89)*
☐ What is your reader's professional experience? *(p. 89)*
☐ What is your reader's job responsibility? *(p. 89)*
☐ What is your reader's reading skill? *(p. 90)*
☐ What are your reader's cultural characteristics? *(p. 90)*
☐ What are your reader's personal characteristics? *(p. 90)*
☐ What are your reader's personal preferences? *(p. 90)*
☐ Why will the reader read your document? *(p. 90)*
☐ What is your reader's attitude toward you? *(p. 91)*
☐ What is your reader's attitude toward the subject? *(p. 91)*
☐ What are your reader's expectations about the document? *(p. 92)*
☐ How will your reader read your document? *(p. 92)*
☐ What is the physical environment in which your reader will read your document? *(p. 93)*
☐ What is the digital environment in which your reader will read your document? *(p. 93)*

In learning about your readers, did you

☐ determine what you already know about them? *(p. 93)*
☐ interview people? *(p. 94)*
☐ read about your audience online? *(p. 94)*
☐ search social media for documents your audience has written? *(p. 94)*
☐ analyze social-media data, if available? *(p. 95)*

In planning to write for an audience from another culture, did you consider the following cultural variables:

☐ political? *(p. 97)*
☐ economic? *(p. 97)*
☐ social? *(p. 97)*
☐ religious? *(p. 97)*
☐ educational? *(p. 97)*
☐ technological? *(p. 98)*
☐ linguistic? *(p. 98)*

In planning to write for an audience from another culture, did you consider other cultural variables:

☐ focus on individuals or groups? *(p. 98)*
☐ distance between business life and private life? *(p. 99)*
☐ distance between ranks? *(p. 99)*
☐ need for details to be spelled out? *(p. 100)*
☐ attitudes toward uncertainty? *(p. 100)*

In writing for a multicultural audience, did you

☐ limit your vocabulary? *(p. 103)*
☐ keep sentences short? *(p. 103)*
☐ define abbreviations and acronyms in a glossary? *(p. 103)*
☐ avoid jargon unless you knew that your readers were familiar with it? *(p. 103)*
☐ avoid idioms and slang? *(p. 103)*
☐ use the active voice whenever possible? *(p. 103)*
☐ use graphics carefully? *(p. 103)*
☐ have the document reviewed by someone from the reader's culture? *(p. 103)*

☐ In writing for multiple audiences, did you consider creating a modular document? *(p.106)*
☐ Did you state your purpose in writing and express it using a verb or verbs? *(p. 109)*
☐ Did you get management's approval of your analysis of audience and purpose? *(p. 111)*
☐ If you are reusing a document with a new audience or purpose, did you revise the information accordingly? *(p. 112)*

EXERCISES

For more about memos, see Ch. 14, p. 376.

1. Choose a 200-word passage from a technical article related to your major course of study and addressed to an expert audience. (You can find a technical article on the web by using Google Scholar or the Directory of Open Access Journals. In addition, many federal government agencies publish technical articles and reports on the web.) Rewrite the passage so that it will be clear and interesting to a general reader. Submit the original passage to your instructor along with your revision.

2. The following passage is an advertisement for a translation service. Revise the passage to make it more appropriate for a multicultural audience. Submit the revision to your instructor.

   If your technical documents have to meet the needs of a global market but you find that most translation houses are swamped by the huge volume, fail to accommodate the various languages you require, or fail to make your deadlines, where do you turn?

   Well, your search is over. Translations, Inc. provides comprehensive translations in addition to full-service documentation publishing.

   We utilize ultrasophisticated translation programs that can translate a page in a blink of an eye. Then our crack linguists comb each document to give it that personalized touch.

   No job too large! No schedule too tight! Give us a call today!

3. Study the website of a large manufacturer of computer products, such as Hewlett-Packard, Acer, Dell, or Lenovo. Identify three different pages that address different audiences and fulfill different purposes. Here is an example:

   Name of the page: Lenovo Group Fact Page

   Audience: prospective investors

   Purpose: persuade the prospective investor to invest in the company

   Be prepared to share your findings with the class.

4. **TEAM EXERCISE** Form small groups and study two websites that advertise competing products. For instance, you might choose the websites of two car makers, two television shows, or two music producers. Have each person in the group, working *alone*, compare and contrast the two sites according to these three criteria:

   a. the kind of information they provide: hard, technical information or more emotional information

   b. the use of multimedia such as animation, sound, or video

   c. the amount of interactivity they invite — that is, the extent to which you can participate in activities while you visit the site

   After each person has separately studied the sites and taken notes about the three criteria, come together as a group. After each person shares his or her findings, discuss the differences as a group. Which aspects of these sites caused the most difference in group members' reactions? Which aspects seemed to elicit the most consistent reactions? In a brief memo to your instructor, describe and analyze how the two sites were perceived by the different members of the group.

CASE 5: Focusing on an Audience's Needs and Interests

You're interning in the marketing department of a cell-phone service provider, and your supervisor has asked you to perform research into a competing provider's products and services for the over-65 market, paying special attention to the ways in which the company successfully appeals to the needs and interests of its audience. She then asks you to prepare an oral presentation about your findings. To begin your project, go to LaunchPad.

CHAPTER

6

Researching Your Subject

IN THE WORKPLACE, you will often conduct research to support your technical communication. As a buyer for a clothing retailer, for example, you might need to conduct research to help you determine whether a new line of products would be successful in your store. As a civil engineer, you might need to perform research to determine whether to replace your company's current surveying equipment with 3D-equipped stations. And as a pharmacist, you might need to research whether a prescribed medication might have a harmful interaction with another medication a patient is already taking.

In the workplace, you will conduct research using a variety of methods. You will consult websites, blogs, and discussion forums, and you might listen to podcasts or watch videos. Sometimes you will interview people, and you will likely distribute surveys electronically to acquire information from customers and suppliers. Regardless of which technique you use, your challenge will be to sort the relevant information from the irrelevant, and the accurate from the bogus.

This chapter focuses on conducting primary research and secondary research. *Primary research* involves discovering or creating technical information yourself. *Secondary research* involves finding information that other people have already discovered or created. This chapter presents secondary research first. Why? Because you will probably do secondary research first. To design the experiments or the field research that goes into primary research, you need a thorough understanding of the information that already exists about your subject.

Understanding the Research Process

In most cases, whether you are conducting academic research or workplace research, your main goal is to answer a question.

In *academic research*, your goal is to find information that will help answer a scholarly question: "To what extent do standardized tests contribute to the success of public elementary schools?" or "What effects do violent media have on teenagers?" Academic research questions are often more abstract than applied. That is, they seek information regarding the principles underlying a phenomenon. Academic research usually requires extensive secondary research: reading scholarly literature in academic journals and books. If you do primary research, as scientists do in labs, you do so only after you have conducted extensive secondary research.

In *workplace research*, your goal is to find information to help you answer a practical question: "Should we replace our sales staff's notebook computers with tablets?" or "What would be the advantages and disadvantages to our company of adopting a European-style privacy policy for customer information?" Workplace research questions frequently focus on improving a situation at a particular organization. These questions call for considerable primary research because they require you to learn about your own organization's processes and how the people in your organization would respond to your ideas. Sometimes, workplace research questions address the needs of customers or other stakeholders. You will need a thorough understanding of your organization's external community in order to effectively align your products or services with their needs.

Regardless of whether you are conducting academic or workplace research, the basic research methods—primary and secondary research—are fundamentally the same, as is the goal: to find answers to your questions effectively and efficiently. The Guidelines box below provides an overview of planning for the research process, and the Guidelines box on page 119 reviews important points to consider while conducting research. Remember that you might also need to perform additional research as you draft, revise, edit, and proofread the technical communication that results from your research. Whenever you need additional information to help you make your argument clear and persuasive, do more research.

GUIDELINES Planning for the Research Process

These eight steps can help you develop a research plan.

▶ **Analyze your audience.** Who are your most important readers? What are their personal characteristics, their attitudes toward your subject, their motivations for reading? If you are writing to an expert audience that might be skeptical about your message, you need to do a lot of research to gather the evidence for a convincing argument. See Ch. 5.

▶ **Analyze your purpose.** Why are you writing? Understanding your purpose helps you understand the types of information readers will expect. Think in terms of what you want your readers to know or believe or do after they finish reading your document. See Ch. 5.

▶ **Analyze your subject.** What do you already know about your subject? What do you still need to find out? Using techniques such as freewriting and brainstorming, you can determine those aspects of the subject you need to investigate. See Ch. 3.

▶ **Consider the document type.** What application will you need to deliver: a proposal, a report, a website? What kind of oral presentation will you need to deliver? See Ch. 3.

▶ **Work out a schedule and a budget for the project.** When is the document due? Do you have a budget for phone calls, database searches, or travel to libraries or other sites? See Ch. 3.

▶ **Determine what information will need to be part of the document.** Draft an outline of the contents, focusing on the kinds of information that readers will expect to see in each part. See Ch. 3.

▶ **Determine what information you still need to acquire.** Make a list of the pieces of information you don't yet have.

▶ **Create questions you need to answer in your document.** Writing the questions in a list forces you to think carefully about your topic. One question suggests another, and soon you have a lengthy list that you need to answer.

GUIDELINES Researching a Topic

Follow these seven guidelines as you gather information to use in your document.

▶ **Conduct secondary research.** Study journal articles and web-based sources such as online journals, discussion forums, blogs, and podcasts.

▶ **Conduct primary research.** You can answer some of your questions by consulting company records, by interviewing experts in your organization, by distributing questionnaires, and by interviewing other people in the industry. Other questions call for using social media to gather information from your customers, suppliers, and other stakeholders.

▶ **Be persistent.** Don't be discouraged if a research method doesn't yield useful information. Even experienced researchers fail at least as often as they succeed. Be prepared to rethink how you might find the information. Don't hesitate to ask reference librarians for help or to post questions on discussion forums.

▶ **Evaluate your information.** Once you have your information, you need to evaluate its quality: is it accurate, comprehensive, unbiased, and current?

▶ **Record your data carefully.** Prepare the materials you will need. Write information down, on paper or electronically. Record interviews (with the respondents' permission). Paste the URLs of the sites you visit into your notes. Bookmark sites so that you can return to them easily.

▶ **Triangulate your research methods.** *Triangulating* your research methods means using more than one or two methods. If a manufacturer's website says a printer produces 17 pages per minute, an independent review in a reputable journal also says 17, and you get 17 in a demo at your office with your documents, the printer probably will produce 17 pages per minute. When you need to answer important questions, don't settle for only one or two sources.

▶ **Do more research.** If the information you have acquired doesn't sufficiently answer your questions, do more research. And if you have thought of additional questions that need to be answered, do more research. When do you stop doing research? You stop only when you think you have enough high-quality information to create your document.

Choosing Appropriate Research Methods

Different research questions require different research methods. Once you have determined the questions you need to answer, think about the various research techniques you could use to answer them.

For example, your research methods for finding out how a current situation is expected to change would differ from your research methods for finding out how well a product might work for your organization. That is, if you want to know how outsourcing will change the computer-support industry over the next 10 to 20 years, you might search for long-range predictions in journal and magazine articles and on reputable websites and blogs. By contrast, if you want to figure out whether a specific scanner will produce the quality of scan that you need and will function reliably, you might do the same kind of secondary research and then observe the operation of the scanner at a vendor's site, schedule product demos at your site, follow up by interviewing others in your company, and perform an experiment in which you try two different scanners and analyze the results.

Table 6.1 provides a good starting point for thinking about how to acquire the information you need. You are likely to find that your research plan changes as you conduct your research. You might find, for instance, that you need more than one method to get the information you need or that the one

TABLE 6.1	Research Questions and Methods	
TYPE OF QUESTION	**EXAMPLE OF QUESTION**	**APPROPRIATE RESEARCH TECHNIQUE**
What is the theory behind this process or technique?	How do greenhouse gases contribute to global warming?	**Encyclopedias, handbooks,** and **journal articles** present theory. Also, you can find theoretical information on **websites** of reputable professional organizations and universities. Search using keywords such as "greenhouse gases" and "global warming."
What is the history of this phenomenon?	When and how did engineers first try to extract shale oil?	**Encyclopedias** and **handbooks** present history. Also, you can find historical information on **websites** of reputable professional organizations and universities. Search using keywords such as "shale oil" and "petroleum history."
What techniques are being used now to solve this problem?	How are companies responding to the federal government's laws on health-insurance portability?	If you need recent information, you will have better luck using digital resources such as **websites** and **social media** than using traditional print media. Search using keywords and tags such as "health-insurance portability." Your search will be most effective if you use standard terminology, such as "HIPAA" for the health-insurance law.

TABLE 6.1	Research Questions and Methods *(continued)*	
TYPE OF QUESTION	**EXAMPLE OF QUESTION**	**APPROPRIATE RESEARCH TECHNIQUE**
How is a current situation expected to change?	What changes will outsourcing cause in the computer-support industry over the next 10 to 20 years?	For long-range predictions, you can find information in **journal articles** and **magazine articles** and on reputable **websites.** Experts might write forecasts on **discussion forums** and **blogs.**
What products are available to perform a task or provide a service?	Which vendors are available to upgrade and maintain our company's website?	For products and services, search **websites, discussion forums,** and **blogs.** Reputable vendors—manufacturers and service providers—have sites describing their offerings. But be careful not to assume vendors' claims are accurate. Even the specifications they provide might be exaggerated.
What are the strengths and weaknesses of competing products and services?	Which portable GPS system is the lightest?	Search for benchmarking articles from experts in the field, such as a **journal article** (either in print or on the web) about camping and outfitting that compares the available GPS systems according to reasonable criteria. Also check **discussion forums** for reviews and **blogs** for opinions. If appropriate, do **field research** to answer your questions.
Which product or service do experts recommend?	Which four-wheel-drive SUV offers the best combination of features and quality for our needs?	Experts write **journal articles, magazine articles,** and sometimes **blogs.** Often, they participate in **discussion forums.** Sometimes, you can **interview** them, in person or on the phone, or write them **inquiries.**
What do our stakeholders think about a current or proposed product or service?	Would the public like to see us add a plug-in hybrid version to our line of small SUVs? How would we market it to distinguish it from the existing hybrid small SUVs?	Study **journal** and **magazine articles** or influential **blogs** or post a question on a **company blog** or on a **microblogging site** such as Tumblr and ask for responses. Also consider analyzing social-media data, using software to capture and measure keywords from social-media platforms.
What are the facts about how we do our jobs at this company?	Do our chemists use gas chromatography in their analyses?	Sometimes, you can **interview** someone, in person or on the phone, to answer a simple question. To determine whether your chemists use a particular technique, start by asking someone in the relevant department.
What can we learn about what caused a problem in our organization?	What caused the contamination in the clean room?	You can **interview** personnel who were closest to the problem and **inspect** the scene to determine the cause of the problem.
What do our personnel think we should do about a situation?	Do our quality-control analysts think we need to revise our sampling quotient?	If there are only a few personnel, **interview** them. If there are many, use **questionnaires** to get the information more quickly.
How well would this product or service work in our organization?	Would this scanner produce the quality of scan that we need and interface well with our computer equipment?	Read product reviews on reputable **websites.** Study **discussion forums. Observe** the use of the product or service at a vendor's site. Schedule product **demos** at your site. Follow up by **interviewing** others in your company to get their thinking. Do an **experiment** in which you try two different solutions to a problem and then analyze the results.

method you thought would work doesn't. Still, having a plan can help you discover the most appropriate methods more quickly and efficiently.

If you are doing research for a document that will be read by people from other cultures, think about what kinds of evidence your readers will consider appropriate. In many non-Western cultures, tradition or the authority of the person making the claim can be extremely important, in some cases more important than the kind of scientific evidence that is favored in Western cultures.

And don't forget that all people pay particular attention to information that comes from their own culture. If you are writing to European readers about telemedicine, for instance, try to find information from European authorities and about European telemedicine. This information will interest your readers and will likely reflect their cultural values and expectations.

Conducting Secondary Research

When you conduct secondary research, you are trying to learn what experts have to say about a topic. Whether an expert is a world-famous scientist revising an earlier computer model about the effects of climate change on agriculture in Europe or the head of your human-resources department checking company records to see how a new health-care law changed the way your company hired part-time workers last year, your goal is the same: to acquire the best available information—the most accurate, most unbiased, most comprehensive, and most current.

Sometimes you will do research in a library, particularly if you need specialized handbooks or access to online subscription services that are not freely available on the Internet. Sometimes you will do your research on the web. As a working professional, you might find much of the information you need in your organization's information center. An *information center* is an organization's library, a resource that collects different kinds of information critical to the organization's operations. Many large organizations have specialists who can answer research questions or who can get articles or other kinds of data for you.

UNDERSTANDING RESEARCH TOOLS

Most technical information—whether it exists in print or electronic form or both—can be tracked down using search tools available in your library, many of which are also available on your personal computer.

- **Library catalogs.** A library's catalog contains electronic records of its physical holdings—all of the books, journals, reports, and other print documents the library contains, as well as its nonprint materials such as audio and video recordings. To search for an item, consult the catalog's instructions, which explain how to limit your search by characteristics

such as types of media, date of publication, and language. The instructions also explain how to use punctuation and words such as *and, or,* and *not* to focus your search effectively.

- **Online databases.** Most libraries subscribe to services, such as LexisNexis, ProQuest, InfoTrac, Gale Virtual Reference, and ERIC, that provide access to large databases of full-text journal articles, conference proceedings, newspapers, and other documents. Some databases have a specific focus within a field or subject matter. Check with a reference librarian—either in person or through a virtual chat—for guidance on the most useful and relevant databases for your needs.

- **Newspaper and periodical indexes.** Indexes are similar to databases, but they typically contain only citation information for articles. If you locate an article title that sounds promising, you then need to track down the periodical through other means in order to access the full article. There are periodical indexes in any number of fields. The following brief list will give you a sense of the diversity of titles:

  —*Applied Science & Technology Index*

  —*Business Source Premier*

  —*Engineering Village*

  —*National Newspaper Index*

  —*Readers' Guide to Periodical Literature*

- **Abstract services.** Abstract services are like indexes but also provide abstracts: brief technical summaries of the articles. In most cases, reading the abstract will enable you to decide whether to seek out the full article. Some abstract services, such as *Chemical Abstracts Service,* cover a broad field, but many are specialized rather than general. Figure 6.1 on page 124 shows an abstract from *AnthroSource,* an abstract service covering anthropology journals.

- **Web search engines.** If you search the web effectively and efficiently, you can find reference materials such as dictionaries and encyclopedias that don't exist in print, online versions of magazines and journals, conversion calculators and other statistical software, current survey data, government documents, animations, audio and video podcasts, and many other kinds of information.

- **Reference works.** Reference works include general dictionaries and encyclopedias, biographical dictionaries, almanacs, atlases, and dozens of other research tools. These print and online works are especially useful when you are beginning a research project because they provide an overview of the subject and often list the major works in the field.

TYPES OF SECONDARY RESEARCH SOURCES

Using the search tools described above, you will uncover a wide variety of information from a multitude of source types.

**PLOT AND IRONY IN CHILDBIRTH NARRATIVES
OF MIDDLE-CLASS BRAZILIAN WOMEN**

Brazil's rate of cesarean deliveries is among the highest in the world and constitutes the majority of childbirths in private hospitals. This study examines ways middle-class Brazilian women are exercising agency in this context. It draws from sociolinguistics to examine narrative structure and dramatic properties of 120 childbirth narratives of 68 low- to high-income women. Surgical delivery constituted 62% of the total. I focus on 20 young middle-class women, of whom 17 had C-sections. Doctors determined mode of childbirth pre-emptively or appeared to accommodate women's wishes, while framing the scenario as necessitating surgical delivery. The women strove to imbue C-section deliveries with value and meaning through staging, filming, familial presence, attempting induced labor, or humanized childbirth. Their stories indicate that class privilege does not lead to choice over childbirth mode. The women nonetheless struggle over the significance of their agency in childbirth.

FIGURE 6.1   An Abstract from *AnthroSource*
Source: O'Dougherty, 2013.

- **Books.** Printed (and electronic) books continue to be useful and popular. Most are edited and published by reputable organizations, some of them with a scientific or academic affiliation. Books provide in-depth background information on a wide range of subjects.
- **Periodicals: journals and magazines.** Usually published weekly, monthly, or quarterly, periodicals typically focus on a specific subject area and provide recent findings on a variety of issues. Journals tend to be more scholarly and scientific, and their articles are often reviewed by experts in the field; magazines are intended for a more general audience. Many periodicals are available in both print and digital formats.
- **Newspapers and online news sources.** Three of the most important indexed U.S. newspapers are the following:
  —the *New York Times*, perhaps the most reputable U.S. newspaper for national and international news
  —the *Christian Science Monitor*, another highly regarded general newspaper
  —the *Wall Street Journal*, the most authoritative news source on business, finance, and the economy

  Many newspapers available on the web can be searched electronically, although sometimes there is a charge for archived articles. In addition, important news sites such as CNN.com have become reliable sources for breaking news.
- **Government documents.** The U.S. government is the world's biggest publisher. In researching any field of science, engineering, or business, you are likely to find that a federal agency or department has produced a relevant brochure, report, or book.

Government publications are cataloged and shelved separately from other kinds of materials. They are classified according to the Superintendent of Documents system, not the Library of Congress system. A reference librarian or a government documents specialist at your library can help you use government publications. You can also access various government sites and databases on the Internet. For example, if your company wishes to respond to a request for proposals (RFP) published by a federal government agency, you will find that RFP on a government site. The major entry point for federal government sites is USA.gov, which links to hundreds of millions of pages of government information and services. It also features tutorials, a topical index, online transactions, and links to state and local government sites.

- **Websites and social media.** Web searches can yield many sources that exist only on the Internet, from company-sponsored sites to online archives. Social-media sources include discussion forums, blogs, and wikis. Because social-media sites typically provide user-generated content, they must be used with caution, as detailed in the next section.

USING SOCIAL MEDIA AND OTHER INTERACTIVE RESOURCES

Social media and other interactive resources enable people to collaborate, share, link, and generate content in ways that traditional websites offering static content cannot. However, the ease and speed with which new content can be posted, as well as the lack of formal review of the content, creates challenges for online researchers. Everyone using social-media resources must be extra cautious in evaluating and documenting sources.

This discussion covers three categories of social-media and web-based resources used by researchers—discussion forums, wikis, and blogs—as well as two techniques for streamlining the process of using these resources: tagged content and RSS feeds.

Discussion Forums   Online discussion forums sponsored by professional organizations, private companies, and others enable researchers to tap a community's information. Discussion forums are especially useful for presenting quick, practical advice. However, the advice might or might not be authoritative, so it should be checked against other sources whenever possible.

Wikis   A wiki is a website that makes it easy for members of a community, company, or organization to create and edit content collaboratively. Often, a wiki contains articles, information about student and professional conferences, reading lists, annotated sets of links, book reviews, and documents used by members of the community. You might have participated in creating and maintaining a wiki in one of your courses or as a member of a community group outside of your college.

Wikis are popular with researchers because they contain information that can change from day to day, on topics in fields such as medicine or business.

As members make changes to the content, the wiki keeps track of who made the changes and when they were made. In addition, because wikis rely on information contributed voluntarily by members of a community, they represent a much broader spectrum of viewpoints than media that publish only information that has been approved by editors. For this reason, however, you should be especially careful when you use wikis; the information they contain might not be trustworthy. It's a good idea to corroborate any information you find on a wiki by consulting other sources. To find a wiki in your subject area, use a specialized search engine such as wiki.com.

Blogs Many technical and scientific organizations, universities, and private companies sponsor blogs that offer useful information for researchers.

Keep in mind that bloggers are not always independent voices. A Hewlett-Packard employee writing on a company-sponsored blog will likely be presenting the company's viewpoint on the topic. Don't count on that blogger to offer objective views about products. Blogs sponsored by government and nonprofit agencies are more likely to be trustworthy.

Tagged Content Tags are descriptive keywords people use to categorize and label content such as blog entries, videos, podcasts, and images they post to the Internet or bookmarks they post to social-bookmarking sites. Tags can be one-word descriptors without spaces or punctuation (such as "sandiegozoo") or multiword descriptors (such as "San Diego Zoo"). Many social-media platforms have adopted the hashtag (#) as a way to tag an item to make it easier to find by searching.

Figure 6.2 shows search results for blogs tagged with "driverless cars" on Smashfuse, a search engine that tracks social-media sites.

RSS Feeds Repeatedly checking for new content on many different websites can be a time-consuming and haphazard way to research a topic. RSS (short for *rich site summary* or *really simple syndication*) technology allows readers to check just one place (such as a software program running on their computer or an email program) for alerts to new content posted on selected websites. Figure 6.3 on page 128 shows a website that offers RSS feeds. Readers use a special type of software program called an *RSS aggregator* to be alerted by *RSS feeds* (notifications of new or changed content from sites of interest to them). With RSS feeds, the information comes to you; you don't have to search for it.

EVALUATING THE INFORMATION

You've taken notes, paraphrased, and quoted from your secondary research. Now, with more information than you can possibly use, you try to figure out what it all means. You realize that you still have some questions — that some of the information is incomplete, some contradictory, and some unclear. There is no shortage of information; the challenge is to find information that is accurate, unbiased, comprehensive, appropriately technical, current, and clear.
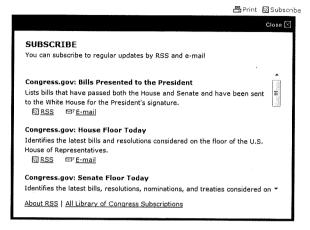
This search returned numerous blogs that relate to the topic of driverless cars. You could also search for individual posts about the topic on other social media and get even more results.
Information from Smashfuse, 2016: http://smashfuse.com/.

- **Accurate.** Suppose you are researching whether your company should consider flextime scheduling. If your research returns conflicting results, you will want to find additional sources on the subject, to help you make a decision.

- **Unbiased.** You want sources that have no financial stake in your project. A private company that transports workers in vans is likely to be a biased source because it could profit from flextime, making extra trips to bring employees to work at different times.

- **Comprehensive.** You want information from different kinds of people — in terms of gender, cultural characteristics, and age — and from people representing all viewpoints on the topic.

FIGURE 6.3 A Website Offering RSS Feeds

This pop-up menu is from a Congressional website that offers RSS subscriptions. The orange feed icon is used on many websites to indicate RSS.

Information from Congress. gov, 2016: www.congress.gov.

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You can subscribe to regular updates by RSS and e-mail

Congress.gov: Bills Presented to the President

Lists bills that have passed both the House and Senate and have been sent to the White House for the President's signature.

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Congress.gov: House Floor Today

Identifies the latest bills and resolutions considered on the floor of the U.S. House of Representatives.

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- **Appropriately technical.** Good information is sufficiently detailed to respond to the needs of your readers, but not so detailed that they cannot understand it or do not need it. For the flextime study, you need to find out whether opening your building an hour earlier and closing it an hour later would significantly affect your utility costs. You can get this information by interviewing people in the Operations Department; you do not need to do a detailed inspection of all the utility records of the company.
- **Current.** If your information is 10 years old, it might not accurately reflect today's situation.
- **Clear.** You want information that is easy to understand. Otherwise, you'll waste time figuring it out, and you might misinterpret it.

The most difficult kind of material to evaluate is user-generated content from the Internet—such as information on discussion forums or in blogs—because it rarely undergoes the formal review procedure used for books and professional journals. A general principle for using any information you find on the Internet is to be extremely careful. Because content is unlikely to have been reviewed before being published on a social-media site, use one or more trusted sources to confirm the information you locate. Some instructors do not allow their students to use blogs or wikis for their research. Check with your instructor to learn his or her policies.

▶ TECH TIP

Why To Use Social Media in Research

Social media such as discussion forums, wikis, and blogs can provide up-to-the-minute content and collaboration opportunities for researchers. Discussion forums can offer quick, practical advice on specific issues; wikis are typically created by community volunteers who have the latest information in their field; and blogs can be found on a wide range of topics. In all three cases, however, the information provided is not necessarily authoritative or unbiased, so it should be corroborated by other sources whenever possible. Finally, consider fulfilling your ethical obligation of generosity by contributing your own expertise and findings on social-media sites to benefit others in your company or field.

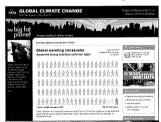### *How* To Use Social Media in Research

Discussion Forum

Use a search engine to find a discussion forum thread. Then search within a forum for a specific subject, or post your own question to the forum.

Information from Petroleum Equipment Forum, 2016: www.pei.org/forum/viewtopic.php?f=13&t=4371.

Wiki

Search wiki.com or other search engines to find specialized wikis on your topic. Then search the wiki to find specific information.

Information from Appropedia.org, 2016: www.appropedia.org/Wind_power.

Government-Sponsored Blog

Search for and within government-sponsored blogs to find authoritative information in a range of subject areas such as climate, economics, and immigration.

Information from NASA, 2013: http://climate.nasa.gov/blog/938. Illustration reprinted by permission of John Cook.

Company-Sponsored Blog

Search blogs sponsored by private organizations to get helpful information, product reviews, and opinions, but watch for author bias.

Information from cnet.com, 2016: http://download.cnet.com/blog/download-blog/.

◢ GUIDELINES Evaluating Print and Online Sources

FOR PRINTED SOURCES

▸ **Authorship**

Do you recognize the name of the author? Does the source describe the author's credentials and current position? If not, can you find this information in a "who's who" or by searching for other books or other journal articles by the author?

FOR ONLINE SOURCES

If you do not recognize the author's name, is the site mentioned on another reputable site? Does the site contain links to other reputable sites? Does it contain biographical information — the author's current position and credentials? Can you use a search engine to find other references to the author's credentials? Be especially careful with unedited sources such as Wikipedia; some articles in it are authoritative, others are not. Be careful, too, with blogs, some of which are written by disgruntled former employees with a score to settle.

▸ **Publisher**

What is the publisher's reputation? A reliable book is published by a reputable trade, academic, or scholarly publisher; a reliable journal is sponsored by a professional association or university. Are the editorial board members well known?

Trade publications — magazines about a particular industry or group — often promote the interests of that industry or group. For example, information in a trade publication for either loggers or environmentalists might be biased. If you doubt the reliability of a book or journal, ask a reference librarian or a professor.

Can you determine the publisher's identity from headers or footers? Is the publisher reputable?

If the site comes from a personal account, the information it offers might be outside the author's field of expertise. Many Internet sites exist largely for public relations or advertising. For instance, websites of corporations and other organizations are unlikely to contain self-critical information. For blogs, examine the *blogroll,* a list of links to other blogs and websites. Credible blogs are likely to link to blogs already known to be credible. If a blog links only to the author's friends, blogs hosted by the same corporation, or blogs that express the same beliefs, be very cautious.

▸ **Knowledge of the literature**

Does the author appear to be knowledgeable about the major literature on the topic? Is there a bibliography? Are there notes throughout the document?

Analyze the Internet source as you would any other source. Often, references to other sources will take the form of links.

(continued)

▸ **Accuracy and verifiability of the information**

Is the information based on reasonable assumptions? Does the author clearly describe the methods and theories used in producing the information, and are they appropriate to the subject? Has the author used sound reasoning? Has the author explained the limitations of the information?

Is the site well constructed? Is the information well written? Is it based on reasonable assumptions? Are the claims supported by appropriate evidence? Has the author used sound reasoning? Has the author explained the limitations of the information? Are sources cited? Online services such as Clicky help you evaluate how active a blog is, how the blog ranks compared to other blogs, and who is citing the blog. Active, influential blogs that are frequently linked to and cited by others are more likely to contain accurate, verifiable information.

▸ **Timeliness**

Does the document rely on recent data? Was the document published recently?

Was the document created recently? Was it updated recently? If a site is not yet complete, be wary.

Conducting Primary Research

Although the library and the Internet offer a wealth of authoritative information, in the workplace you will often need to conduct primary research because you need new information. There are eight major categories of primary research: analysis of social-media data, observations and demonstrations, inspections, experiments, field research, interviews, inquiries, and questionnaires.

ANALYSIS OF SOCIAL-MEDIA DATA

Every hour, tens of millions of posts are made on social media. A torrent of information is continuously coming online, and many organizations are working hard to sift through it to find useful insights.

Businesses are spending the most time on social-media research, trying to figure out what customers like and dislike about their products and services, learn what they want, and reinforce brand loyalty. Take the case of Nielsen, which for fifty years has been monitoring the TV viewing habits of Americans by distributing questionnaires and attaching devices to their TVs, and then selling the data it collects to TV networks and producers, who use the information to determine how much to charge advertisers. The problem at Nielsen is that many people don't watch TV on TV or they don't watch shows when they are broadcast. Now Nielsen also uses social-media analysis: gathering data by monitoring social media to listen in on what people are

DOCUMENT ANALYSIS ACTIVITY

Evaluating Information from Internet Sources

This information appears on the website of the Corn Refiners Association. The questions below ask you to consider the guidelines for evaluating Internet sources (pp. 130–31).

1. Given the association's name and the product being discussed, what potential bias might exist on the part of the authors of this document?

2. What main point are the authors making in this passage? How do they use words with negative and positive connotations (like "hype" and "natural") to try to persuade readers of their point of view?

3. If you were considering using this source in a document you were writing, what information would you want to discover about the site and the organization that publishes it? How would you locate the information you needed?

HIGH FRUCTOSE CORN SYRUP: MYTHS VS. FACTS

You've probably seen the negative headlines about high fructose corn syrup. Have you ever wondered if the media hype is true? Here are some of the most common inaccurate statements about this misunderstood sweetener along with the actual reality.

Myth: High fructose corn syrup is not natural.
Fact: Wrong again. High fructose corn syrup is made from corn, a natural grain product, and is a natural sweetener. High fructose corn syrup contains no artificial or synthetic ingredients or color additives. It meets the U.S. Food and Drug Administration's longstanding policy regarding the use of the term "natural."

Myth: High fructose corn syrup is to blame for obesity.
Fact: Obesity is caused by consuming more calories than are expended and Type II diabetes is associated with obesity. While high fructose corn syrup contributes to calories in the diet, there is no scientific evidence that high fructose corn syrup is a unique contributor to obesity or diabetes. In fact, the U.S. Department of Agriculture data shows that consumption of high fructose corn syrup has actually been declining while obesity and diabetes rates continued to rise. Around the world, obesity levels are also rising even though HFCS consumption is limited outside of the U.S. Many other factors contribute to rising obesity levels including changes in lifestyle, diet and exercise and are unrelated to HFCS.

Myth: High fructose corn syrup is sweeter than sugar.
Fact: Sorry, no. High fructose corn syrup and sugar (sucrose) have almost the same level of sweetness. HFCS was made to provide the same sweetness as sugar (sucrose) so that consumers would not notice a difference in sweetness or taste. In fact, one type of HFCS commonly used in foods (HFCS-42) is actually less sweet than sugar.

Source: Corn Refiners Association, 2016.

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saying on Twitter, Facebook, and other services about different TV programs (DeVault, 2013).

But organizations other than businesses are analyzing social-media data, too. For instance, the U.S. Geological Survey created the Twitter Earthquake Detector (TED), a program to monitor Twitter for the use of the word *earthquake*. Why? Because they realized that when people experience earthquakes, a lot of them tweet about it. The Centers for Disease Control, a U.S. federal agency, analyzes keywords on social media to monitor the spread of diseases, such as the Zika virus, in the United States and around the world. According to one scientist, "The world is equipped with human sensors—more than 7 billion and counting. It's by far the most extensive sensor network on the planet. What can we learn by paying attention?" (McCaney, 2013).

How do you perform social-media data analysis? There are many software programs that can help you devise searches. Among the most popular is HootSuite, which includes tools for listening in on what people are saying about your company on social media such as Twitter, Facebook, LinkedIn, and many other services. In addition, HootSuite helps you monitor and manage your company's social-media presence and provides *analytics*: demographic data about who is following your company, their attitudes, and their behaviors. Figure 6.4 shows a HootSuite dashboard, the screen that lets you view and manage all the information.

Like other similar tools for managing social media, HootSuite enables you to view all of your social media accounts from a single dashboard and post content to multiple accounts at once. Here we see a person's Facebook, Twitter, and Instagram streams.

Clicking the analytics button provides access to tools you can use to view various metrics such as growth in numbers of followers during a specific period of time or frequency of readers' interactions with your posts.

FIGURE 6.4   A HootSuite Dashboard
Courtesy of HootSuite.

OBSERVATIONS AND DEMONSTRATIONS

Observation and demonstration are two common forms of primary research. When you *observe*, you simply watch some activity to understand some aspect of it. For instance, if you were trying to determine whether the location of the break room was interfering with work on the factory floor, you could observe the situation, preferably at different times of the day and on different days of the week. If you saw workers distracted by people moving in and out of the room or by sounds made in the room, you would record your observations by taking notes, taking photos, or shooting video of events. An observation might lead to other forms of primary research. You might, for example, follow up by interviewing some employees who could help you understand what you observed.

When you witness a *demonstration* (or *demo*), you are watching someone carry out a process. For instance, if your company was considering buying a conveyor belt sorter for its warehouse, you could arrange to visit a manufacturer's facility, where technicians would show how the sorter works. If your company was considering a portable machine, such as a laptop computer, manufacturers or dealers could demo their products at your facility.

When you plan to observe a situation or witness a demo, prepare beforehand. Write down the questions you need answered or the factors you want to investigate. Prepare interview questions in case you have a chance to speak with someone. Think about how you are going to incorporate the information you acquire into the document you will write. Finally, bring whatever equipment you will need (pen and paper, computer, camera, etc.) to the site of the observation or demo.
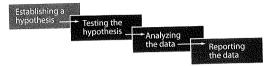
INSPECTIONS

Inspections are like observations, but you participate more actively. For example, a civil engineer can determine what caused a crack in a foundation by inspecting the site: walking around, looking at the crack, photographing it and the surrounding scene, examining the soil. An accountant can determine the financial health of an organization by inspecting its financial records, perhaps performing calculations and comparing the data she finds with other data.

These professionals are applying their knowledge and professional judgment as they inspect a site, an object, or a document. Sometimes inspection techniques are more complicated. A civil engineer inspecting foundation cracking might want to test his hunches by bringing soil samples back to the lab for analysis.

When you carry out an inspection, do your homework beforehand. Think about how you will use the data in your document: will you need photographs or video files or computer data? Then prepare the materials and equipment you'll need to capture the data.

EXPERIMENTS

Learning to conduct the many kinds of experiments used in a particular field can take months or even years. This discussion is a brief introduction. In many cases, conducting an experiment involves four phases.

Establishing a hypothesis → Testing the hypothesis → Analyzing the data → Reporting the data

- **Establishing a hypothesis.** A hypothesis is an informed guess about the relationship between two factors. In a study relating gasoline octane and miles per gallon, a hypothesis might be that a car will get 5 percent better mileage with 89-octane gas than with 87-octane gas.

- **Testing the hypothesis.** Usually, you need an experimental group and a control group. These two groups should be identical except for the condition you are studying: in the above example, the gasoline. The control group would be a car running on 87 octane. The experimental group would be an identical car running on 89 octane. The experiment would consist of driving the two cars over an identical course at the same speed—preferably in some sort of controlled environment—over a given distance, such as 1,000 miles. Then you would calculate the miles per gallon. The results would either support or refute your original hypothesis.

- **Analyzing the data.** Do your data show a correlation—one factor changing along with another—or a causal relationship? For example, we know that sports cars are involved in more fatal accidents than sedans (there is a stronger correlation for sports cars), but we don't know what the causal relationship is—whether the car or the way it is driven is the important factor.

- **Reporting the data.** When researchers report their findings, they explain what they did, why they did it, what they saw, what it means, and what ought to be done next.

FIELD RESEARCH

Whereas an experiment yields quantitative data that typically can be measured precisely, most field research is qualitative; that is, it yields data that typically cannot be measured precisely. Often in field research, you seek to understand the quality of an experience. For instance, you might want to understand how a new seating arrangement affects group dynamics in a classroom. You could design a study in which you observed and shot video of classes and interviewed the students and the instructor about their reactions to the new arrangement. Then you could do the same in a traditional classroom and compare the results.

Some kinds of studies have both quantitative and qualitative elements. In the case of classroom seating arrangements, you could include some quantitative measures, such as the number of times students talked with one another. You could also distribute questionnaires to elicit ratings by the students and the instructor. If you used these same quantitative measures on enough classrooms, you could gather valid quantitative information.

When you are doing quantitative or qualitative research on the behavior of animals—from rats to monkeys to people—try to minimize two common problems:

- **The effect of the research on the behavior you are studying.** In studying the effects of the classroom seating arrangement, minimize the effects of your own presence. For instance, if you observe in person, avoid drawing attention to yourself. Also, make sure that the video camera is placed unobtrusively and that it is set up before the students arrive, so they don't see the process. Still, any time you bring in a camera, you cannot be sure that what you witness is typical.

- **Bias in the recording and analysis of the data.** Bias can occur because researchers want to confirm their hypotheses. In an experiment to determine whether students write differently on physical keyboards than on touch screens, a researcher might see differences where other people don't. For this reason, the experiment should be designed so that it is *double blind*. That is, the students shouldn't know what the experiment is about so that they don't change their behavior to support or negate the hypothesis, and the data being analyzed should be disguised so that researchers don't know whether they are examining the results from the control group or the experimental group. For example, the documents produced on keyboards and touch screens should be printed out the same way.

Conducting an experiment or field research is relatively simple; the hard part is designing your study so that it accurately measures what you want it to measure.

INTERVIEWS

Interviews are extremely useful when you need information on subjects that are too new to have been discussed in the professional literature or are too narrow for widespread publication (such as local political questions).

In choosing a respondent—a person to interview—answer three questions:

- **What questions do you want to answer?** Only when you know this can you begin to search for a person who can provide the information.

- **Who could provide this information?** The ideal respondent is an expert willing to talk. Unless there is an obvious choice, such as the professor carrying out the research you are studying, use directories, such as local industrial guides, to locate potential respondents. You may also be able to find experts through your social-media network.

- **Is the person willing to be interviewed?** Contact the potential respondent by phone or in writing and describe what kind of information you are seeking. If the person is not able to help you, he or she might be willing to refer you to someone who can. Explain why you have decided to ask him or her. (A compliment works better than admitting that the person you really wanted to interview is out of town.) Explain what you plan to do with the information, such as write a report or present a talk. Then, if the person is willing to be interviewed, set up an appointment at his or her convenience.

GUIDELINES Conducting an Interview

Follow these suggestions for preparing for and conducting an interview—and for following up after the interview.

PREPARING FOR THE INTERVIEW

▸ **Do your homework.** If you ask questions that have already been answered in the professional literature, the respondent might become annoyed and uncooperative.

▸ **Prepare good questions.** Good questions are clear, focused, and open.

— **Be clear.** The respondent should be able to understand what you are asking.

UNCLEAR   Why do you sell Trane products?

CLEAR   What are the characteristics of Trane products that led you to include them in your product line?

The unclear question can be answered in a number of unhelpful ways: "Because they're too expensive to give away" or "Because I'm a Trane dealer."

— **Be focused.** The question must be narrow enough to be answered briefly. If you want more information, you can ask a follow-up question.

UNFOCUSED   What is the future of the computer industry?

FOCUSED   What will the American chip industry look like in 10 years?

— **Ask open questions.** Your purpose is to get the respondent to talk. Don't ask a lot of questions that have yes or no answers.

CLOSED   Do you think the federal government should create industrial partnerships?

OPEN   What are the advantages and disadvantages of the federal government's creating industrial partnerships?

▸ **Check your equipment.** If you will be recording the interview, test your voice recorder or video camera to make sure it is operating properly.

BEGINNING THE INTERVIEW

▸ Arrive on time.

▸ Thank the respondent for taking the time to talk with you.

▸ State the subject and purpose of the interview and what you plan to do with the information.

▸ If you wish to record the interview, ask permission.

CONDUCTING THE INTERVIEW

▶ **Take notes.** Write down important concepts, facts, and numbers, but don't take such copious notes that you can't make eye contact with the respondent or that you are still writing when the respondent finishes an answer.

▶ **Start with prepared questions.** Because you are likely to be nervous at the start, you might forget important questions. Have your first few questions ready.

▶ **Be prepared to ask follow-up questions.** Listen carefully to the respondent's answer and be ready to ask a follow-up question or request a clarification. Have your other prepared questions ready, but be willing to deviate from them if the respondent leads you in unexpected directions.

▶ **Be prepared to get the interview back on track.** Gently return to the point if the respondent begins straying unproductively, but don't interrupt rudely or show annoyance. Do not say, "Whoa! I asked about layoffs in this company, not in the whole industry." Rather, say, "On the question of layoffs at this company, do you anticipate . . . ?"

CONCLUDING THE INTERVIEW

▶ **Thank the respondent.**

▶ **Ask for a follow-up interview.** If a second meeting would be useful, ask to arrange one.

▶ **Ask for permission to quote the respondent.** If you think you might want to quote the respondent by name, ask for permission now.

AFTER THE INTERVIEW

▶ **Write down the important information while the interview is fresh in your mind.** (This step is unnecessary, of course, if you have recorded the interview.) If you will be printing a transcript of the interview, make the transcript now.

▶ **Send a brief thank-you note.** Within a day or two, send a note showing that you appreciate the respondent's courtesy and that you value what you have learned. In the note, confirm any previous offers you have made, such as to send the respondent a copy of your final document.

When you wish to present the data from an interview in a document you are preparing, include a transcript of the interview (or an excerpt from the interview). You will probably present the transcript as an appendix so that readers can refer to it but are not slowed down when reading the body of the document. You might decide to present brief excerpts from the transcript in the body of the document as evidence for points you make.

Figure 6.5 is from a transcript of an interview with an attorney specializing in information technology. The interviewer is a student who is writing about legal aspects of software ownership.

INQUIRIES

A useful alternative to a personal interview is to send an inquiry. This inquiry can take the form of a letter, an email, or a message sent through an organization's website. If you are lucky, your respondent will provide detailed and helpful answers. However, the respondent might not clearly understand what you want to know or might choose not to help you. Although the strategy of

Q. Why is copyright ownership important in marketing software?

A. If you own the copyright, you can license and market the product and keep other people from doing so. It could be a matter of millions of dollars if the software is popular.

Q. Shouldn't the programmer automatically own the copyright? •⎯⎯⎯⎯⎯

A. If the programmer wrote the program on personal time, he or she should and does own the copyright.

Q. So "personal time" is the critical concept?

A. That's right. We're talking about the "work-made-for-hire" doctrine of copyright law. If I am working for you, anything I make under the terms of my employment is owned by you.

Q. What is the complication, then? If I make the software on my machine at home, I •⎯ own it; if I'm working for someone, my employer owns it.

A. Well, the devil is in the details. Often the terms of employment are casual, or there is no written job description or contract for the particular piece of software.

Q. Can you give me an example of that?

A. Sure. There was a 1992 case, *Aymes v. Bonelli*. Bonelli owned a swimming pool and hired Aymes to write software to handle record keeping on the pool. This was not part of Bonelli's regular business; he just wanted a piece of software written. The terms of the employment were casual. Bonelli paid no health benefits, Aymes worked irregular hours, usually unsupervised — Bonelli wasn't a programmer. When the case was heard, the court ruled that even though Bonelli was paying Aymes, Aymes owned the copyright because of the lack of involvement and participation by Bonelli. The court found that the degree of skill required by Aymes to do the job was so great that, in effect, he was creating the software by himself, even though he was receiving compensation for it.

Q. How can such disagreements be prevented? By working out the details ahead of time?

A. Exactly. The employer should have the employee sign a statement that the project is being carried out as work made for hire and should register the copyright with the U.S. Copyright Office in Washington. Conversely, employees should try to have the employer sign a statement that the project is not work made for hire and should try to register the copyright themselves.

Q. And if agreement can't be reached ahead of time?

A. Then stop right there. Don't do any work.

The student prompts the attorney to expand her answers.

The student responds to the attorney's answers, making the interview more of a discussion.

FIGURE 6.5 Excerpt from an Interview

the inquiry is essentially that of a personal interview, inquiries can be less successful because the recipient has not already agreed to provide information and might not respond. Also, an inquiry, unlike an interview, gives you little opportunity to follow up by asking for clarification.

QUESTIONNAIRES

Questionnaires enable you to solicit information from a large group of people. You can send questionnaires through the mail, email them, present them as forms on a website, or use survey software (such as SurveyMonkey).

Unfortunately, questionnaires rarely yield completely satisfactory results, for three reasons:

- **Some of the questions will misfire.** Respondents will misinterpret some of your questions or supply useless answers.
- **You won't obtain as many responses as you want.** The response rate will almost never exceed 50 percent. In most cases, it will be closer to 10 to 20 percent.
- **You cannot be sure the respondents are representative.** People who feel strongly about an issue are much more likely to respond to questionnaires than are those who do not. For this reason, you need to be careful in drawing conclusions based on a small number of responses to a questionnaire.

When you send a questionnaire, you are asking the recipient to do you a favor. Your goal should be to construct questions that will elicit the information you need as simply and efficiently as possible.

Asking Effective Questions To ask effective questions, follow two suggestions:

- **Use unbiased language.** Don't ask, "Should U.S. clothing manufacturers protect themselves from unfair foreign competition?" Instead, ask, "Are you in favor of imposing tariffs on men's clothing?"
- **Be specific.** If you ask, "Do you favor improving the safety of automobiles?" only an eccentric would answer no. Instead, ask, "Do you favor requiring automobile manufacturers to equip new cars with electronic stability control, which would raise the price by an average of $300 per car?"

Table 6.2 explains common types of questions used in questionnaires.

Include an introductory explanation with the questionnaire. This explanation should clearly indicate who you are, why you are writing, what you plan to do with the information from the questionnaire, and when you will need it.

Testing the Questionnaire Before you send out *any* questionnaire, show it and its accompanying explanation to a few people who can help you identify any problems. After you have revised the materials, test them on people whose backgrounds are similar to those of your intended respondents. Revise the materials a second time, and, if possible, test them again. Once you have sent the questionnaire, you cannot revise it and resend it to the same people.

Administering the Questionnaire Determining who should receive the questionnaire can be simple or difficult. If you want to know what the residents of a particular street think about a proposed construction project, your job is easy. But if you want to know what mechanical-engineering students in colleges across the country think about their curricula, you will need a background in sampling techniques to identify a representative sample.

Make it easy for respondents to present their information. For mailed questionnaires, include a self-addressed, stamped envelope.

Figure 6.6 on page 142 shows a sample questionnaire.

TABLE 6.2   Common Types of Questions Used in Questionnaires

TYPE OF QUESTION	EXAMPLE	COMMENTS
Multiple choice	Would you consider joining a company-sponsored sports team? Yes _____ No _____	The respondent selects one of the alternatives.
Likert scale	The flextime program has been a success in its first year. strongly disagree __ __ __ __ __ __ strongly agree	The respondent ranks the degree to which he or she agrees or disagrees with the statement. Using an even number of possible responses (six, in this case) increases your chances of obtaining useful data. With an odd number, many respondents will choose the middle response.
Semantic differential	Logging on to the system simple __ __ __ __ __ __ difficult The description of the new desalinization process interesting __ __ __ __ __ __ boring	The respondent registers a response along a continuum between a pair of opposing adjectives. Usually, these questions measure a person's feelings about a task, an experience, or an object. As with Likert scales, an even number of possible responses yields better data.
Ranking	Please rank the following work schedules in order of preference. Put a 1 next to the schedule you would most like to have, a 2 next to your second choice, and so on. 8:00–4:30 _____ 8:30–5:00 _____ 9:00–5:30 _____ flexible _____	The respondent indicates the priority of a number of alternatives.
Short answer	What do you feel are the major advantages of the new parts-requisitioning policy? 1. _____ 2. _____ 3. _____	The respondent writes a brief answer using phrases or sentences.
Short essay	The new parts-requisitioning policy has been in effect for a year. How well do you think it is working?	Although essay questions can yield information you never would have found using closed-ended questions, you will receive fewer responses to them because answering them requires more effort. Also, essays cannot be quantified precisely, as data from other types of questions can.

September 6, 2017

To: All employees
From: William Bonoff, Vice President of Operations
Subject: Evaluation of the Lunches Unlimited food service

As you may know, every two years we evaluate the quality and cost of the food service that caters our lunchroom. We would like you to help in our evaluation by sharing your opinions about the food service. Please note that your responses will remain anonymous. Please drop the completed questionnaires in the marked boxes near the main entrance to the lunchroom.

1. Approximately how many days per week do you eat lunch in the lunchroom?

   0 _____   1 _____   2 _____   3 _____   4 _____   5 _____

2. At approximately what time do you eat in the lunchroom?

   11:30–12:30 _____   12:00–1:00 _____   12:30–1:30 _____   varies _____

3. A clean table is usually available.

   strongly disagree _____ _____ _____ _____ _____ _____ strongly agree

4. The Lunches Unlimited personnel are polite and helpful.

   strongly disagree _____ _____ _____ _____ _____ _____ strongly agree

5. Please comment on the quality of the different kinds of food you have eaten in the lunchroom.
   a. Daily specials
      excellent _____   good _____   satisfactory _____   poor _____
   b. Hot dogs and hamburgers
      excellent _____   good _____   satisfactory _____   poor _____
   c. Other entrées
      excellent _____   good _____   satisfactory _____   poor _____

6. What *foods* would you like to see served that are not served now?

   _____
   _____
   _____

7. What *beverages* would you like to see served that are not served now?

   _____
   _____
   _____

8. Please comment on the prices of the foods and beverages served.
   a. Hot meals (daily specials): too high _____   fair _____   a bargain _____
   b. Hot dogs and hamburgers: too high _____   fair _____   a bargain _____
   c. Other entrées: too high _____   fair _____   a bargain _____

9. Would you be willing to spend more money for a better-quality lunch if you thought the price was reasonable?

   yes, often _____   sometimes _____   not likely _____

10. On the other side of this sheet, please provide whatever comments you think will help us evaluate the catering service.

    _____

                    Thank you for your assistance.

Likert-scale questions 3 and 4 make it easy for the writer to quantify data about subjective impressions.

Short-answer questions 6 and 7 are best for soliciting ideas from respondents.

FIGURE 6.6   Questionnaire

Presenting Questionnaire Data in Your Document To decide where and how to present the data that you acquire from your questionnaire, think about your audience and purpose. Start with this principle: important information is presented and analyzed in the body of a document, whereas less important information is presented in an appendix (a section at the end that only some of your audience will read). Most often, different versions of the same information appear in the two places.

Typically, the full questionnaire data are presented in an appendix. If you can, present the respondents' data—the answers they provided—in the questionnaire itself, as shown here:

1. Approximately how many days per week do you eat lunch in the lunchroom?

   0 **12**   1 **16**   2 **18**   3 **12**   4 **9**   5 **4**

2. At approximately what time do you eat in the lunchroom?

   11:30–12:30 **3**   12:00–1:00 **26**   12:30–1:30 **7**   varies **23**

If you think your reader will benefit from analyses of the data, present such analyses. For instance, you could calculate the percentage for each response: for question 1, "12 people—17 percent—say they do not eat in the cafeteria at all." Or you could present the percentage in parentheses after each number: "12 (17%)."

Selected data might then be interpreted in the body of the document. For instance, you might devote a few sentences or paragraphs to the data for one of the questions. The following example shows how a writer might discuss the data from question 2.

Question 2 shows that 26 people say that they use the cafeteria between noon and 1:00. Only 10 people selected the two other times: 11:30–12:30 or 12:30–1:30. Of the 23 people who said they use the cafeteria at various times, we can conclude that at least a third—8 people—use it between noon and 1:00. If this assumption is correct, at least 34 people (26 + 8) use the cafeteria between noon and 1:00. This would explain why people routinely cannot find a table in the noon hour, especially between 12:15 and 12:30. To alleviate this problem, we might consider asking department heads not to schedule meetings between 11:30 and 1:30, to make it easier for their people to choose one of the less-popular times.

The body of a document is also a good place to discuss important non-quantitative data. For example, you might wish to discuss and interpret several representative textual answers to open-ended questions.

ETHICS NOTE

REPORTING AND ANALYZING DATA HONESTLY

When you put a lot of time and effort into a research project, it's frustrating if you can't find the information you need or if the information you find doesn't help you say what you want to say. As discussed in Chapter 2, your responsibility as a professional is to tell the truth.

If the evidence suggests that the course of action you propose won't work, don't omit that evidence or change it. Nor should you hide it in a place where readers may not see it. Rather, try to figure out why the evidence does not support your proposal. Present your explanation honestly and visibly.

If you can't find reputable evidence to support your claim that one device works better than another, don't just keep silent and hope your readers won't notice. Explain why you think the evidence is missing and how you propose to follow up by continuing your research.

If you make an honest mistake, you are a person. If you cover up a mistake, you're a dishonest person. If you get caught fudging the data, you could be an unemployed dishonest person. If you don't get caught, you're still a smaller person.

WRITER'S CHECKLIST

☐ Did you determine the questions you need to answer for your document? (p. 117)

Did you plan before beginning the research process, considering the following important issues:
☐ audience? (p. 118)
☐ purpose? (p. 118)
☐ subject? (p. 118)
☐ document type? (p. 118)
☐ schedule and budget? (p. 119)
☐ information needed? (p. 119)

Did you choose appropriate research tools to find sources, including
☐ library catalogs? (p. 122)
☐ online databases? (p. 123)
☐ newspaper and periodical indexes? (p. 123)
☐ abstract services? (p. 123)
☐ web search engines? (p. 123)
☐ reference works? (p. 123)

Did you find appropriate secondary-research sources to answer your questions, including
☐ books? (p. 124)
☐ journal and magazine articles? (p. 124)

☐ newspaper and online news articles? (p. 124)
☐ government documents? (p. 124)
☐ websites? (p. 125)
☐ social media? (p. 125)

In evaluating information, did you carefully assess
☐ the author's credentials? (p. 130)
☐ the publisher? (p. 130)
☐ the author's knowledge of literature in the field? (p. 130)
☐ the accuracy and verifiability of the information? (p. 131)
☐ the timeliness of the information? (p. 131)

Did you choose appropriate primary-research methods to answer your questions, including, if appropriate,
☐ social-media data analysis? (p. 131)
☐ observations and demonstrations? (p. 134)
☐ inspections? (p. 134)
☐ experiments? (p. 135)
☐ field research? (p. 135)
☐ interviews? (p. 136)
☐ inquiries? (p. 138)
☐ questionnaires? (p. 139)

☐ Did you report and analyze the data honestly? (p. 144)

EXERCISES

1. Imagine you are an executive working for a company that distributes books to bookstores in the Seattle, Washington, area. Your company, with a 20,000-square-foot warehouse and a fleet of 15 small delivery vans, employs 75 people. The following are three questions that an academic researcher specializing in energy issues might focus on in her research. Translate each of these academic questions into a workplace question that your company might need to answer.

   a. What are the principal problems that need to be resolved before biomass (such as switchgrass) can become a viable energy source for cars and trucks?

   b. How much money will need to be invested in the transmission grid before windmills can become a major part of the energy solution for business and residential customers in the western United States?

   c. Would a federal program that enables companies to buy and sell carbon offsets help or hurt industry in the United States?

2. For each of the following questions, select a research technique that is likely to yield a useful answer. For instance, if the question is "Which companies within a 20-mile radius of our company headquarters sell recycled paper?" a search of the web is likely to provide a useful answer.

   a. Does the Honda CR-V include traction control as a standard feature?

   b. How much money has our company's philanthropic foundation donated to colleges and universities in each of the last three years?

   c. How does a 3D printer work?

   d. Could our Building 3 support a rooftop green space?

   e. How can we determine whether we would save more money by switching to LED lighting in our corporate offices?

3. Using a search engine, answer the following questions. Provide the URL of each site that contains information for your answer. If your instructor requests it, submit your answers in an email to him or her.

   a. What are the three largest or most important professional organizations in your field? (For example, if you are a construction management major, your field is construction management, civil engineering, or industrial engineering.)

   b. What are three important journals read by people in your field?

   c. What are three important online discussion forums or bulletin boards read by people in your field?

   d. What are the date and location of an upcoming national or international professional meeting for people in your field?

   e. Name and describe, in one paragraph for each, three major issues being discussed by practitioners or academics in your field. For instance, nurses might be discussing the effect of managed care on the quality of medical care delivered to patients.

4. Revise the following interview questions to make them more effective. In a brief paragraph for each, explain why you have revised the question as you have.

   a. What is the role of communication in your daily job?

   b. Do you think it is better to relocate your warehouse or go to just-in-time manufacturing?

   c. Isn't it true that it's almost impossible to train an engineer to write well?

   d. Where are your company's headquarters?

   e. Is there anything else you think I should know?

5. Revise the following questions from questionnaires to make them more effective. In a brief paragraph for each, explain why you have revised the question as you have.

   a. Does your company provide tuition reimbursement for its employees? Yes_____ No_____

   b. What do you see as the future of bioengineering?

   c. How satisfied are you with the computer support you receive?

   d. How many employees work at your company?
   5–10_____ 10–15_____ 15 or more_____

   e. What kinds of documents do you write most often?
   memos_____ letters_____ reports_____

6. **TEAM EXERCISE** Form small groups, and describe and evaluate your college or university's website. A different member of the group might carry out each of the following tasks:

- In an email to the site's webmaster, ask questions about the process of creating the site. For example, how involved was the webmaster with the content and design of the site? What is the webmaster's role in maintaining the site?

- Analyze the kinds of information the site contains, and determine whether the site is intended

primarily for faculty, students, alumni, legislators, or prospective students.

- Determine the overlap between information on the site and information in printed documents published by the school. In those cases in which there is overlap, is the information on the site merely a duplication of the printed information, or has it been revised to take advantage of the unique capabilities of the web?

In a memo to your instructor, present your findings and recommend ways to improve the site.

CASE 6: Revising a Questionnaire

You're a marketing director at a real-estate company. You are trying to determine whether it would be cost-effective to have the company's agents take property photos instead of having the photos taken by the professional photographers employed by the supplier with which you currently contract. You ask one of your agents to develop a questionnaire to gauge agents' reactions to and opinions about the possibility of adding photography to their responsibilities, but you find that her questionnaire needs considerable revising before it will be an effective tool. To access the questionnaire and begin assessing it, go to LaunchPad.

CHAPTER

7 Organizing Your Information

DURING THE PLANNING PHASE of your writing process, you need to organize the information that will go into a document. Writers draw on a number of organizational patterns to deliver information to their audiences. But how do you know which organizational patterns will work best for a given project? Is it a question of the information you want to communicate? The audience you are addressing? The purpose you are trying to achieve? The culture in your own company? Short answer: to varying degrees, all of these factors will influence the pattern you choose. To get some ideas, talk with experienced co-workers, study other similar documents, and read this chapter.

At this point, you should know for whom you are writing and why, and you should have completed most of your research. Now it is time to start organizing the information that will make up the body of your document, whether it is a print document or an online one.

Understanding Three Principles for Organizing Technical Information

In organizing your information, analyze your audience and purpose, use conventional patterns of organization, and display your organizational pattern prominently.

As with any important writing task, you might want to discuss your ideas about how to organize the document with others in your network. They might identify other factors that you should consider or suggest other patterns of organization that might work better for your audience, purpose, and subject.

ANALYZING YOUR AUDIENCE AND PURPOSE

Although you thought about your audience and purpose as you planned and researched your subject, your analyses of audience and purpose are likely to change as you continue. Therefore, it is useful to review your initial assessment of audience and purpose before you proceed.

Will your audience like the message you will present? If so, announce your main point early in the document. If not, consider a pattern that presents

your important evidence before your main point. Is your audience used to seeing a particular pattern in the application (the kind of document you will be writing)? If they are, you will probably want to use that pattern, unless you have a good reason to use a different one.

What is your purpose in writing the document? Do you want your audience to understand a body of information or to accept a point of view and perhaps act on it? One purpose might call for a brief report without any appendixes; the other might require a detailed report, complete with appendixes.

For more about audience and purpose, see Ch. 5.

If you are addressing people from other cultures, remember that organizational patterns can vary from culture to culture. If you can, study documents written by people from the culture you are addressing to see whether they favor an organizational pattern different from the one you are considering. As you do so, ask yourself the following four questions:

- **Does the document follow expected organizational patterns?** For example, this chapter discusses the general-to-specific pattern. Does the document you are studying present the specific information first?

- **Do the introduction and conclusion present the kind of information you would expect?** In the United States, main findings are often presented in the introduction; in some other cultures, the main findings are not presented until late in the document.

- **Does the document appear to be organized linearly?** Is the main idea presented first in a topic sentence or thesis statement? Does supporting information follow? In some cultures, main ideas are withheld until the end of the paragraph or document.

- **Does the document use headings?** If so, does it use more than one level?

If documents from the culture you plan to address are organized very differently from those you're used to seeing, take extra steps to ensure that you don't distract readers by using an unfamiliar organizational pattern.

USING CONVENTIONAL PATTERNS OF ORGANIZATION

This chapter presents a number of conventional, or commonly used, patterns of organization, such as the chronological pattern and the spatial pattern. You should begin by asking yourself whether a conventional pattern for presenting your information already exists. Using a conventional pattern makes things easier for you as a writer and for your audience.

For you, a conventional pattern serves as a template or checklist, helping you remember which information to include and where to put it. In a proposal, for example, you include a budget, which you put near the end or in an appendix. For your audience, a conventional pattern makes your document easier to read and understand. Readers who are familiar with proposals can

find the information they want because you have put it where others have put similar information.

Does this mean that technical communication is merely a process of filling in the blanks? No. You need to assess the writing situation continuously as you work. If you think you can communicate your ideas better by modifying a conventional pattern or by devising a new pattern, do so. However, you gain nothing if an existing pattern would work just as well.

DISPLAYING YOUR ORGANIZATIONAL PATTERN PROMINENTLY

Make it easy for your readers to understand your organizational pattern. Displaying your pattern prominently involves three main steps:

- **Create a detailed table of contents.** If your document has a table of contents, including at least two levels of headings helps readers find the information they seek.
- **Use headings liberally.** Headings break up the text, making your pages more interesting visually. They also communicate the subject of the section and improve readers' understanding.
- **Use topic sentences at the beginnings of your paragraphs.** The topic sentence announces the main point of a paragraph and helps the reader understand the details that follow.

Understanding Conventional Organizational Patterns

Every argument calls for its own organizational pattern. Table 7.1 explains the relationship between organizational patterns and the kinds of information you want to present.

TABLE 7.1 Organizational Patterns and the Kinds of Information You Want To Present

IF YOU WANT TO ...	CONSIDER USING THIS ORGANIZATIONAL PATTERN	FOR EXAMPLE ...
Explain events that occurred or might occur or tasks that the reader is to carry out	**Chronological** (p. 152). Most of the time, you present information in chronological order. Sometimes, however, you use reverse chronology.	You describe the process used to diagnose the problem with the accounting software. Or, in a résumé, you describe your more recent jobs before your earlier ones.
Describe a physical object or scene, such as a device or a location	**Spatial** (p. 153). You choose an organizing principle such as top-to-bottom, east-to-west, or inside-to-outside.	You describe the three main buildings that will make up the new production facility.

(continued)

TABLE 7.1 Organizational Patterns and the Kinds of Information You Want To Present *(continued)*

IF YOU WANT TO ...	CONSIDER USING THIS ORGANIZATIONAL PATTERN	FOR EXAMPLE ...
Explain a complex situation, such as the factors that led to a problem or the theory that underlies a process	**General to specific** (p. 155). You present general information first, then specific information. Understanding the big picture helps readers understand the details.	You explain the major changes and the details of a law mandating the use of a new refrigerant in cooling systems.
Present a set of factors	**More important to less important** (p. 157). You discuss the most important issue first, then the next most important issue, and so forth. In technical communication, you don't want to create suspense. You want to present the most important information first.	When you launch a new product, you discuss market niche, competition, and then pricing.
Present similarities and differences between two or more items	**Comparison and contrast** (p. 158). You choose from one of two patterns: (1) discuss all the factors related to one item, then all the factors related to the next item, and so forth; (2) discuss one factor as it relates to all the items, then another factor as it relates to all the items, and so forth.	You discuss the strengths and weaknesses of three companies bidding on a contract your company is offering. You discuss everything about Company 1, then everything about Company 2, and then everything about Company 3. Or you discuss the management structure of Company 1, of Company 2, and of Company 3; then you address the engineering expertise of Company 1, of Company 2, and of Company 3; and so forth.
Assign items to logical categories or discuss the elements that make up a single item	**Classification or partition** (p. 161). Classification involves placing items into categories according to some criterion. Partition involves breaking a single item or a group of items into major elements.	For classification, you group the motors your company manufactures according to the fuel they burn: gasoline or diesel. For partition, you explain the operation of each major component of one of your motors.
Discuss a problem you encountered, the steps you took to address the problem, and the outcome or solution	**Problem-methods-solution** (p. 163). You can use this pattern in discussing the past, the present, or the future. Readers understand this organizational pattern because they use it in their everyday lives.	In describing how your company is responding to a new competitor, you discuss the problem (the recent loss in sales), the methods (how you plan to examine your product line and business practices), and the solution (which changes will help your company prosper).
Discuss the factors that led to (or will lead to) a given situation, or the effects that a situation led to or will lead to	**Cause and effect** (p. 166). You can start from causes and speculate about effects, or you can start with the effect and try to determine which factors were the causes of that effect.	You discuss factors that you think contributed to a recent sales dip for one of your products. Or you explain how you think changes to an existing product will affect its future sales.

Different sections of this manual use different organizational patterns.

Chapter 1 is organized *chronologically:* you take the product out of the box before you set it up and run it and before you shut it down.

In Chapter 1, the section called "Opening the Box" uses *partition* by showing and naming the various items that are included in the package.

Chapter 2 is organized from *general to specific:* you want to understand the basic features of the product before you study the more specialized features.

Chapter 3 is organized according to the *problem-methods-solution* pattern. The reader tries to solve the problem by reading the troubleshooting tips, locating other resources, and contacting the manufacturer.

CONTENTS

Chapter 1: Setting Up Your Susamu Tablet

Chapter 2: Using Your Susamu Tablet

Chapter 3: If You Have Problems

FIGURE 7.1   Using Multiple Organizational Patterns in a Single Document

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Long, complex arguments often require several organizational patterns. For instance, one part of a document might be a causal analysis of the problem you are writing about, and another might be a comparison and contrast of two options for solving that problem. Figure 7.1, an excerpt from a user's manual, shows how different patterns might be used in a single document.

CHRONOLOGICAL

The chronological—or timeline—pattern is commonly used to describe events. In an *accident report,* you describe the events in the order in which they occurred. In the background section of a *report,* you describe the events that led to the present situation. In a set of slides for an *oral presentation,* you explain the role of social media in U.S. presidential elections by discussing each of the presidential elections, in order, since 2000.

◢ GUIDELINES Organizing Information Chronologically

These three suggestions can help you write an effective chronological passage.

▶ **Provide signposts.** If the passage is more than a few hundred words long, use headings. Choose words such as *step, phase, stage,* and *part,* and consider numbering them. Add descriptive phrases to focus readers' attention on the topic of the section:
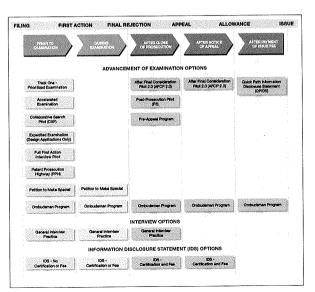
(continued)

Phase One: Determining Our Objectives
Step 3: Installing the Lateral Supports

At the paragraph and sentence levels, transitional words such as *then, next, first,* and *finally* will help your reader follow your discussion.

▶ **Consider using graphics to complement the text.** Flowcharts, in particular, help you emphasize chronological passages for all kinds of readers, from the most expert to the general reader.

▶ **Analyze events where appropriate.** When you use chronology, you are explaining what happened in what sequence, but you are not necessarily explaining why or how an event occurred or what it means. For instance, the largest section of an accident report is usually devoted to the chronological discussion, but the report is of little value unless it explains what caused the accident, who bears responsibility, and how such accidents can be prevented.

Figure 7.2, a timeline presented on the website of the U.S. Patent and Trademark Office, is organized chronologically.

FIGURE 7.2   Information Organized Chronologically
Information from United States Patent and Trademark Office, 2016: www.uspto.gov/patent/initiatives.

The U.S. Patent and Trademark Office created this timeline to display the various programs and initiatives that are available to applicants during each phase of the application process. In the live version of this document on the USPTO website, each program title links to more specific information about objectives and participation requirements.

SPATIAL

The spatial pattern is commonly used to describe objects and physical sites. In an *accident report*, you describe the physical scene of the accident. In a *feasibility study* about building a facility, you describe the property on which it would be built. In a *proposal* to design a new microchip, you describe the layout of the new chip. The Guidelines box on page 155 can help you organize information spatially.

Figure 7.3 shows the use of spatial organization.

FIGURE 7.3 Information Organized Spatially

Information from EnergyStar, 2014: www.energystar.gov/?c=home_sealing .hm_.improvement_.insulation_table.

This information is addressed to homeowners who want to add insulation to their attics or floors. To help readers understand how much insulation they need based on their climate, the writers could have used an alphabetical list of cities or states or zip codes. Instead, the writers chose a map because it enables readers to quickly and easily "see" the climate in their region.

Recommended Levels of Insulation

Insulation level are specified by R-Value. R-Value is a measure of insulation's ability to resist heat traveling through it. The higher the R-Value the better the thermal performance of the insulation. The table below shows what levels of insulation are cost-effective for different climates and locations in the home.

Recommended insulation levels for retrofitting existing wood-framed buildings

Zone	Add Insulation to Attic		Floor
	Uninsulated Attic	Existing 3-4 Inches of Insulation	
1	R30 to R49	R25 to R30	R13
2	R30 to R60	R25 to R38	R13 to R19
3	R30 to R60	R25 to R38	R19 to R25
4	R38 to R60	R38	R25 to R30
5 to 8	R49 to R60	R38 to R49	R25 to R30

Wall Insulation: *Whenever exterior siding is removed on an*

Uninsulated wood-frame wall:

• Drill holes in the sheathing and blow insulation into the empty wall cavity before installing the new siding, and
• Zones 3–4: Add R5 insulative wall sheathing beneath the new siding
• Zones 5–8: Add R5 to R6 insulative wall sheathing beneath the new siding.

Insulated wood-frame wall:

• For Zones 4 to 8: Add R5 insulative sheathing before installing the new siding.

GUIDELINES Organizing Information Spatially

These three suggestions can help you write an effective spatial passage.

▶ **Provide signposts.** Help your readers follow the argument by using words and phrases that indicate location (*to the left, above, in the center*) in headings, topic sentences, and support sentences.

▶ **Consider using graphics to complement the text.** Diagrams, drawings, photographs, and maps clarify spatial relationships.

▶ **Analyze events where appropriate.** A spatial arrangement doesn't explain itself; you have to do the analysis. A diagram of a floor plan cannot explain why the floor plan is effective or ineffective.

GENERAL TO SPECIFIC

The general-to-specific pattern is useful when your readers need a general understanding of a subject to help them understand and remember the details. For example, in a *report*, you include an executive summary—an overview for managers—before the body of the report. In a set of *instructions*, you provide general information about the necessary tools and materials and about safety measures before presenting the step-by-step instructions. In a *blog*, you describe the topic of the blog before presenting the individual blog posts.

Figure 7.4 (on page 156), from the U.S. Department of State, explains the principles underlying the nation's cybersecurity policy.

GUIDELINES Organizing Information from General to Specific

These two suggestions can help you use the general-to-specific pattern effectively.

▶ **Provide signposts.** Explain that you will address general issues first and then move on to specific concerns. If appropriate, incorporate the words *general* and *specific* or other relevant terms in the major headings or at the start of the text for each item you describe.

▶ **Consider using graphics to complement the text.** Diagrams, drawings, photographs, and maps help your reader understand both the general information and the fine points.

The first paragraph is an *advance organizer*: a general summary of the topics that will be addressed in more detail.

The three topics are announced in the italicized phrases.

These phrases are used at the start of the three sections.

The United States will confront these [cyberterrorism] challenges — while preserving our core principles. Our policies flow from a commitment to both preserving the best of cyberspace and safeguarding our principles. Our international cyberspace policy reflects our core commitments to *fundamental freedoms, privacy,* and the *free flow of information.*

Fundamental Freedoms. Our commitment to freedom of expression and association is abiding, but does not come at the expense of public safety or the protection of our citizens. Among these civil liberties, recognized internationally as "fundamental freedoms," the ability to seek, receive and impart information and ideas through any medium and regardless of frontiers has never been more relevant. As a nation, we are not blind to those Internet users with malevolent intentions, but recognize that exceptions to free speech in cyberspace must also be narrowly tailored. For example, child pornography, inciting imminent violence, or organizing an act of terrorism have no place in any society, and thus, they have no place on the Internet. Nonetheless, the United States will continue to combat them in a manner consistent with our core values — treating these issues specifically, and not as referenda on the Internet's value to society.

Privacy. Our strategy marries our obligation to protect our citizens and interests with our commitment to privacy. As citizens increasingly engage via the Internet in their public and private lives, they have expectations for privacy: individuals should be able to understand how their personal data may be used, and be confident that it will be handled fairly. Likewise, they expect to be protected from fraud, theft, and threats to personal safety that lurk online — and expect law enforcement to use all the tools at their disposal, pursuant to law, to track and prosecute those who would use the Internet to exploit others. The United States is committed to ensuring balance on both sides of this equation, by giving law enforcement appropriate investigative authorities it requires, while protecting individual rights through appropriate judicial review and oversight to ensure consistency with the rule of law.

Free Flow of Information. States do not, and should not have to choose between the free flow of information and the security of their networks. The best cybersecurity solutions are dynamic and adaptable, with minimal impact on network performance. These tools secure systems without crippling innovation, suppressing freedom of expression or association, or impeding global interoperability. In contrast, we see other approaches — such as national-level filters and firewalls — as providing only an illusion of security while hampering the effectiveness and growth of the Internet as an open, interoperable, secure, and reliable medium of exchange. The same is true commercially; cyberspace must remain a level playing field that rewards innovation, entrepreneurship, and industriousness, not a venue where states arbitrarily disrupt the free flow of information to create unfair advantage. The United States is committed to international initiatives and standards that enhance cybersecurity while safeguarding free trade and the broader free flow of information, recognizing our global responsibilities, as well as our national needs.

FIGURE 7.4 Information Organized from General to Specific

Information from U.S. Department of State, 2011: www.whitehouse.gov/sites/default/files/rss_viewer/international_strategy_for_cyberspace.pdf.

MORE IMPORTANT TO LESS IMPORTANT

The more-important-to-less-important organizational pattern recognizes that readers often want the bottom line — the most important information — first. For example, in an *accident report*, you describe the three most important factors that led to the accident before describing the less important factors. In a *feasibility study* about building a facility, you present the major reasons that the proposed site is appropriate, then the minor reasons. In a *proposal* to design a new microchip, you describe the major applications for the new chip, then the minor applications.

For most documents, this pattern works well because readers want to get to the bottom line as soon as possible. For some documents, however, other patterns work better. People who write for readers outside their own company often reverse the more-important-to-less-important pattern because they want to make sure their audience reads the whole discussion. This reversed pattern is also popular with writers who are delivering bad news. For instance, if you want to justify recommending that your organization *not* go ahead with a popular plan, the reverse sequence lets you explain the problems with the popular plan before you present the plan you recommend. Otherwise, readers might start to formulate objections before you have had a chance to explain your position.

Figure 7.5 (on page 158), from the U.S. Department of Agriculture, shows the more-important-to-less-important organizational structure.

◢
GUIDELINES **Organizing Information from More Important to Less Important**

These three suggestions can help you write a passage organized from more important to less important.

▸ **Provide signposts.** Tell your readers how you are organizing the passage. For instance, in the introduction of a proposal to design a new microchip, you might write, "The three applications for the new chip, each of which is discussed below, are arranged from most important to least important."

In creating signposts, be straightforward. If you have two very important points and three less important points, present them that way: group the two important points and label them something like "Major Reasons to Retain Our Current Management Structure." Then present the less important factors as "Other Reasons to Retain Our Current Management Structure." Being straightforward makes the material easier to follow and enhances your credibility.

▸ **Explain why one point is more important than another.** Don't just say that you will be arranging the items from more important to less important. Explain why the more important point is more important.

▸ **Consider using graphics to complement the text.** Diagrams and numbered lists often help to suggest levels of importance.

Writers of technical communication often have to explain why some information is more important than other information. To do so, they typically present the more important information first and use words and phrases to signal the importance of the points they present. This paragraph sketches the background of the Forest Service's strategy for combatting the damage done by bark beetles. Notice that the problem the paragraph focuses on first is the health and safety risks posed by the falling trees. The next point, about the environmental impacts, is less important, as suggested by the word "also" in the final sentence.

FIGURE 7.5 Information Organized from More Important to Less Important

Information from U.S. Department of Agriculture, 2012: www.fs.fed.us /restoration/Bark_Beetle/overview.shtml.

Here the writer uses the words "first" and "second" to signal priority. Safety is the most important issue; reforestation is less important, as suggested by the phrase "After the priority of safety." Thinning the forests is a lower priority, as suggested by the word "also" in the phrase "Forests will also be thinned."

WESTERN BARK BEETLE STRATEGY OVERVIEW

Across six states of the interior west, over 17.5 million acres of forested lands are infested by bark beetles. The infestation is growing at an estimated 600,000 acres a year with the potential to affect the majority of our western pine, fir and spruce forests. It is estimated that 100,000 beetle-killed trees are currently falling daily, posing a serious health and safety threat to forest visitors, residents and employees. The epidemic is also causing unprecedented environmental impacts.

The Western Bark Beetle Strategy (PDF, 7.0 MB) developed in 2011 identifies how the Forest Service is responding to and will respond to the western bark beetle epidemic over the next five years (FY 2011–2016). The extent of the epidemic requires prioritization of treatments, first providing for human safety in areas threatened by standing dead hazard trees, and second, addressing dead and down trees that create hazardous fuels conditions adjacent to high value areas. After the priority of safety, forested areas with severe mortality will be reforested with the appropriate species (recovery). Forests will also be thinned to reduce the number of trees per acre and create more diverse stand structures to minimize extensive epidemic bark beetle areas (resiliency). This is a modest strategy that reflects current budget realities, but focuses resources in the most important places that can make a big difference to the safety of the American public.

COMPARISON AND CONTRAST

Typically, the comparison-and-contrast pattern is used to describe and evaluate two or more items or options. For example, in a *memo*, you compare and contrast the credentials of three finalists for a job. In a *proposal* to design a new microchip, you compare and contrast two different strategies for designing the chip. In a *video* explaining different types of low-emissions vehicles, you compare and contrast electric cars and hybrids.

The first step in comparing and contrasting two or more items is to determine the *criteria*: the standards or needs you will use in studying the items. For example, if a professional musician who plays the piano in restaurants was looking to buy a new portable keyboard, she might compare and contrast available instruments using the number of keys as one criterion. For this person, 88 keys would be better than 64. Another criterion might be weight: lighter is better than heavier.

Almost always, you will need to consider several or even many criteria. Start by deciding whether each criterion represents a *necessary* quality or merely a *desirable* one. In studying keyboards, for instance, the number of keys might be a necessary quality. If you need an 88-key instrument to play your music, you won't consider any instruments without 88 keys. The same thing might be true of touch-sensitive keys. But a MIDI interface might be

less important, a merely desirable quality; you would like MIDI capability, but you would not eliminate an instrument from consideration just because it doesn't have MIDI.

Two typical patterns for organizing a comparison-and-contrast discussion are *whole-by-whole* and *part-by-part*. The following example illustrates the difference between them. The example shows how two printers—Model 5L and Model 6L—might be compared and contrasted according to three criteria: price, resolution, and print speed.

The whole-by-whole pattern provides a coherent picture of each option: Model 5L and Model 6L. This pattern works best if your readers need an overall assessment of each option or if each option is roughly equivalent according to the criteria.

Whole-by-whole	Part-by-part
Model 5L	Price
• price	• Model 5L
• resolution	• Model 6L
• print speed	
	Resolution
Model 6L	• Model 5L
• price	• Model 6L
• resolution	
• print speed	Print Speed
	• Model 5L
	• Model 6L

The part-by-part pattern lets you focus your attention on the criteria. If, for instance, Model 5L produces much better resolution than Model 6L, the part-by-part pattern reveals this difference more effectively than the whole-by-whole pattern does. The part-by-part pattern is best for detailed comparisons and contrasts.

You can have it both ways. You can begin with a general description of the various items and then use a part-by-part pattern to emphasize particular aspects.

Once you have chosen the overall pattern—whole-by-whole or part-by-part—you decide how to order the second-level items. That is, in a whole-by-whole passage, you have to sequence the aspects of the items or options being compared; in a part-by-part passage, you have to sequence the items or options themselves.

Figure 7.6 (on page 160) shows a comparison-and-contrast table about employment in the labor force.

GUIDELINES Organizing Information by Comparison and Contrast

These four suggestions can help you compare and contrast items effectively.

▶ **Establish criteria for the comparison and contrast.** Choose criteria that are consistent with the needs of your audience.

▶ **Evaluate each item according to the criteria you have established.** Draw your conclusions.

▶ **Organize the discussion.** Choose either the *whole-by-whole* or the *part-by-part* pattern or some combination of the two. Then order the second-level items.

▶ **Consider using graphics to complement the text.** Graphics can clarify and emphasize comparison-and-contrast passages. Diagrams, drawings, and tables are common ways to provide such clarification and emphasis.

This excerpt from an infographic published by the federal government presents a lot of information about employment in the civilian labor force in the United States, in the five years from 2006 through 2010 and in 1970. The main theme is the comparison between men and women: how many are in the workforce and what jobs they hold. Because the main basis of comparison and contrast is the sex of workers, the writers chose a basic table structure, with data about men in one column and data about women in the other.

America's Changing Labor Force

The **Equal Employment Opportunity (EEO) Tabulation,** based on the American Community Survey (ACS), provides statistics on the demographics of the workforce by occupation. The U.S. Census Bureau has produced this tabulation after every census since the 1970s. However, for the first time, this tabulation used five years of statistics from the American Community Survey (2006-2010). They serve as the primary benchmark for assessing the diversity of the labor force and monitoring compliance with civil rights laws. This infographic focuses on men and women in the civilian labor force and what we can learn from the EEO tabulations over the past five decades.

Men   Women

Leading Occupations

2006–2010

Truck drivers 3.2M
Miscellaneous managers ... 2.1M
Freight, stock, and material movers 1.9M

Secretaries and administrative assistants.......................... 3.8M
Cashiers 2.8M
Elementary and middle school teachers 2.7M

1970

Miscellaneous managers 1.9M
Truck drivers 1.5M
Production supervisors . 1.4M

Secretaries 2.8M
Bookkeepers 1.4M
Elementary school teachers 1.3M

Occupational Growth Since 2000

Men's representation grew among tellers, loan interviewers and clerks, and insurance claims and policy processing clerks.
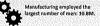
Some of the occupations with the largest increases in women's representation were dentists, veterinarians, and physicians and surgeons.

Leading Industries

Manufacturing employed the largest number of men: 10.8M.

Educational services, health care, and social assistance employed the largest number of women: 22.4M.

ETHICS NOTE

COMPARING AND CONTRASTING FAIRLY

Because the comparison-and-contrast organizational pattern is used frequently in evaluating items, it appears often in product descriptions as part of the argument that one company's products are better than a competitor's. There is nothing unethical in this. But it is unethical to misrepresent items, such as when writers portray their own product as better than it is or portray their competitor's as worse than it is.

Obviously, lying about a product is unethical. But some practices are not so easy to characterize. For example, suppose your company makes tablet computers and your chief competitor's model has a longer battery life than yours. In comparing and contrasting the two tablets, are you ethically obligated to mention battery life? No, you are not. If readers are interested in battery life, it is their responsibility to figure out what your failure to mention battery life means and seek further information from other sources. If you do mention battery life, however, you must do so honestly, using industry-standard techniques for measuring it. You cannot measure your tablet's battery life under one set of conditions and your competitor's under another set.

CLASSIFICATION OR PARTITION

Classification is the process of assigning items to categories. For instance, all the students at a university could be classified by sex, age, major, and many other characteristics. You can also create subcategories within categories, such as males and females majoring in business.

GUIDELINES Organizing Information by Classification or Partition

These six suggestions can help you write an effective classification or partition passage.

▶ **Choose a basis of classification or partition that fits your audience and purpose.** If you are writing a warning about snakes for hikers in a particular state park, your basis of classification will probably be whether the snakes are poisonous. You will describe all the poisonous snakes, then all the nonpoisonous ones.

▶ **Use only one basis of classification or partition at a time.** If you are classifying graphics programs according to their technology — paint programs and draw programs — do not include another basis of classification, such as cost.

▶ **Avoid overlap.** In classifying, make sure that no single item could logically be placed in more than one category. In partitioning, make sure that no listed component includes another listed component. Overlapping generally occurs when you change the basis of classification or the level at which you are partitioning a unit. In the following classification of bicycles, for instance, the writer introduces a new basis of classification that results in overlapping categories:

— mountain bikes

— racing bikes

— comfort bikes

— ten-speed bikes

The first three items share a basis of classification: the general category of bicycle. The fourth item has a different basis of classification: number of speeds. Adding the fourth item is illogical because a particular ten-speed bike could be a mountain bike, a racing bike, or a comfort bike.

▶ **Be inclusive.** Include all the categories necessary to complete your basis of classification. For example, a partition of an automobile by major systems would be incomplete if it included the electrical, fuel, and drive systems but not the cooling system. If you decide to omit a category, explain why.

▶ **Arrange the categories in a logical sequence.** Use a reasonable plan, such as chronology (first to last), spatial development (top to bottom), or importance (most important to least important).

▶ **Consider using graphics to complement the text.** Organization charts are commonly used in classification passages; drawings and diagrams are often used in partition passages.

Classification is common in technical communication. In a *feasibility study* about building a facility, you classify sites into two categories: domestic or foreign. In a *journal article* about ways to treat a medical condition, you classify the treatments as surgical or nonsurgical. In a description of a major in a *college catalog*, you classify courses as required or elective.

Partition is the process of breaking a unit into its components. For example, a home-theater system could be partitioned into the following components: TV, amplifier, peripheral devices such as DVD players, and speakers. Each component is separate, but together they form a whole system. Each component can, of course, be partitioned further.

Partition is used in descriptions of objects, mechanisms, and processes. In an *equipment catalog*, you use partition to describe the major components of one of your products. In a *proposal*, you use partition to present a detailed description of an instrument you propose to develop. In a *brochure*, you explain how to operate a product by describing each of its features.

In Figure 7.7, the writer uses classification effectively in introducing categories of tornados to a general audience.

FIGURE 7.7 Information Organized by Classification

The Enhanced Fujita (EF) rating scale classifies tornados according to their wind speed and destructiveness.

Information from National Oceanic and Atmospheric Administration, 2012. Explanation of EF-scale ratings: www.srh .noaa.gov/hun/?n=efscale_explanation.

Explanation of EF-Scale Ratings

Over the course of April 27th, 2011, damage across the entire range of the EF scale was sustained in some portion of the Huntsville County Warning Forecast Area. Below is a chart that explains what type of damage is associated with each ranking on the EF scale, including example photographs from the April 27th event.

EF Rating	Wind Speeds	Expected Damage
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.
EF-5	>200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.

Figure 7.8 illustrates partition. For more examples of partition, see Chapter 20, which includes descriptions of objects, mechanisms, and processes.

PROBLEM-METHODS-SOLUTION

The problem-methods-solution pattern reflects the logic used in carrying out a project. The three components of this pattern are simple to identify:

- **Problem.** A description of what was not working (or not working effectively) or what opportunity exists for improving current processes.

- **Methods.** The procedures performed to confirm the analysis of the problem, solve the problem, or exploit the opportunity.

- **Solution.** The statement of whether the analysis of the problem was correct or of what was discovered or devised to solve the problem or capitalize on the opportunity.

FIGURE 7.8 Information Organized by Partition

Information from U.S. Department of Energy, 2013: www2.eere.energy.gov /wind/printable_versions/inside_a _wind_turbine.html.

This example of partition begins with a textual overview of the topic.

This interactive graphic enables the reader to see the components of the wind turbine in operation as the equipment generates electricity.

Following this graphic is a description of each of the components shown in the graphic.

THE INSIDE OF A WIND TURBINE

Wind turbines harness the power of the wind and use it to generate electricity. Simply stated, a wind turbine works the opposite of a fan. Instead of using electricity to make wind, like a fan, wind turbines use wind to make electricity. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity. This illustration provides a detailed view of the inside of a wind turbine, its components, and their functionality.
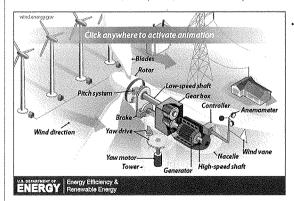
The problem-methods-solution pattern is common in technical communication. In a *proposal*, you describe a problem in your business, how you plan to carry out your research, and how your deliverable (an object or a report) can help solve the problem. In a *completion report* about a project to improve a manufacturing process, you describe the problem that motivated the project, the methods you used to carry out the project, and the findings: the results, conclusions, and recommendations.

GUIDELINES **Organizing Information by Problem-Methods-Solution**
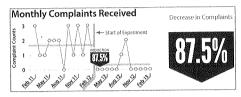
These five suggestions can help you write an effective problem-methods-solution passage.

▶ **In describing the problem, be clear and specific.** Don't write, "Our energy expenditures are getting out of hand." Instead, write, "Our energy usage has increased 7 percent in the last year, while utility rates have risen 11 percent." Then calculate the total increase in energy costs.

▶ **In describing your methods, help your readers understand what you did and why you did it that way.** You might need to justify your choices. Why, for example, did you use a *t*-test in calculating the statistics in an experiment? If you can't defend your choice, you lose credibility.

▶ **In describing the solution, don't overstate.** Avoid overly optimistic claims, such as "This project will increase our market share from 7 percent to 10 percent within 12 months." Instead, be cautious: "This project could increase our market share from 7 percent to 10 percent." This way, you won't be embarrassed if things don't turn out as well as you had hoped.

▶ **Choose a logical sequence.** The most common sequence is to start with the problem and conclude with the solution. However, different sequences work equally well as long as you provide a preliminary summary to give readers an overview and include headings or some other design elements to help readers find the information they want (see Chapter 11). For instance, you might want to put the methods last if you think your readers already know them or are more interested in the solution.

▶ **Consider using graphics to complement the text.** Graphics, such as flowcharts, diagrams, and drawings, can clarify problem-methods-solution passages.

Figure 7.9 shows the problem-methods-solution pattern. The passage is from a case study of a police department using TASER equipment to solve two problems.

Challenge When facing the public, Rialto PD found two main areas for improvement: Use of Force, and Officer Complaints. These issues cost the department valuable time and resources. Rialto PD believed that improving oversight, gathering more video evidence, and improving trust within the community would decrease the frequency of these issues. **Solution** Rialto PD invested in TASER's Digital Evidence Ecosystem, AXON flex and EVIDENCE.com. After purchasing 66 cameras and licenses to EVIDENCE.com, the PD began a scientific research study to determine the effects of TASER's AXON flex and EVIDENCE.com solution.

To protect the integrity of data gathered during the experiment, Rialto PD used the "Cambridge Randomizer" and followed a strict scientific process. This strategy shaped a sophisticated, Web-based experiment with data protected from outside influences. . . . Because of Rialto PD's extensive data gathering and controlled study, the data is compelling. Over the course of 1 year, officer complaints fell by 87.5% in the experimental group. The data shows the officers increased interactions with the public compared to the previous year, and still complaints fell dramatically.

"Challenge" presents the problem at the Rialto, California, police department.

"Solution" begins with a discussion of the methods the police department used to solve the two problems.

Monthly Complaints Received — Decrease in Complaints — 87.5%

Rialto PD also focused on their Officer use-of-force data. During the experiment, individuals wearing an AXON flex reduced use-of-force by 59%. This data indicates that the presence of the camera not only encouraged compliance from the public but it also reduced instances of use of force by officers.

Note that writers do not necessarily use the words problem, methods, *and* solution *in this method of organization. Don't worry about the terminology; the important point is to recognize that this organizational pattern is based on identifying a problem, doing something to respond to it, and thereby reducing or solving it.*

Patrol Officer's Use-of-Force — Reduced Use-of-Force — 59%

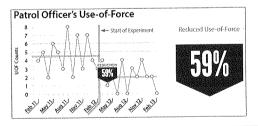**FIGURE 7.9** **Information Organized by the Problem-Methods-Solution Pattern**
Reprinted by permission of TASER International, Inc.

CAUSE AND EFFECT

Technical communication often involves cause-and-effect discussions. Sometimes you will reason forward, from cause to effect: if we raise the price of a particular product we manufacture (cause), what will happen to our sales (effect)? Sometimes you will reason backward, from effect to cause: productivity went down by 6 percent in the last quarter (effect); what factors led to this decrease (causes)? Cause-and-effect reasoning, therefore, provides a way to answer the following two questions:

- What will be the effect(s) of X?
- What caused X?

Arguments organized by cause and effect appear in various types of technical communication. In an *environmental impact statement*, you argue that a proposed construction project would have three important effects on the ecosystem. In the recommendation section of a *report*, you argue that a recommended solution would improve operations in two major ways. In a *memo*, you describe a new policy and then explain the effects you anticipate the policy will have.

Cause-and-effect relationships are difficult to describe because there is no scientific way to determine causes or effects. You draw on your common sense and your knowledge of your subject. When you try to determine, for example, why the product your company introduced last year sold poorly, you start with the obvious possibilities: the market was saturated, the product was of low quality, the product was poorly marketed, and so forth. The more you know about your subject, the more precise and insightful your analysis will be.

◢
GUIDELINES Organizing Information by Cause and Effect

These four suggestions can help you write an effective cause-and-effect passage.

▸ **Explain your reasoning.** To support your claim that the product was marketed poorly, use specific facts and figures: the low marketing budget, delays in beginning the marketing campaign, and so forth.

▸ **Avoid overstating your argument.** For instance, if you write that Bill Gates, the co-founder of Microsoft, "created the computer revolution," you are claiming too much. It is better to write that Gates "was one of the central players in creating the computer revolution."

For more about logical fallacies, see Ch. 8, p. 186.

▸ **Avoid logical fallacies.** Logical fallacies, such as hasty generalizations or post hoc reasoning, can also undermine your discussion.

▸ **Consider using graphics to complement the text.** Graphics, such as flowcharts, organization charts, diagrams, and drawings, can clarify and emphasize cause-and-effect passages.

But a causal discussion can never be certain. You cannot *prove* why a product failed in the marketplace; you can only explain why the factors you are identifying are the most plausible causes or effects. For instance, to make a plausible case that the main reason for the product's weak performance is that it was poorly marketed, you can show that, in the past, your company's other unsuccessful products were marketed in similar ways and your company's successful products were marketed in other ways.

Figure 7.10 illustrates an effective cause-and-effect argument. The writer is explaining why electric vehicles have not sold well in the United States.

Electric motors are superior to internal-combustion engines—on paper, at least. They have better torque, they have only one moving part, and they are easy to maintain. But the sales of all-electric cars in the United States have been weak. Four factors are holding back the sales of all-electric cars:

- **Range.** The electric car with the best range can travel about 300 miles, but it is a very expensive two-seater. The best-selling and more affordable electric models claim only 100 miles. Compared to a gasoline-powered car, with a range of 300–500 miles, the electric car simply isn't practical for someone who doesn't already have a standard car to use for long trips.

- **Charge time.** On a 120-volt outlet, the average electric car takes almost 20 hours to charge. On a 240-volt outlet, it's 7 hours. Few drivers want to plan their trips around downtimes as long as that.

- **Infrastructure.** Even in the most densely populated regions of the country, there are still only about a third as many charging stations as there are gas stations. In 2012, there were 125,000 gas stations in the nation, but only 10,000 electric-car charge points.

- **Cost.** The enormous R&D costs of electric cars are being passed on to consumers. An electric car can cost 40% more than a comparable gasoline-powered car, so it takes drivers years to make up the difference in fuel savings.

The first paragraph presents the effect in this cause-effect argument: electric cars are not popular in the United States.
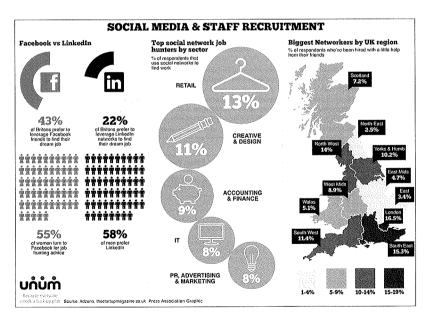
The bullet list presents four causes.

FIGURE 7.10 A Discussion Organized by the Cause-and-Effect Pattern

DOCUMENT ANALYSIS ACTIVITY

Using Multiple Organizational Patterns in an Infographic

This infographic about how job seekers in England use social media presents three sets of data, each of which uses a different organizational pattern. The questions below ask you to think about the organizational patterns.

1. On the left, Facebook and LinkedIn are compared in two pairs of graphics. Is the comparison in each pair clear and easy to understand? Would other types of graphics be easier to understand?

2. In the middle section of the infographic, which organizational pattern is being used? How effective is it in helping readers understand the information?

3. What are the two organizational patterns being used to communicate the data in the map of England?

SOCIAL MEDIA & STAFF RECRUITMENT

Facebook vs LinkedIn

43%
of Britons prefer to leverage Facebook friends to find their dream job

22%
of Britons prefer to leverage LinkedIn networks to find their dream job

55%
of women turn to Facebook for job hunting advice

58%
of men prefer LinkedIn

unum
Because everyone needs a back-up plan   Source: Adzuna, thestartupmagazine.co.uk Press Association Graphic

Top social network job hunters by sector
% of respondents that use social networks to find work

RETAIL
13%

CREATIVE & DESIGN
11%

ACCOUNTING & FINANCE
9%

IT
8%

PR, ADVERTISING & MARKETING
8%

Biggest Networkers by UK region
% of respondents who've been hired with a little help from their friends

Scotland 7.2%
North East 2.5%
North West 14%
Yorks & Humb 10.2%
East Mids 4.7%
West Mids 8.9%
East 3.4%
Wales 5.1%
London 16.5%
South West 11.4%
South East 15.3%

1-4%   5-9%   10-14%   15-19%

Source: Unum, 2013: www.unum.co.uk/hr/3-staff-recruitment-problems-that-social-media-solves.
Used by permission of Unum, Ltd.

WRITER'S CHECKLIST

☐ Did you analyze your audience and purpose? (p. 148)

☐ Did you consider using a conventional pattern of organization? (p. 149)

Did you display your organizational pattern prominently by

☐ creating a detailed table of contents? (p. 150)

☐ using headings liberally? (p. 150)

☐ using topic sentences at the beginnings of your paragraphs? (p. 150)

The following checklists cover the eight organizational patterns discussed in this chapter.

Chronological and Spatial

Did you

☐ provide signposts, such as headings and transitional words or phrases? (pp. 152, 155)

☐ consider using graphics to complement the text? (pp. 153, 155)

☐ analyze events where appropriate? (pp. 153, 155)

General to Specific

Did you

☐ provide signposts, such as headings and transitional words or phrases? (p. 155)

☐ consider using graphics to complement the text? (p. 155)

More Important to Less Important

Did you

☐ provide signposts, explaining clearly that you are using this organizational pattern? (p. 157)

☐ explain why the first point is the most important, the second is the second most important, and so forth? (p. 157)

☐ consider using graphics to complement the text? (p. 157)

Comparison and Contrast

Did you

☐ establish criteria for the comparison and contrast? (p. 159)

☐ evaluate each item according to the criteria you established? (p. 159)

☐ organize the discussion by choosing the pattern — whole-by-whole or part-by-part — that is most appropriate for your audience and purpose? (p. 159)

☐ consider using graphics to complement the text? (p. 159)

Classification or Partition

Did you

☐ choose a basis of classification or partition that fits your audience and purpose? (p. 161)

☐ use only one basis of classification or partition at a time? (p. 161)

☐ avoid overlap? (p. 161)

☐ include all the appropriate categories? (p. 161)

☐ arrange the categories in a logical sequence? (p. 161)

☐ consider using graphics to complement the text? (p. 161)

Problem-Methods-Solution

Did you

☐ describe the problem clearly and specifically? (p. 164)

☐ if appropriate, justify your methods? (p. 164)

☐ avoid overstating your solution? (p. 164)

☐ arrange the discussion in a logical sequence? (p. 164)

☐ consider using graphics to complement the text? (p. 164)

Cause and Effect

Did you

☐ explain your reasoning? (p. 166)

☐ avoid overstating your argument? (p. 166)

☐ avoid logical fallacies? (p. 166)

☐ consider using graphics to complement the text? (p. 166)