

13

Instructions and Procedures



LEARNING OBJECTIVES FOR THIS CHAPTER

- Identify various types of instructions and their uses
- Understand the ethical and legal implications of instructions
- Understand the components of instructions
- Determine the level of detail and technicality necessary for a given set of instructions
- Write instructions with a readable style and accessible design
- Understand the components of procedures
- Write a set of procedures
- Test instructions and procedures for usability

CHAPTER OUTLINE

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LET'S GET STARTED

Instructions

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Almost everyone writes instructions. Think about the last time someone asked you how to get to your apartment or house. You may have told them to look it up on Google Maps, but you probably also gave some simple step-by-step instructions (“Get off at Exit 12. Turn left. Go about 1/2 mile...”). Before reading the material in this chapter, write instructions that tell a new student how to get from your classroom to the student union (or to a good pizza place or somewhere similar).

Questions to ask about the instructions you wrote as you review the material in this chapter:

- ▶ Did I provide enough of an introduction?
- ▶ Are steps listed in order?
- ▶ Are the steps visually easy to follow?
- ▶ Am I using imperative verb forms?
- ▶ Am I providing enough detail? Too much?

At the end of this chapter, review your initial Let's Get Started instructions with your instructor or with a group of students to see how much you might change or modify the instructions based on what you have learned from the chapter.

Instructions spell out the steps required for completing a task or series of tasks (for example, installing a video card in your computer or operating an electron microscope). The audience for a set of instructions might be someone who doesn't know how to perform the task or someone who has performed the task but can't remember how or wants to perform it more effectively. In any case, well-written and carefully designed instructions enable readers to get the job done safely and efficiently.

Definition of
instructions

Procedures, a special type of instructions, serve as official guidelines for people who typically are already familiar with a given task (say, firefighters who are evacuating a high-rise building). Procedures ensure that all members of a group

Definition
of procedures

Formats of instructions and procedures

coordinate their activities when performing a task. More so than instructions, procedures may need to be reviewed and approved by an official body of some sort. For example, official surgical procedures may need to be approved by a hospital's safety and ethics board.

Instructions and procedures can be written and designed in a wide variety of formats, from brochures to user manuals to Web pages. Increasingly, instructions and procedures are available in both print and digital formats; for instance, PDF versions of consumer user manuals are often available for download from a company's Web site. The format should be chosen based on the people who will be using the material and the environment where the material will be used. For example, instructions for connecting a battery charger to your car's battery should not be provided on a CD because most people will not have a laptop computer handy while performing this task. Instead, these instructions should be printed directly on the charger itself, with a longer brochure (containing safety information) included in the box.

This chapter will first explore various aspects of instructions, followed by procedures.

AUDIENCE AND PURPOSE OF INSTRUCTIONS

Audience considerations

Before writing instructions, find out how much your readers already know about the task. For instance, if you are writing for technicians who have done a similar task with a different piece of equipment, you may not need as much detail or context. If, on the other hand, you are writing for a general audience, such as consumers who are trying to assemble a new stereo cabinet or use a new Bluetooth headset, you will need more details but in a less technical presentation. If you have a mixed audience (some experienced with the task, others less experienced), you will need a layered approach, offering a "quick start up" document for those in the know and a more comprehensive user guide for the novices.

Readers across the globe, some who may not speak English as a first language, might use your instructions. Therefore, write in a straightforward style with plenty of visuals, and remain sensitive to cultural differences.

Purpose considerations

The purpose of instructions is simply to help people perform a task or series of tasks. As you write, keep the following questions in mind: "How is the task done?" "What materials are needed in order to complete the task?" "In which order should the steps in the task be completed?" "What could go wrong?" and "Are any safety issues involved?" Ask yourself if the primary purpose is to allow people to complete the task quickly (as when people are trying to assemble a new stereo cabinet and don't want to take all day) or to complete the task incrementally and over a longer period (as when people are using a kit to test for radon in their homes).

TYPES OF INSTRUCTIONAL FORMATS

As discussed above, instructions and procedures alike come in many formats. The most common formats for instructions are instructional brochures, user manuals, quick reference cards, Web-based instructions, and online instructions.

Instructional Brochures

Instructional brochures can be posted, handed out, mailed, put on a Web site, or otherwise distributed to a broad audience. Typically, brochures contain both text and visuals, which helps increase the audience appeal. Figure 13.1 shows an

Features of effective instructional brochures

 BAC (foodborne bacteria) could make you and those you care about sick. In fact, even though you can't see BAC—or smell him, or feel him—he and millions more like him may have already invaded the food you eat. But you have the power to <i>Fight BAC!</i>®. Foodborne illness can strike anyone. Some people are at a higher risk for developing foodborne illness, including pregnant women, young children, older adults and people with weakened immune systems. For these people the following four simple steps are critically important:  CLEAN: Wash hands and surfaces often Bacteria can be spread throughout the kitchen and get onto hands, cutting boards, utensils, counter tops and food. To <i>Fight BAC!</i>®, always: ■ Wash your hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers and handling pets. ■ Wash your cutting boards, dishes, utensils and counter tops with hot soapy water after preparing each food item and before you go on to the next food. ■ Consider using paper towels to clean up kitchen surfaces. If you use cloth towels wash them often in the hot cycle of your washing machine. ■ Rinse fresh fruits and vegetables under running tap water, including those with skins and rinds that are not eaten. ■ Rub firm-skin fruits and vegetables under running tap water or scrub with a clean vegetable brush while rinsing with running tap water.	 SEPARATE: Don't cross-contaminate Cross-contamination is how bacteria can be spread. When handling raw meat, poultry, seafood and eggs, keep these foods and their juices away from ready-to-eat foods. Always start with a clean scene—wash hands with warm water and soap, and wash cutting boards, dishes, countertops and utensils with hot water and soap. ■ Separate raw meat, poultry, seafood and eggs from other foods in your grocery shopping cart, grocery bags and in your refrigerator. ■ Use one cutting board for fresh produce and a separate one for raw meat, poultry and seafood. ■ Never place cooked food on a plate that previously held raw meat, poultry, seafood or eggs.  COOK: Cook to safe temperatures Food is safely cooked when it reaches a high enough internal temperature to kill the harmful bacteria that cause illness. Refer to the chart on the back of this brochure for the proper internal temperatures. ■ Use a food thermometer to measure the internal temperature of cooked foods. Make sure that meat, poultry, egg dishes, casseroles and other foods are cooked to the internal temperature shown in the chart on the back of this brochure. ■ Cook ground meat or ground poultry until it reaches a safe internal temperature. Color is not a reliable indicator of doneness. ■ Cook eggs until the yolk and white are firm. Only use recipes in which eggs are cooked or heated thoroughly. ■ When cooking in a microwave oven, cover food, stir and rotate for even cooking. Food is done when it reaches	the safe internal temperature as measured with a food thermometer. ■ Bring sauces, soups and gravy to a boil when reheating.  CHILL: Refrigerate promptly Refrigerate foods quickly because cold temperatures slow the growth of harmful bacteria. Do not over-stuff the refrigerator. Cold air must circulate to help keep food safe. Keeping a constant refrigerator temperature of 40°F or below is one of the most effective ways to reduce the risk of foodborne illness. Use an appliance thermometer to be sure the temperature is consistently 40°F or below. The freezer temperature should be 0°F or below. ■ Refrigerate or freeze meat, poultry, eggs and other perishables as soon as you get them home from the store. ■ Never let raw meat, poultry, eggs, cooked food or cut fresh fruits or vegetables sit at room temperature more than two hours before putting them in the refrigerator or freezer (one hour when the temperature is above 90°F). ■ Never defrost food at room temperature. Food must be kept at a safe temperature during thawing. There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately. ■ Always marinate food in the refrigerator. ■ Divide large amounts of leftovers into shallow containers for quicker cooling in the refrigerator. ■ Use or discard refrigerated food on a regular basis. Check USDA cold storage information at www.fightbac.org for optimum storage times.
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FIGURE 13.1 An instructional brochure

Source: "Four Simple Steps to Food Safety" from *Fight BAC!* Copyright © 2011 by the Partnership for Food Safety Education. Reprinted with permission.

instructional brochure. Notice its user-friendly design: In addition to the cartoon illustration at the top, which immediately catches a reader's attention, clear visuals reinforce each main section ("Clean," "Separate," "Cook," and "Chill"). Each main section also begins with an action verb, includes a brief introduction, and uses bulleted lists (which also use action verbs) to break up the text into easy-to-digest chunks. Finally, a Web address at the end points readers to further information.

User Manuals

Features of effective user manuals

User manuals tend to be the most comprehensive form of instructions: Manuals often contain instructions for using a product, along with descriptions and specifications, warnings, maintenance and troubleshooting advice, and any other information the reader is likely to need. For complex products (for example, a spreadsheet program), the user manual can be a sizable book. Given the cost of printing and distributing such a large book and keeping print material current, companies are increasingly providing smaller ("Getting Started") manuals that contain the basic operating tips and then placing the more lengthy information on a Web site. In some cases (for legal or other reasons), full-scale user manuals are still being produced, but the trend is toward smaller documents and digital information.

Figure 13.2 is a table of contents from a photocopier user manual. Although most people will go directly to sections 2 and 3 on loading paper and making copies, other sections are available for learning about the copier, using its peripheral devices, performing maintenance, and entering text.

Quick Reference Materials

Features of effective quick reference materials

Quick reference materials are a form of instructions typically written and designed to fit on a single sheet of paper, a small or wallet-sized card, or a Web page. The instructions focus on the basic steps for people who only want enough information to perform a specific task rapidly and continue on with their work.

Figure 13.3 shows Web-based quick reference material (keyboard shortcuts) for Internet Explorer. The first screen organizes the content into high level categories so that people can find what they need quickly. After clicking on a category, readers would see detailed information (shown on the second screen) about particular tasks in the left column, with the corresponding keyboard shortcuts listed in the right column. The two-column approach and clean design make the page easy to navigate.

TABLE OF CONTENTS	
ABOUT THIS MANUAL	3
• MANUALS PROVIDED WITH THE MACHINE	3
1 BEFORE USING THE MACHINE	
PART NAMES AND FUNCTIONS	5
• EXTERIOR	5
• INTERIOR	7
• AUTOMATIC DOCUMENT FEEDER AND DOCUMENT GLASS	8
• SIDE AND BACK	9
• OPERATION PANEL	10
TOUCH PANEL	12
• SYSTEM BAR	14
PRINT/SEND STATUS (JOB STATUS)	15
TURNING THE POWER ON AND OFF	16
• ENERGY SAVE FUNCTIONS	17
• [POWER SAVE] KEY	17
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• AUTHENTICATION BY USER NUMBER	18
• AUTHENTICATION BY LOGIN NAME / PASSWORD	20
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IMPORTANT POINTS ABOUT PAPER	24
• NAMES AND LOCATIONS OF TRAYS	24
• THE MEANING OF "R" IN PAPER SIZES	24
• USEABLE PAPER	25
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• LOADING PAPER	27
• CHANGING THE PAPER SIZE	28
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FIGURE 13.2
A table of
contents from
a user manual

Manual provides
basic information
first

More technical
information is
placed later in the
manual

Source: Courtesy of Sharp Electronics Corporation.

Web-based Instructions

Instructions that are set up as a Web page allow readers to click on hyperlinks to explore more information, access definitions of technical words and phrases, and learn more about topics they may not fully understand. Web-based instructions are useful in situations where your audience may be a mix

Features of effective
Web-based
instructions

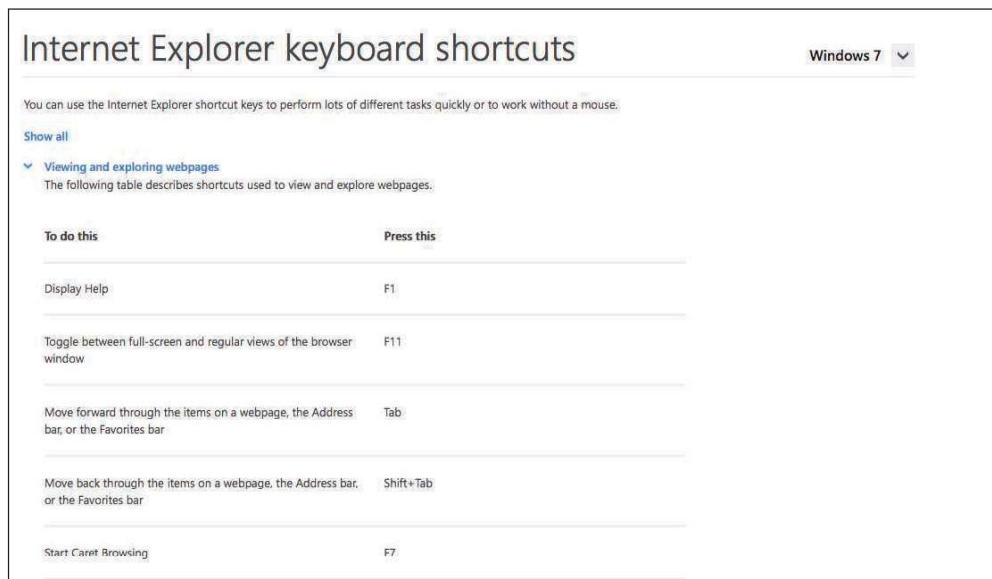
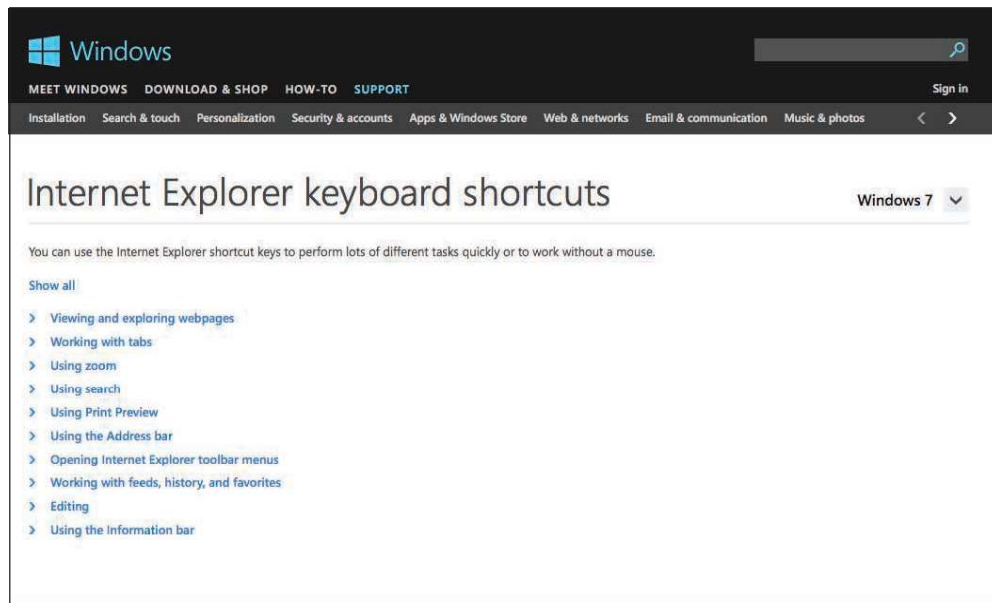


FIGURE 13.3 A quick-reference Web page (partial view)

Source: Microsoft product screen shot reprinted with permission from Microsoft Corporation.

of people who know something about the topic and people who don't know as much. For instance, Figure 13.4 shows Web-based instructions for how to apply for Energy Star status for a building. Some readers may already be familiar with the eligibility requirements, but people who need more information can click on the link.

Web-based instructions are also useful because it's easy for organizations to keep the information updated by simply revising the Web site (rather than, say, printing thousands of new brochures).

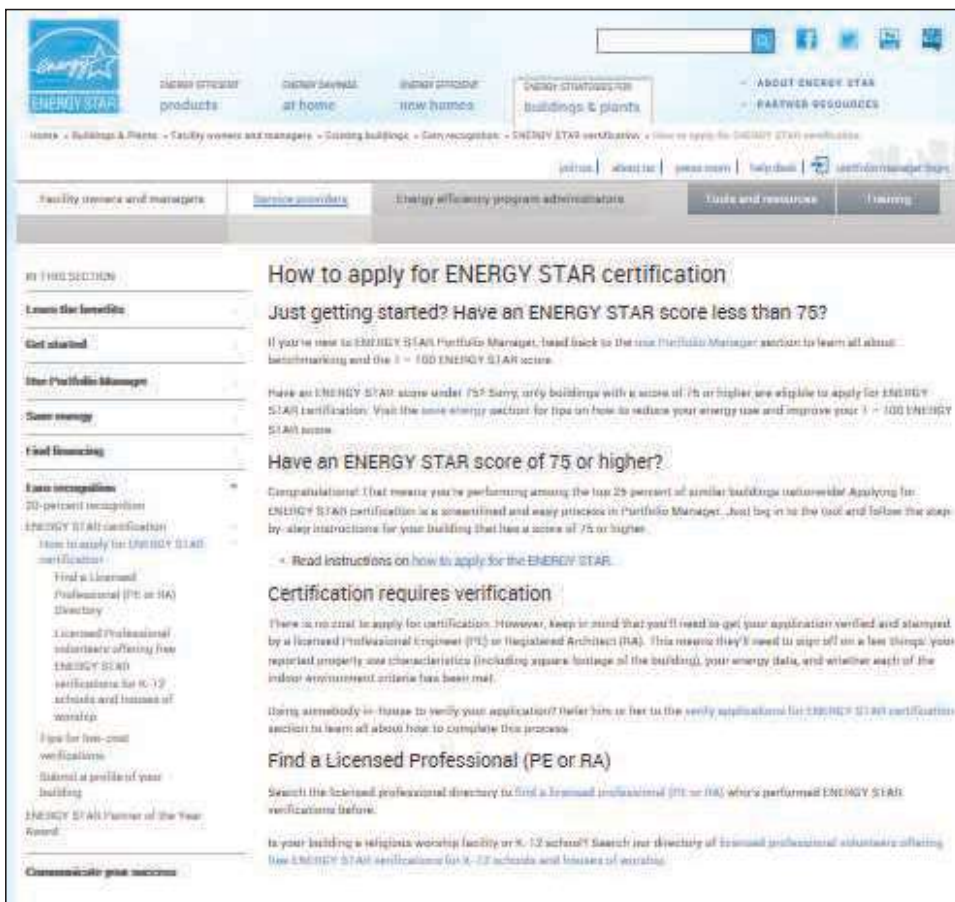


FIGURE 13.4 Web-based instructions

Source: U.S. Environmental Protection Agency.

Online Instructions

Features of effective online instructions

Many products, especially software, have done away with large user manuals and instead provide instructions that can be accessed directly through the software. Word processing programs (Microsoft Word or Apple Pages or other) are good examples of online instructions. If you are working on a document and forget how to create a table or set up footnotes, you simply type your question or topic into the help box to access the instructions. This content is always up to date because it is linked to the company's database of help information or is updated when your computer or software does an automatic update.

Online instructions are typically “context sensitive”—that is, the help system recognizes what you are trying to accomplish and not only provides instructions but also guides you to the menu function you are looking for. Figure 13.5 is a typical online help screen.

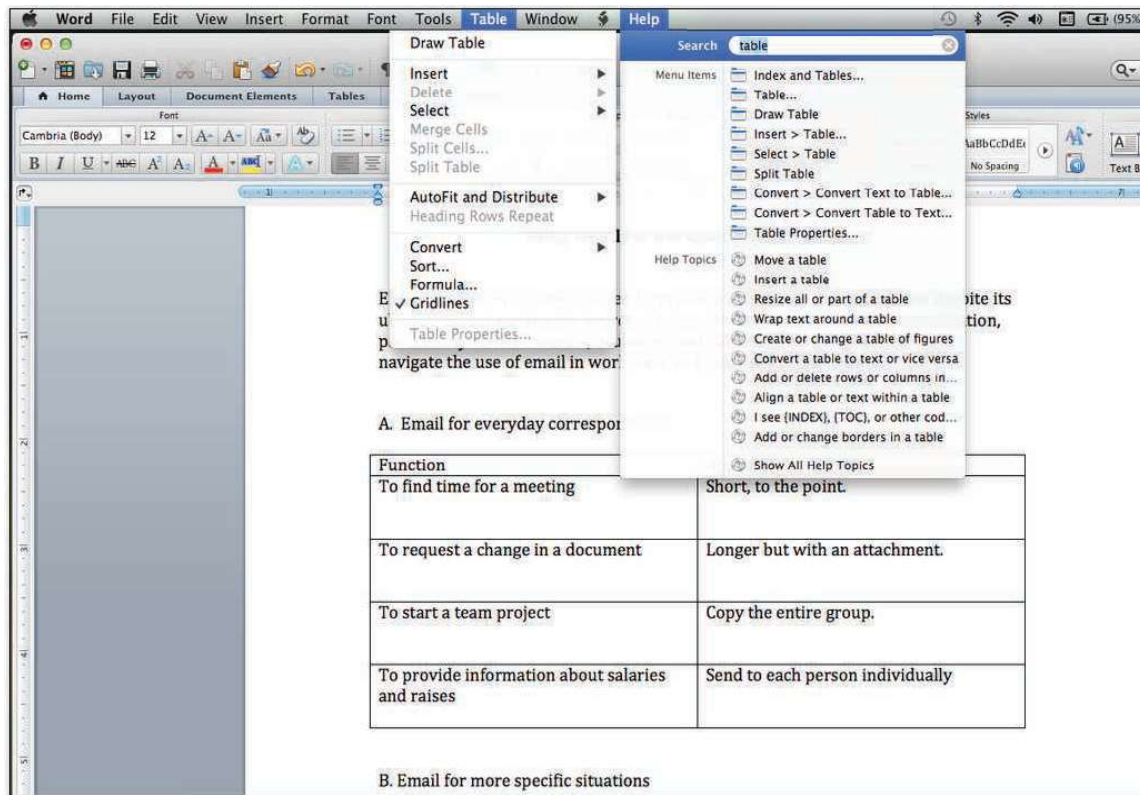


FIGURE 13.5 Online instructions

Source: Microsoft product screen shot reprinted with permission from Microsoft Corporation.

ETHICAL AND LEGAL IMPLICATIONS

Instructional documents carry profound ethical and legal obligations on the part of those who prepare them. Among all technical documents, therefore, instructions involve the strictest requirements for accurate information in an accessible format.

Countless injuries result from misuse of products such as power tools, car jacks, or household cleaners. This type of misuse is often caused by defective instructions. Clear, easy-to-follow instructions that contain just the right amount of detail can prove to be the difference between the unsafe and safe use of a product.

Ethical implications
of instructions

Any person injured because of unclear, inaccurate, or incomplete instructions can sue the writer as well as the manufacturer. Courts have ruled that a writing defect in product support literature carries the same type of liability as a design or manufacturing defect in the product itself (Girill 37). Some of the legal liabilities resulting from faulty instructions include

Legal implications
of instructions

- Failure to provide instructions and cautions for the proper use of a product: for example, a household cleaning product that should not be mixed with other products
- Failure to warn against hazards from proper use of a product: for example, the risk of cutting one's fingers on a vegetable slicer
- Failure to warn against the possible misuses of a product: for example, the danger of improperly installing a child safety seat

ELEMENTS OF EFFECTIVE INSTRUCTIONS

All instructions must include a title, a brief overview or introduction, a body section (including the required steps involved in following the instructions), and a conclusion. In addition, most instructions should also include visuals as well as notes, cautions, warnings, and/or danger notices.

Title

Be sure your title provides a clear and exact preview of the required task. For example, the title "Instructions for Cleaning the DVD Drive of a Laptop Computer" tells people what to expect: instructions for a specific procedure involving one selected part. But the title "The Laptop Computer" gives no such forecast; a document with a general title like this might contain a history of the laptop, a description of each part, or a wide range of related information.

Include a clear
and exact title

Overview or Introduction

Provide a brief overview or introduction to orient readers before they begin the task

Explain the purpose of the instructions and describe what they cover. You don't want to bury readers in an overly long overview/introduction, nor do you want to set them loose without adequate preparation. Know your audience—what it needs and doesn't need. For example, you might begin with a short paragraph:

These instructions provide complete information for the use of the lab's electron microscope. The first section explains the setup steps, and the second section describes how to create a slide and view it with the microscope.

Body

Include a body section with task steps in correct order

Explain each step and substep in the correct order. Insert notes, cautions, warnings, dangers, and visuals as needed (see below for more on these elements). Begin each step with a definition or a purpose statement, as appropriate. People who understand the reasons for a step will do a better job. Segment the steps with a numbered list. Begin each substep of a complex process on a new line.

Conclusion

Wrap up with a conclusion, if appropriate

The conclusion of a set of instructions might summarize the main steps of the task, describe the results readers should experience, offer follow-up advice, or provide troubleshooting tips. You might do all of these things in the conclusion—or none of them. If the body section has provided all the necessary information, omit the conclusion altogether.

Visuals

Provide visuals to enhance usability

Visuals in instructions play a vital role: They show what to do, attract the reader's attention, and help keep words to a minimum. (For more on visuals, see Chapter 8.) Visuals can illustrate any step that might be hard for people to picture. For instance, describing in words how to locate something is a lot less effective than simply showing the location with a drawing or photograph. Visuals can also help tell the whole story, offering the big picture in one glance, something that would be far less effective using words only. Figure 13.6 enables readers to visualize a task. Figure 13.7 shows readers the complete process at a glance.

Notes, Cautions, Warnings, and Danger Notices

Always include notes, cautions, and warnings for user safety

Notes provide additional information, while cautions, warnings, and danger notices prevent damage, injury, or even death. Use these items only when needed. Overuse will dull their effect, and readers may overlook their importance.

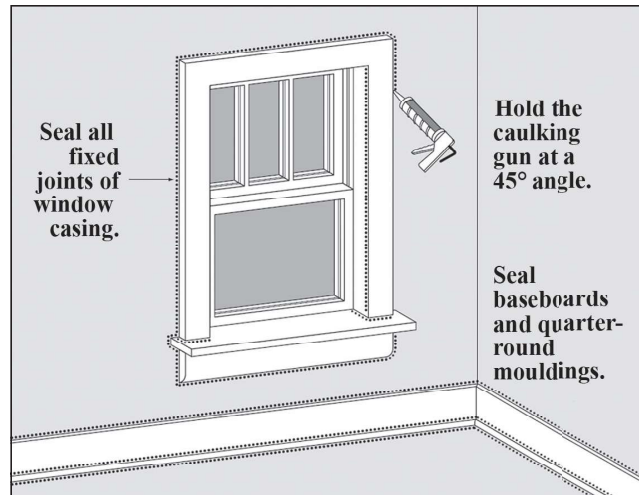


FIGURE 13.6
A visual that illustrates a task (how to apply weatherstrip caulking)

Source: From U.S. Department of Energy
<www.nrel.gov/docs/fy01osti/28039.pdf>.

A note clarifies a point, emphasizes vital information, or describes options or alternatives. For example:

NOTE: If you don't name a newly initialized disk, the computer automatically names it "Untitled."

When to use notes

Notes are designed to enhance performance and prevent errors; cautions, warnings, and danger notices are used for safety reasons.

When to use cautions

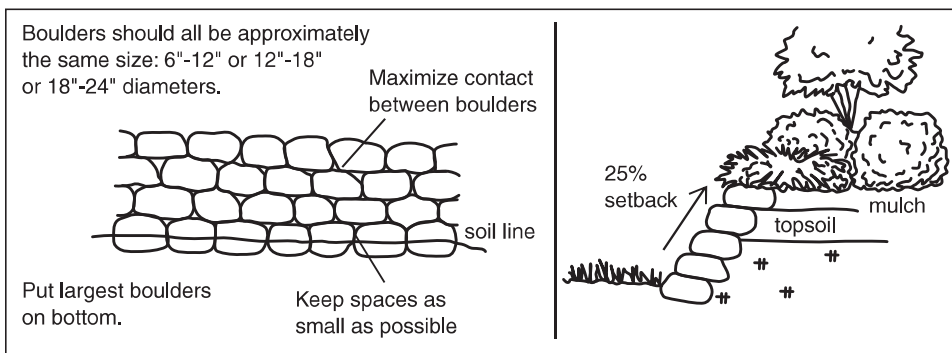


FIGURE 13.7
A visual that shows the full picture (how to build a boulder wall) in one glance

Source: From University of Michigan Sustainable Urban Landscape Information Series Web site, <www.sustland.umn.edu>. Copyright © 2006 by University of Minnesota Extension. Reprinted with permission.

Cautions prevent possible mistakes that could result in injury or equipment damage. For example:

CAUTION: A momentary electrical surge or power failure will erase the contents of internal memory. To avoid losing your work, every few minutes save on a backup file what you have just typed into the computer.

When to use warnings

Warnings alert readers to potential hazards to life or limb. For instance:

WARNING: To prevent electrical shock, always disconnect your printer from its power source before cleaning internal parts.

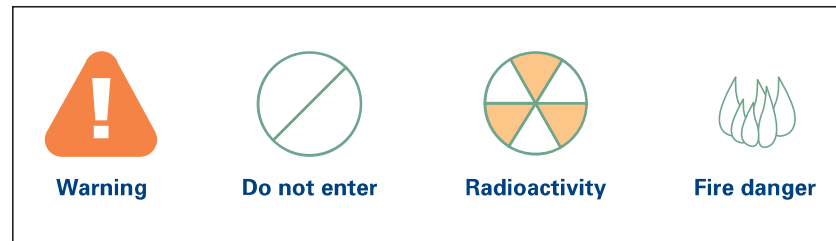
When to use a danger notice

Danger notices identify an immediate hazard to life or limb. For example:

DANGER: The red canister contains DEADLY radioactive material. Do not break the safety seal under any circumstances.

When you include cautions, warnings, or danger notices, be sure to provide the appropriate visual symbol or icon to indicate these conditions, as in Figure 13.8.

FIGURE 13.8
Caution, warning,
and danger
symbols



CONTENT, STYLE, AND DESIGN CONSIDERATIONS

In addition to including all the necessary elements in a set of instructions, you also need to decide about matters of content, style, and design.

Detail and Technicality

Provide an adequate level of detail and technicality

Readers who know a great deal about the product or task(s) to be covered don't need a lot of detail and can typically handle a high level of technical information. But readers who are new to the situation need more detail and fewer technical terms. Use the techniques described in Chapter 3 to determine how much your readers already know.

Unless you learn that your audience has the relevant background and skills, write for more general readers. For example, if you are writing instructions for providing first aid to a victim of electrical shock, you might write the following for an audience with extensive medical background:

FIRST AID FOR ELECTRICAL SHOCK

1. Check vital signs.
2. Establish an airway.
3. Administer CPR as needed.
4. Treat for medical shock.

Instructions for a
technical audience

But for an inexperienced audience, not only will the above details be inadequate, but also terms such as “vital signs” and “CPR” will be too technical. Such instructions posted for workers in a high-voltage area who are not medically trained would be useless. Illustrations and explanations would be needed, as demonstrated in Figure 13.9.

Style

Instructions must always be clear and easy to follow upon first reading because people usually take immediate action. Follow the Strategies below.

Write with a readable
style



STRATEGIES for Achieving Readability

- **Use direct address, active voice, and imperative mood.** To emphasize the reader's role, write in the second person, as direct address. Begin all steps and substeps with action verbs, using the active voice and imperative mood. In certain cases, you may want to provide a clarifying word or phrase that precedes the verb:

Say this	Not this
Insert the disk. <i>or</i> [To run the program,] insert the disk.	You should insert the disk.
Key in your access code. <i>or</i> [To log on,] key in your access code.	The user keys in her access code.
Plug in the power cord. <i>or</i> [When you are ready to power up,] plug in the power cord.	The power cord is plugged in.



STRATEGIES *continued*

- **Use short and logically shaped sentences.** Use short sentences—one sentence for each step—so that readers can perform one step at a time. If a single step covers two related actions, describe these actions in their required sequence:

| Before switching on the computer, insert the CD in the drive.

OR

| Insert the CD in the drive. Then switch on the computer.

- **Use parallel phrasing.** Parallelism is especially important in instructions because the repeating grammatical forms emphasize the step-by-step organization. Notice how all the sentences below are structured identically:

| To log on to the VAX 380, follow these steps:

1. Switch the terminal to “on.”
2. Press the CONTROL key and the C key simultaneously.
3. Type “logon,” and then press the ESCAPE key.
4. Type your user name, and then press the ESCAPE key.

- **Use affirmative phrasing.** Negative phrasing is harder to understand.

Say this	Not this
Examine your disk for dust contamination.	Verify that your disk is not contaminated with dust.

- **Use transitions to mark time and sequence.** Transitional expressions provide a bridge between related ideas. Some transitions (“first,” “next,” “meanwhile,” “finally,” “after,” “then”) mark time and sequence and are therefore especially useful in instructions, emphasizing their step-by-step nature:

| First, plug in the power cord, and then turn on the printer.

| After the printer warms up, insert the paper in the paper slot.

| Finally, hit the “print” button.

Design

Create an accessible design

Instructions rarely receive undivided attention. The reader, in fact, is doing two activities more or less at once: interpreting the instructions and performing the required task.

THE ABC'S OF CARDIOPULMONARY RESUSCITATION (CPR)

Cardiopulmonary resuscitation (CPR) is an emergency medical procedure for restoring breathing and heartbeat to persons who have suffered an electrical shock, heart attack, or other instance of cardiac arrest. CPR keeps oxygenated blood flowing to the brain until medical professionals arrive. Following are three simple “ABC” steps for CPR.

Step 1: A for Airway: Make sure the airway is not constricted.

- First, call 911 immediately or have someone else call.
- Check if the victim is breathing. If not, carefully roll the victim onto his or her back in one movement.
- Gently push back the forehead with one hand and lift the chin with your other hand to unblock tongue from airway.
- Listen for breathing and watch for chest movement. Move quickly to Step 2 if the victim is still not breathing.

Step 2: B for Breathing: Administer rescue breathing to keep the blood oxygenated.

- Continue to hold down the forehead and lift the neck to keep the airway open.
- Pinch the nose with the thumb and forefinger of the hand holding back the forehead.
- Take a deep breath and seal your lips around the victim's mouth.
- Blow one breath steadily into the mouth for one second; then administer a second breath.
- Do not wait to see if the victim resumes independent breathing. Move quickly to Step 3.

Step 3: C for Circulation: Perform chest compressions to keep the blood circulating.

- Kneel at the side of the victim's head and shoulders. Do not spend time checking for a pulse.
- Place the heel of one hand over the notch at the center of the victim's chest.
- Place the palm of your other hand over the first hand and, using your body weight, press down firmly and quickly, compressing the chest about two inches.
- Allow the chest to return to its original position before the next compression.
- Administer chest compressions at about two compressions per second for 20 seconds.
- Return to Step 2, first ensuring that the airway is open.
- Cycle between Steps 2 and 3 thereafter until help arrives.



Step 1



Step 2



Step 3

FIGURE 13.9 Adequate detail and technicality for a general audience

An effective instructional design conveys the sense that the task is within a qualified person's range of abilities. Therefore, design your instructions so that people can leave and return to the document as needed and easily find their place.



STRATEGIES for Creating an Accessible Design

- ▶ **Use informative headings.** Clear headings tell readers what to expect, emphasize what is most important, and provide cues for navigation. A heading such as “How to Format Your Portable USB Drive” is more informative than “Portable USB Drive Formatting.”
- ▶ **Arrange all steps in a numbered list.** Unless the procedure consists of simple steps, list and number each step. Numbered steps not only announce the sequence of required actions, but also help readers remember where they left off.
- ▶ **Separate each step visually.** Single space within steps and double space between.
- ▶ **Make cautions, warnings, and danger notices highly visible.** Use ruled boxes or highlighting and plenty of white space to make these items stand out. Also, include symbols if possible; if not, use bold text and capital letters for emphasis.
- ▶ **Make visual and verbal information redundant.** Let the visual repeat, restate, or reinforce the prose rather than provide entirely new information.
- ▶ **Place visuals and prose steps that are connected close together.** If room allows, place a visual that goes with a step right beside the step; if not, right after the step. Set off the visual with plenty of white space.
- ▶ **Keep the design simple and easy to navigate.** Readers may be overwhelmed by an excessively complex or inconsistent design.
- ▶ **For lengthy instructions, consider a layered approach.** In a complex manual, for instance, you might add a “Quick-Use Guide” for getting started or a table of contents with page references to more detailed and technical information.

Figure 13.10 shows instructions that have been prepared for general readers who need to make a common home repair.

HOW TO REPLACE A WORN FAUCET WASHER

Introduction

A leaking faucet, caused by a worn washer, can lose up to fifteen gallons of water per day. This loss can result in a higher water bill, overuse of the septic system and well pump, an increase in your hot-water bill, and rust or chlorine deposits in your sink basin. These instructions detail how to replace the washer. No special knowledge or skills are necessary.

Overview

The typical faucet consists of a round knob or a handle (Figure 1) that, when turned, causes the stem to screw down until the washer sits snugly over the seat. With the washer in place, the flow of water is stopped. A worn washer loses the ability to form a tight seal, causing a leak or drip to develop. Replacing the worn washer eliminates the leak.

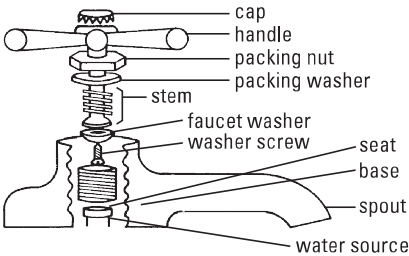


Figure 1. Typical faucet in exploded view

Equipment and Material Needed

- pliers
- regular or Phillips (crossed head) screwdriver
- new washer of same size and shape as worn washer
- valve for shutting off water supply

Note and Caution These instructions apply only to faucets that have washers. Avoid using any excessive force on the threaded parts because they are made of soft metal and could easily strip.

INSTRUCTIONS

1. Shut off the water supply. Look under the sink or fixture for the shutoff valve. If you are unable to find a valve in this location, use the main shutoff valve located in the basement or beneath the house. The water pipe (one-half to one inch in diameter) usually originates from an inside cellar wall. Locate the shutoff valve by following the pipe from the wall to an attached valve, usually within a few feet of the wall (Figure 2). Turn this valve fully clockwise. With your water supply shut off, you can take the faucet apart.

FIGURE 13.10
A complete set
of instructions

- Clear title announces the document's exact purpose
- Introduction provides appropriate detail for people with no experience with this task
- Brief overall description and principle of operation
- Visual reinforces the prose
- Required items are listed
- Note and caution alert readers before they take action
- The body section provides step-by-step guidance

FIGURE 13.10
(Continued)

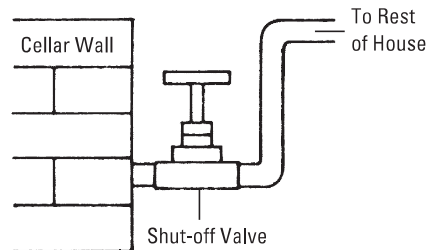


Figure 2. Location of main shut-off valve

2. Disassemble the faucet. Before removing the handle, open the faucet to allow remaining water in the pipe to escape. Using your screwdriver, remove the screw on top of the handle. If a cap covers the screw, pry it off (Figure 1). Remove the handle.

Next, remove the packing nut, using pliers to turn the nut counter-clockwise. The flat circular nut washer can now be lifted from the faucet base. With packing nut and washer removed, screw the stem out of the base by turning the faucet in the "open" direction. Lift the stem out of the base and proceed to step 3.

3. Replace the worn washer. Using your screwdriver, remove the screw holding the washer at the base of the stem (Figure 1). Remove the worn washer and replace it with a new one of the same size, using the washer screw to hold it in place. (Washers of various sizes can be purchased at any hardware store.) If the washer screw is worn, replace it. When the new washer is fixed in place, proceed to step 4.

4. Reassemble the faucet. To reassemble your faucet, reverse the sequence described in step 2.

Caution: Do not overtighten the packing nut!

Using pliers, screw the stem into the base until it ceases to turn. Next, place the packing washer and nut over the threads in the collar. Tighten the packing nut using the strength of one hand. Finally, secure the handle with your screwdriver. When the faucet is fully assembled, turn the handle to the "off" position and proceed to step 5.

5. Turn on the water supply. First, check to see that your faucet is fully closed. Next, turn the water on slowly (about one-half turn each time) until the shutoff valve is fully open. These slow turns prevent a sudden buildup of pressure, which could damage the pipes. Your faucet should now be as good as new.

Caution
precedes step

Because the body
section has given
readers all they
need, no conclusion
is required

PROCEDURES

Procedures provide rules and guidance for people who are required to follow accepted practice. For example, different people in your organization might perform the same task (say, monitoring groundwater pollution) at different times, with different equipment, or under different circumstances. This task may need to be standardized to ensure that all work is done with the same accuracy and precision.

Function of
procedures

Audience and Purpose Considerations

Unlike instructions, which will be read mostly by people unfamiliar with the given task, procedures may be used by people already familiar with the task but who need to follow a standard. For example, if apprentice chefs in a famous restaurant who normally prepare salads and appetizers are asked to take over on the preparation of special sauces, those workers probably already know the basics but would need more information on the specific sauces required, amounts of ingredients, reduction techniques, and so on.

Consider your
audience

Determine how your readers will use these procedures. Will they be following the procedures in a hurry while evacuating a building? Would the procedures be better distributed on paper, on a Web site, or as an email attachment? Once you know exactly how the procedures will be used, you can make decisions about the document's length, format, level of detail, and medium.

Consider your
purpose

Types of Procedures

The most common types of procedures are standard operating procedures (SOPs), general safety procedures, and medical or health procedures.

Standard operating procedures are formal procedures designed to give an organization an official record of the procedure and how it should be performed. SOPs, kept up to date and in a location or format available to employees, are required by law in many workplace environments, including those that deal with chemicals or industrial waste. SOPs are also written to inform the public about how a particular procedure is performed.

Standard operating
procedures

Safety procedures, as in Figure 13.11, are required in many settings. Hotel rooms typically list fire exit procedures on the back of the entry door. Most organizations have official procedures for dealing with emergencies.

Safety procedures

Medical procedures can be written for medical professionals or for consumers. Procedures for medical professionals might include SOPs on hand washing, surgical techniques, and other steps involved in patient care in the hospital. Today, with the vast amount of medical information available online, many medical procedures are written for nonexperts.

Medical procedures

FIGURE 13.11
A set of
procedures
(safety
procedures)

Title ("Evacuating
High-Rise
Buildings") is clear
and easy to spot

Overview/
introduction section
defines the issue
and provides
background

Headings in the
form of reader
questions help
people find the
information they
need

Bullets, instead
of numbered
lists of steps, are
appropriate for this
document

Evacuating High-Rise Buildings

The National Fire Protection Association defines "high-rise building" as a building greater than 75 feet (25 m) in height where the building height is measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.

Appropriate exits, alarms, emergency lighting, communication systems, and sprinkler systems are critical for employee safety. When designing and maintaining exits, it is essential to ensure that routes leading to the exits, as well as the areas beyond the exits, are accessible and free from materials or items that would impede individuals from easily and effectively evacuating. State and local building code officials can help employers ensure that the design and safety systems are adequate.

When there is an emergency, getting workers out of high-rise buildings poses special challenges. Preparing in advance to safely evacuate the building is critical to the safety of employees who work there.

What actions should employers take to help ensure safe evacuations of high-rise buildings?

- Don't lock fire exits or block doorways, halls, or stairways.
- Test regularly all back-up systems and safety systems, such as emergency lighting and communication systems, and repair them as needed.
- Develop a workplace evacuation plan, post it prominently on each floor, and review it periodically to ensure its effectiveness.
- Identify and train floor wardens, including back-up personnel, who will be responsible for sounding alarms and helping to evacuate employees.
- Conduct emergency evacuation drills periodically.
- Establish designated meeting locations outside the building for workers to gather following an evacuation. The locations should be a safe distance from the building and in an area where people can assemble safely without interfering with emergency response teams.
- Identify personnel with special needs or disabilities who may need help evacuating

OSHA FACT Sheet

and assign one or more people, including back-up personnel, to help them.

- Ensure that during off-hour periods, systems are in place to notify, evacuate, and account for off-hour building occupants.
- Post emergency numbers near telephones.

What should workers know before an emergency occurs?

- Be familiar with the worksite's emergency evacuation plan;
- Know the pathway to at least two alternative exits from every room/area at the workplace;
- Recognize the sound/signaling method of the fire/evacuation alarms;
- Know who to contact in an emergency and how to contact them;
- Know how many desks or cubicles are between your workstation and two of the nearest exits so you can escape in the dark if necessary;
- Know where the fire/evacuation alarms are located and how to use them; and
- Report damaged or malfunctioning safety systems and back-up systems

What should employers do when an emergency occurs?

- Sound appropriate alarms and instruct employees to leave building.
- Notify police, firefighters, or other appropriate emergency personnel.
- Take a head count of employees at designated meeting locations, and notify emergency personnel of any missing workers.

What should employees do when an emergency occurs?

- Leave the area quickly but in an orderly manner, following the worksite's emergency evacuation plan. Go directly to the nearest fire-free and smoke-free stairwell recognizing that in some circumstances the only available exit route may contain limited amounts of smoke or fire.

Source: U.S. Occupational Safety and Health Administration.

USABILITY TESTING

Any technical document must be written and designed for the right audience. With instructions and procedures, however, accuracy and ease of use are especially important. Otherwise, readers could make costly and dangerous errors.

To identify which parts of the document work or don't work, conduct a usability analysis, using the Basic Usability Survey in Figure 13.12. The survey is designed for both the writers and the readers. Essentially it asks one main question (broken into more specific questions): "Do these instructions or procedures enable you to carry out the task safely, efficiently, and accurately?" Notice how the phrasing encourages responses containing examples instead of merely yes or no answers.

The importance of usability testing of instructions and procedures

What a basic usability survey asks



STRATEGIES for Instructions and Procedures

- ▶ **Analyze your audience.** For instructions, assume a general audience that does not know how to perform a task. For procedures, assume that your audience does know something about the procedure but needs a set of standard guidelines.
- ▶ **Analyze your purpose.** Consider where the document will be used and how to present the information for maximum usability.
- ▶ **Always remember the ethical and legal implications.** Instructions and procedures must always be written with reader safety at the forefront.
- ▶ **Use standard organization and include all needed elements.** Always include a clear and exact title; include an overview or introduction for instructions (but only if appropriate for procedures); include a body section (in numbered list format for instructions, but not necessarily for procedures); and include visuals, notes, cautions, warnings, danger notices, and a conclusion as appropriate.
- ▶ **Provide an appropriate level of detail and technicality.** Do not give readers too much or too little detail, and use only as much technical language as your audience will understand.
- ▶ **Write with a readable style.** Refer to the Strategies for Achieving Readability (pages 255–256).
- ▶ **Design for maximum accessibility.** Refer to the Strategies for Creating an Accessible Design (page 258).
- ▶ **Always test for usability.** Instructions and procedures must be easy to grasp in one reading, lead to successful completion of a task or procedure, and ensure reader safety. Make sure each word and image is just right.

Basic Usability Survey

1. Briefly describe why this document is used. _____

2. Evaluate the *content*:
 - Identify any irrelevant information. _____

 - Indicate any gaps in the information. _____

 - Identify any information that seems inaccurate. _____

 - List other problems with the content. _____

3. Evaluate the *organization*:
 - Identify anything that is out of order or hard to locate or follow. _____

 - List other problems with the organization. _____

4. Evaluate the *style*:
 - Identify anything you misunderstood on first reading. _____

 - Identify anything you couldn't understand at all. _____

 - Identify expressions that seem wordy, inexact, or too complex. _____

 - List other problems with the style. _____

5. Evaluate the *design*:
 - Indicate any headings that are missing, confusing, or excessive. _____

 - Indicate any material that should be designed as a list. _____

 - Give examples of material that might be clarified by a visual. _____

 - Give examples of misleading or overly complex visuals. _____

 - List other problems with the design. _____

6. Identify anything that seems misleading or that could create legal problems or cross-cultural misunderstanding. _____

7. Please suggest other ways of making this document easier to use. _____

FIGURE 13.12 A basic usability survey

Source: Adapted from Carliner 258; Daugherty 17–18; Hart 53–57.



CHECKLIST for Instructions and Procedures

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INSTRUCTIONS

- ☐ Have I determined what type of instructional format I should use?
- ☐ Have I assessed the ethical and legal implications of my instructions?
- ☐ Have I provided a clear and exact title?
- ☐ Have I included an orienting overview or introduction?
- ☐ Have I provided step-by-step instructions in the body?
- ☐ Have I used visuals to enhance usability?
- ☐ Have I included notes, cautions, warnings, and dangers whenever necessary?
- ☐ Have I provided the appropriate level of detail and technicality for my audience?
- ☐ Have I followed the strategies for writing with a readable style?
- ☐ Have I followed the strategies for creating an accessible design?
- ☐ Have I performed a Basic Usability Survey?

PROCEDURES

- ☐ Have I considered my audience and purpose?
- ☐ Have I provided a clear and exact title?
- ☐ Have I provided a clear introduction and numbered steps or visuals if appropriate?
- ☐ Have I included notes, cautions, warnings, and dangers whenever necessary?
- ☐ Have I provided a conclusion?
- ☐ Have I provided an appropriate level of detail, a readable style, and an accessible design?
- ☐ Have I performed a Basic Usability Survey?



APPLICATIONS

GENERAL APPLICATION

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Select part of a technical manual in your field—or instructions or procedures for a general audience—and make a copy of the material. Using the Checklist above, evaluate the sample. In a memo to your instructor, discuss the document's strong and weak points, or be prepared to explain them in class.

TEAM APPLICATION

Divide into small groups and go online to look for a quick reference guide for something you own (your cell phone or laptop; a coffee pot or other appliance; the office copier). Look specifically for fairly brief instructions that could use revision for improved content, organization, style, or format. Make sure the instructions cover a task that you will be able to carry out. Make a copy of the instructions. Test these instructions for usability and revise as needed. Submit all materials to your instructor, along with a memo explaining the improvements, or be prepared to discuss your revision in class.

GLOBAL APPLICATION

MyWritingLab™

In many cultures, the use of imperative mood is considered impolite or too direct. For instance, instructions that state “Place the disk into the disk drive” may sound bossy and inconsiderate. Find a set of instructions that use imperative mood (for example, Figure 13.10 in this chapter) and rewrite these for a cross-cultural audience where the imperative mood would be offensive. For instance, you might use an indirect imperative (“Be sure to insert the disk into the drive”).

DIGITAL AND SOCIAL MEDIA APPLICATION

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Think of a real situation in which you are trying to fix a product you own but can't find the original user manual. For instance, you might need to access the password settings for your Wi-Fi router but not remember how to do so. Go online and find the user manual (Hint: You will need the device name, brand, and model number). How easy or difficult was it to find the manual and then find the information you needed? Based on ideas from this chapter, are there other ways the information could have been written or made available to make your task easier?

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Visit Chapter 13, *Instructions and Procedures*, in MyWritingLab to complete this chapter's applications, to explore this chapter's overview, checklist, and flashcards, and to test your understanding of the chapter objectives.