
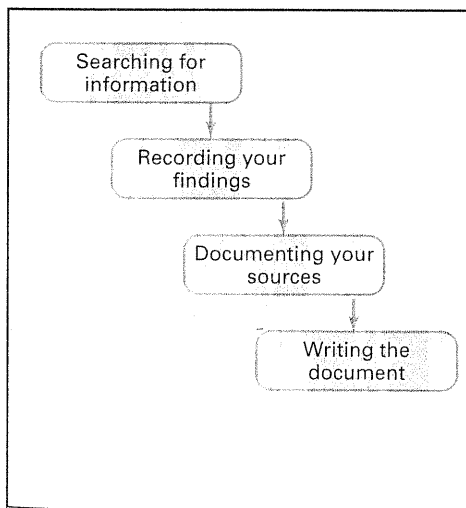


**LEARNING OBJECTIVES FOR THIS CHAPTER**

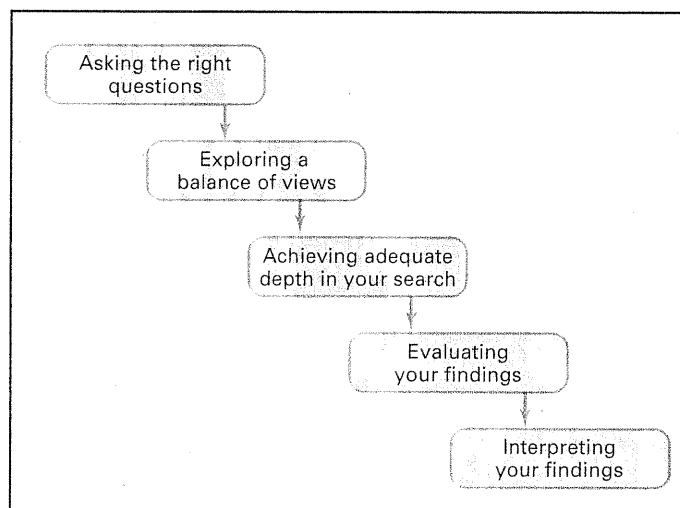
- ▶ Think critically about the research process
- ▶ Differentiate between procedural stages and inquiry stages of research
- ▶ Differentiate between primary and secondary research
- ▶ Explore online secondary sources using various search technologies
- ▶ Explore traditional secondary sources (books, periodicals, reference works)
- ▶ Explore primary sources (inquiries, interviews, surveys)
- ▶ Understand copyright in relation to research practices

Major decisions in the workplace are based on careful research, with the findings recorded in a written report. Some parts of the research process follow a recognizable sequence (Figure 7.1A). But research is not merely a numbered set of procedures. The procedural stages depend on the many decisions that accompany any legitimate inquiry (Figure 7.1B).<sup>1</sup> These decisions require you to *think critically* about each step of the process and about the information you gather for your research.

 **Chapter overview**  
(Go to Student Resources > Chapter 7)



**FIGURE 7.1A** The Procedural Stages of the Research Process



**FIGURE 7.1B** Stages of Critical Thinking in the Research Process

<sup>1</sup> Our thanks to University of Massachusetts Dartmouth librarian Shaleen Barnes for inspiring this chapter.

## ASKING THE RIGHT QUESTIONS

The answers you uncover will only be as good as the questions you ask. Suppose, for instance, you face the following scenario:

### CASE Defining and Refining a Research Question

You are the public health manager for a small, New England town in which high-tension power lines run within one hundred feet of the elementary school. Parents are concerned about danger from electromagnetic radiation (EMR) emitted by these power lines in energy waves known as electromagnetic fields (EMFs). Town officials ask you to research the issue and prepare a report to be distributed at the next town meeting in six weeks.

First, you need to identify your exact question or questions. Initially, the major question might be: *Do the power lines pose any real danger to our children?* After phone calls around town and discussions at the coffee shop, you discover that townspeople actually have three main questions about electromagnetic fields: *What are they? Do they endanger our children? If so, then what can be done?*

To answer these questions, you need to consider a range of subordinate questions, like those in the Figure 7.2 tree chart. Any *one* of those questions could serve as subject of a worthwhile research report on such a complex topic. As research progresses, this chart will grow. For instance, after some preliminary reading, you learn that electromagnetic fields radiate not only from power lines but from *all* electrical equipment, and even from the Earth itself. So you face this additional question: *Do power lines present the greatest hazard as a source of EMFs?*

You now wonder whether the greater hazard comes from power lines or from other sources of EMF exposure. Critical thinking, in short, has helped you to define and refine the essential questions.

Let's say you've chosen this question: *Do electromagnetic fields from various sources endanger our children?* Now you can consider sources to consult (journals, interviews, reports, Internet sites, database searches, and so on). Figure 7.3 illustrates likely sources for information on the EMF topic.



Research assignment  
tutorial  
(Go to The Research  
Process>Tutorials)

Try to consider all  
the angles

## EXPLORING A BALANCE OF VIEWS

Instead of settling for the most comforting or convenient answer, pursue the *best* answer. Even "expert" testimony may not be enough, because experts can disagree or be mistaken. To answer fairly and accurately, consider a balance of perspectives from up-to-date and reputable sources:

- What do informed sources have to say about this topic?
- On which points do sources agree?
- On which points do sources disagree?

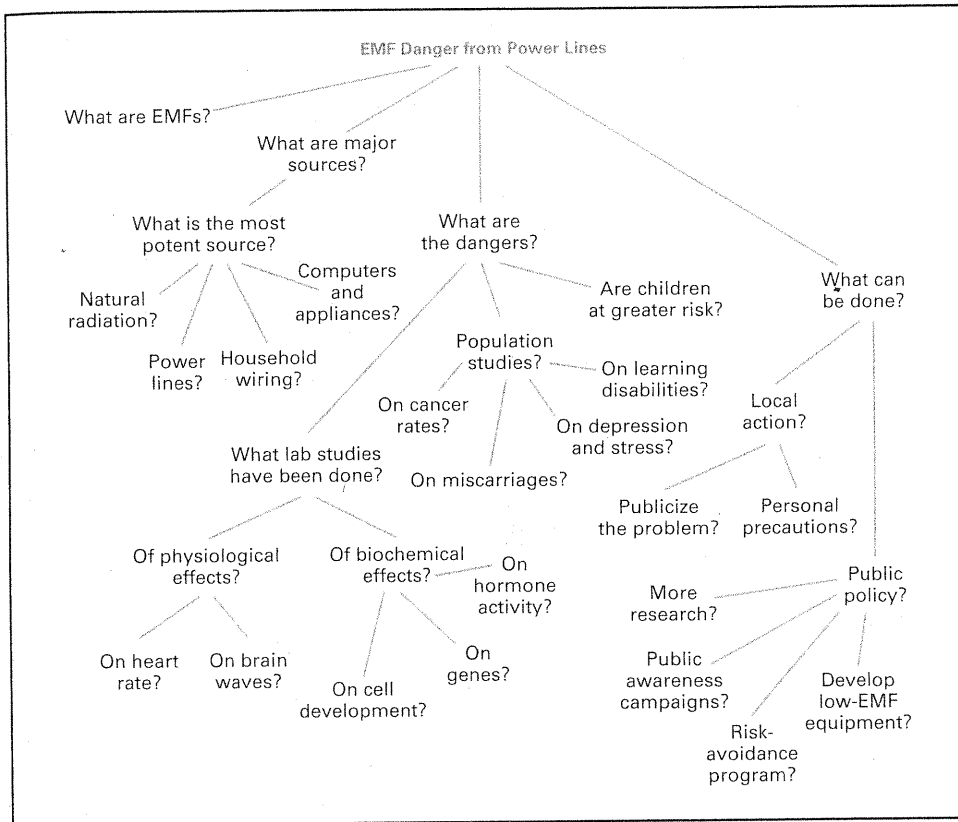


FIGURE 7.2 **How the Right Questions Help Define a Research Problem** You cannot begin to solve a problem until you have defined it clearly.

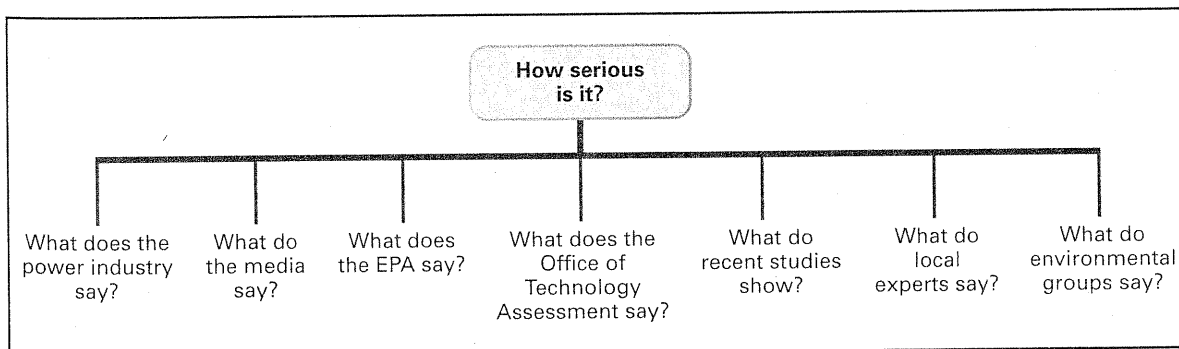


FIGURE 7.3 **A Range of Essential Viewpoints** No single source is likely to offer "the final word." Ethical researchers rely on evidence that represents a fair balance of views.

**NOTE** Recognize the difference between “balance” (sampling a full range of opinions) and “accuracy” (getting at the facts). Government or power industry spokespersons, for example, might present a more positive view (or “spin”) of the EMF issue than the facts warrant. Not every source is equal, nor should we report points of view as though they were equal (Trafford 137).

## ACHIEVING ADEQUATE DEPTH IN YOUR SEARCH<sup>2</sup>

Balanced research examines a broad *range* of evidence; thorough research, however, examines that evidence in sufficient *depth*. Different sources of information about any topic occupy different levels of detail and dependability (Figure 7.4).

The depth of a source often determines its quality

1. The surface level offers items from the popular media (newspapers, radio, TV, magazines, certain Internet discussion groups, blogs, and certain Web sites). Designed for general consumption, this layer of information often merely skims the surface of an issue.
2. At the next level are trade, business, and technical publications (*Frozen Food World*, *Publisher's Weekly*, and so on). Often available in both print and Web-based formats, these publications are designed for readers who range from moderately informed to highly specialized. This layer of information focuses more on practice than on theory, on issues affecting the field, and on public

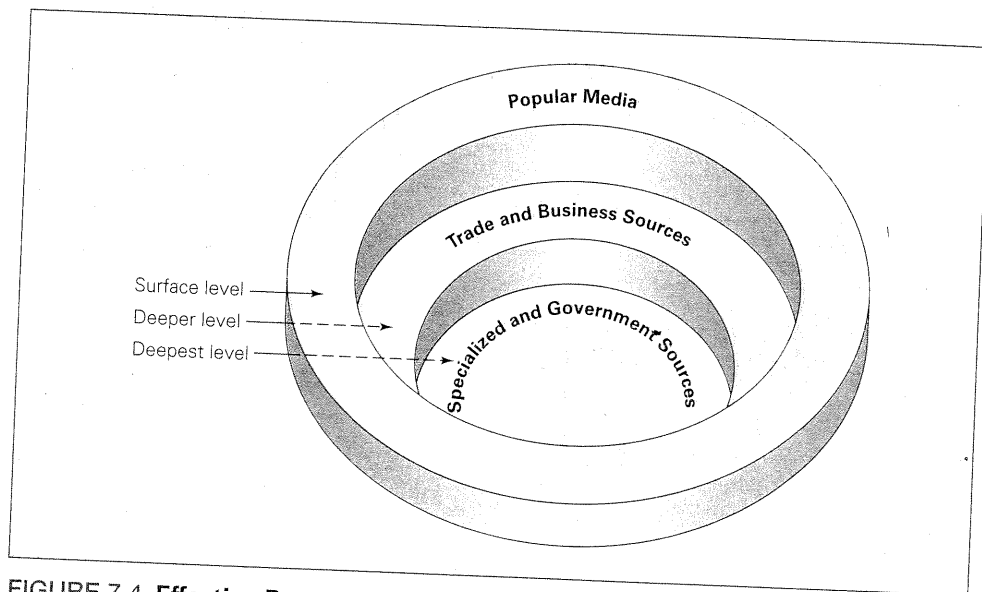


FIGURE 7.4 Effective Research Achieves Adequate Depth

<sup>2</sup> Our thanks to UMass Dartmouth librarian Ross LaBaugh for inspiring this section.



relations. While the information is usually accurate, the general viewpoints tend to reflect a field's particular biases.

3. At a deeper level is the specialized literature (journals from professional associations—academic, medical, legal, engineering). Designed for practicing professionals, this layer of information focuses on theory as well as on practice, on descriptions of the latest studies (written by the researchers themselves and scrutinized by peers for accuracy and objectivity), on debates among scholars and researchers, and on reviews, critiques, and refutations of prior studies and publications.

Also at this deepest level are government sources and corporate documents available through the Freedom of Information Act. Designed for anyone willing to investigate its complex resources, this information layer offers hard facts and detailed discussion, and (in many instances) *relatively* impartial views.

**NOTE** *Web pages, of course, offer links to increasingly specific levels of detail. But the actual “depth” and quality of a Web site’s information depend on the sponsorship and reliability of that site (see page 135).*

How deep is deep enough? This depends on your purpose, your audience, and your topic. But the real story most likely resides at deeper levels. Research on the EMF issue, for example, would need to look beneath media headlines and biased special interests (say, electrical industry or environmental groups), focusing instead on studies by a wide range of experts.

## EVALUATING YOUR FINDINGS

Not all findings have equal value. Some information might be distorted, incomplete, or misleading. Information might be tainted by *source bias*, in which a source understates or overstates certain facts, depending on whose interests that source represents (say, power company, government agency, parent group, or a reporter seeking headlines). To evaluate a particular finding, ask these questions:

- Is this information accurate, reliable, and relatively unbiased?
- Do the facts verify the claim?
- How much of the information is useful?
- Is this the whole or the real story?
- Do I need more information?

Instead of merely emphasizing findings that support their own biases or assumptions, ethical researchers seek out and report the most *accurate* answer.



### Research project

(Go to Student Resources>Chapter 7> Projects and Case Studies>Privacy at Work? Be Serious)

Questions for evaluating a particular finding

## INTERPRETING YOUR FINDINGS

Once you have decided which of your findings seem legitimate, you need to decide what they all mean by asking these questions:

Questions for interpreting your findings

- What are my conclusions and do they address my original research question?
- Do any findings conflict?
- Are other interpretations possible?
- Should I reconsider the evidence?
- What, if anything, should be done?



Research project

(Go to Student Resources>Chapter 7> Projects and Case Studies>What Is Fair Maternity Leave?)

For more advice on evaluating and interpreting data, see Chapter 8.

**NOTE** *Never force a simplistic conclusion on a complex issue. Sometimes the best you can offer is an indefinite conclusion: "Although controversy continues over the extent of EMF hazards, we all can take simple precautions to reduce our exposure." A wrong conclusion is far worse than no definite conclusion at all.*

## PRIMARY VERSUS SECONDARY SOURCES

How primary and secondary research differ

*Primary research* means getting information directly from the source by conducting interviews and surveys and by observing people, events, or processes in action. *Secondary research* is information obtained second hand by reading what other researchers have compiled in books and articles in print or online. Most information found on the Internet would be considered a secondary source. Some Web-based information is more accurate than others; for instance, a Web page created by a high school student might be interesting but not overly reliable, whereas a Web site that is the equivalent of a traditional secondary source (encyclopedia, research index, newspaper, journal) would be more reliable for your research.

Why you should combine primary and secondary research

Whenever possible, combine primary and secondary research. Typically, you would start by using secondary sources, because they are readily available and can help you get a full background understanding of your topic. However, don't neglect to add your own findings to existing ones by doing primary research.

Working with primary sources can help you expand upon what other people have already learned and add considerable credibility to your work. For instance, assume that your boss asks you to write a report about how well your company's new product is being received in the marketplace: You might consult sales reports and published print and online reviews of the product (secondary research), but you might also survey people who use the product and interview some of them individually (primary research).

## EXPLORING SECONDARY SOURCES

Secondary sources include some Web sites; online news outlets and magazines; blogs and wikis; books in the library; journal, magazine, and newspaper articles; government publications; and other public records. Research assignments begin more effectively when you first uncover and sort through what is already known about your topic before adding to that knowledge yourself.



**Internet searching help**  
(Go to *The Research Process* > *MySearchLab*)

### Web-based Secondary Sources

To find various sites on the Web, use two basic tools: *subject directories* and *search engines*.

- **Subject Directories.** Subject directories are indexes compiled by editors who sift through Web sites and sort the most useful links. Popular general subject directories include *Yahoo! Directory* <dir.yahoo.com>, *Google Directory* <www.google.com/dirhp>, and *About.com* <www.about.com>. Specialized directories focus on a single topic such as software, health, or employment. See *Beaucoup!*, a “directory of directories,” at <www.beaucoup.com> for listings of specialized directories organized by category.
- **Search Engines.** Search engines, such as Yahoo <www.yahoo.com> and Google <www.google.com>, scan for Web sites containing key words. Even though search engines yield a lot more information than subject directories, much of it can be irrelevant. Some search engines, however, are more selective than others, and some focus on specialized topics.

Subject directories are maintained by editors

Most search engines are maintained by computers, not people

### Locating Secondary Sources Using Google

Most people today, from students to professionals, begin their research of secondary sources by doing a Google search. Google, the most popular of the search engines, searches Web pages, government documents, online news sites, and other sources. Google also has a large collection of books and journal articles that it makes available through agreements with publishers or by digitizing works that either are in the public domain or are out of copyright.

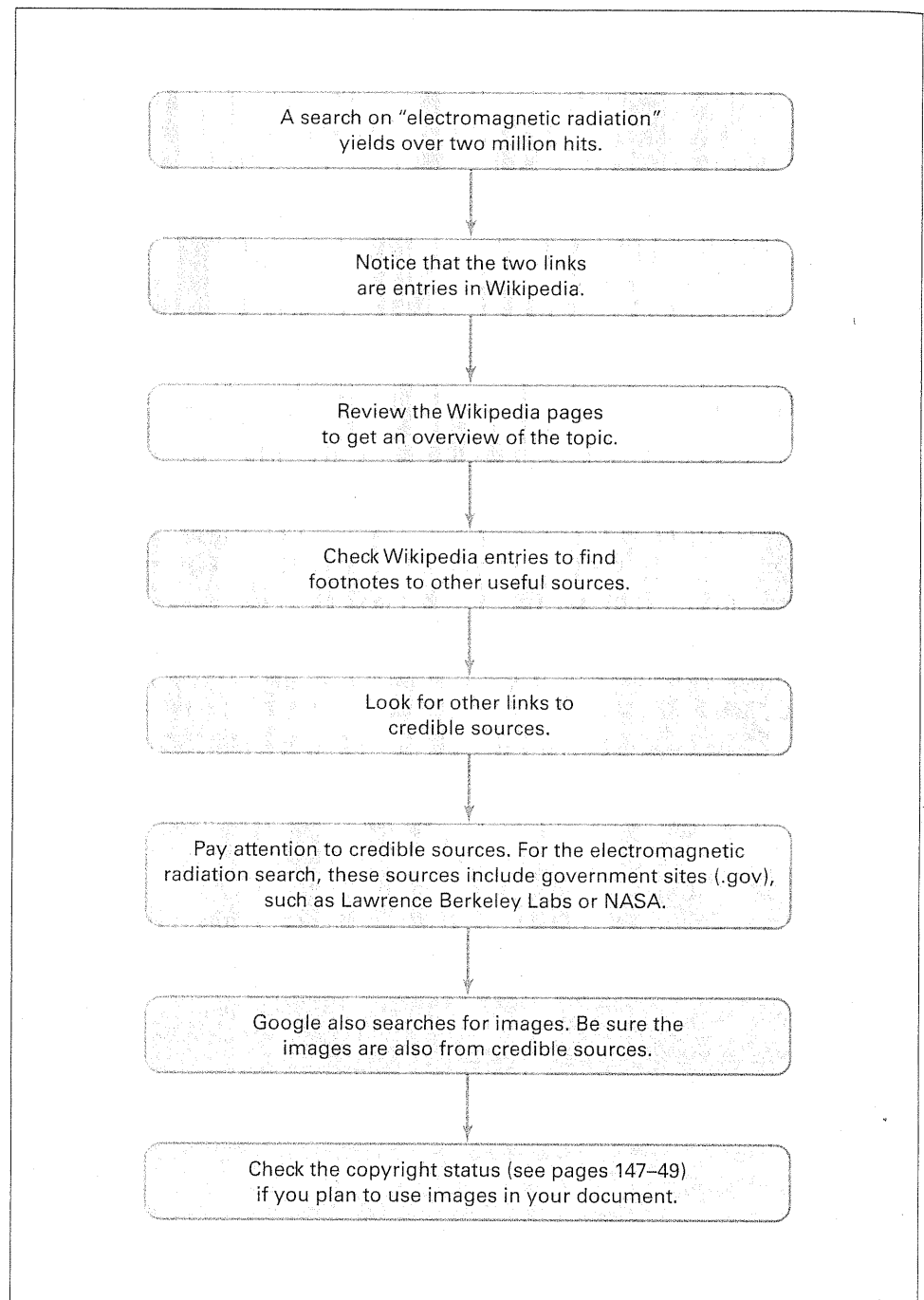
It's fine to start with a Google search just to brainstorm ideas and develop approaches to get started. But you quickly will need to narrow down your findings and do some deeper digging. For instance, your search on “electromagnetic radiation” will yield thousands or even millions of results. Figure 7.5 outlines the process and results of a Google search. You should stick with sites from reliable sources such as universities or government research labs.

Refine your Google searches

### Locating Secondary Sources Using Wikipedia

The first two Web links in many Google searches are to Wikipedia, the popular online encyclopedia. Wikipedia's content is provided and edited by countless

Use Wikipedia as a starting point



**FIGURE 7.5 Google Search Process** A Google search on "electromagnetic radiation" (or any other topic) will yield thousands if not more results. Links to government and science Web sites typically provide more trustworthy information than links to commercial sites.

people worldwide. Although these pages can provide a good starting point, the content may not be completely accurate. Use a Wikipedia entry to get an overview of the topic, and to help you locate other sources.

The Wikipedia page on electromagnetic radiation contains footnotes to other sources. You can track down these sources at the library or over the Internet. Think of Wikipedia as a place to get your research started, but not as your final destination.

## Other Web-based Secondary Sources

Google and Wikipedia can help you get started with your research. But the more intensively you investigate the sources you find on the Internet, the more you will need to pay attention to what you are finding. Following are the principal categories of information sources on the Internet.

**General Commercial, Organizational, and Academic Web Sites.** Search engines pull up a wide variety of hits, most of which will be commercial (.com), organizational (.org), and academic (.edu) Web sites. If a commercial site looks relevant to your search, by all means use it, as long as you think critically about the information presented. Does the company's effort to sell you something affect the content? Be careful also of organizational Web sites, which are likely to be well-researched, but may have a particular social or political agenda. Academic Web sites tend to be credible. However, some academics may also have biases, so never stop thinking critically about what you find on the Web.

**Government Web Sites.** Search engines will also pull up government Web sites, but your best access route is through the United States government's Web portal at <www.usa.gov>. Most government organizations (local, state, and federal) offer online access to research and reports (Figure 7.6). Examples include the Food and Drug Administration's site at <www.fda.gov>, for information on food recalls, clinical drug trials, and countless related items; and the Federal Bureau of Investigation's site at <www.fbi.gov>, for information about fugitives, crime statistics, and much more. State and local sites provide information on auto licenses, state tax laws, and local property issues. From some of these sites you can link to specific government-sponsored research projects.

**NOTE** *Be sure to check the dates of reports or data you locate on a government Web site, and find out how often the site is updated.*

**Online News Outlets and Magazines.** Most major news organizations offer online versions of their broadcasts and print publications. Examples include the *New York Times*, the *Wall Street Journal*, CNN, and National Public Radio. Magazines such as *Time*, *Newsweek*, and *Forbes* also offer Web versions. Some news is available online only, as in the online magazines *Slate* and *Salon*.

**NOTE** Make sure you understand how the publication obtains and reviews information. Is it a major news site, such as CNN, or is it a smaller site run by a special-interest group? Each can be useful, but you must evaluate the source. Also keep in mind that many online magazines have a political bias.

Visuals help orient readers to key topics

Content is organized by categories

Timely information is featured in the center page column

Home | [About CDC](#) | [Press Room](#) | [A-Z Index](#) | [Contact Us](#)

**CDC** Department of Health and Human Services  
Centers for Disease Control and Prevention

CDC en Español Search:

**Health & Safety Topics**

- Birth Defects
- Disabilities
- Diseases & Conditions
- Emergency
- Preparedness & Response
- Environmental Health
- Genetics and Genomics
- Health Promotion
- Injury and Violence
- Travelers' Health
- Vaccines & Immunizations
- Workplace Safety & Health

**Publications & Products**

- Emerging Infectious Diseases Journal
- MMWR
- Preventing Chronic Disease Journal
- Public Health Image Library
- Public Health Law News
- more

**Data & Statistics**

- Growth Charts
- National Data
- State Data
- more

**Avian Influenza**  
Latest information on bird flu... [more](#)

**Winter Weather**  
Don't let winter leave you cold... [more](#)

**Pandemic Flu**  
Pandemic Flu resources... [more](#)

**Anthrax**  
Learn more about anthrax... [more](#)

**Ricin**  
Learn more about ricin... [more](#)

**Patterns of global tobacco use in young people**  
Implications for future chronic disease burden in adults... [more](#)

**Genomics and Disease Prevention**  
Learn more about genomic discoveries and how they can be used to improve health and prevent disease in populations... [more](#)

**Learn more about New Beginnings**  
A Discussion Guide for Living Well with Diabetes... [more](#)

**Cancer Incidence Data Available**  
The National Program of Cancer Registries now provides cancer data in WONDER... [more](#)

**Business Gateway to CDC Resources (New!)**  
Business Checklist for Pandemic Flu Now Available... [more](#)

**CDC's New Health Protection Goals**  
CDC focuses on a set of health protection goals to become a more performance-based agency focusing on healthy people, preparedness, and healthy places. Public and partner review and

**Programs & Campaigns**

**National Diabetes Education Program**  
Partners work together to improve the treatment and outcomes of diabetes.

**VERB™**  
Encouraging tweens to be physically active on a continued basis.

**Conferences & Events**

**International Conference on Emerging Infectious Diseases - Preregistration deadline is March 1, 2006!**  
(Mar 19-22), Atlanta, GA

**Alaska Native Health Research Conference**  
(Mar 30-31), Anchorage, AK

**FIGURE 7.6 Centers for Disease Control Home Page** The CDC home page provides Health & Safety Topics, disease information, and much more.

Source: Centers for Disease Control and Prevention home page, [www.cdc.gov](http://www.cdc.gov).

**Blogs.** *Blogs* (short for *Web logs*) are Web sites on which the blog's author posts ideas, and other readers reply. The postings and attached discussions are displayed in reverse chronological order. Links that the owner has selected also supply ways to connect to other blogs on similar topics. Blogs are great for finding current information about a specific topic from individuals, companies, and nonprofit organizations. Evaluate the information on individual blogs carefully and decide which ones are most relevant and reliable.

Colleges and universities also host blogs as a way to support classroom teaching, provide space for student discussion, allow faculty to collaborate on research projects, and more. One excellent example is the University of Minnesota's UThink Project at <blog.lib.umn.edu>.

Blogs nearly always represent the particular views of the blog author (whether an individual, company, organization, or academic institution) and of those who reply to the postings. Check any information you find on a blog against a professionally edited or peer-reviewed source.

**Wikis.** *Wikis* are community encyclopedias that allow anyone to add to or edit the content of a listing. The most popular wiki is *Wikipedia* <www.wikipedia.org>. (See pages 129–31 for information about using Wikipedia for research.) The theory of a wiki is that if the information from one posting is wrong, someone else will correct it, and over time the site will reach a high level of accuracy and reliability.

Many wikis have no oversight. Aside from a few people who determine whether to delete articles based on requests from readers, the content on a wiki is not checked by editors for accuracy. Always check the information against other peer-reviewed or traditional sources. Remember that most of what is posted on a wiki has not been evaluated objectively.

**Internet Forums and Electronic Mailing Lists.** For almost any topic imaginable, you will find a Web forum, or discussion group. (See, for example, <discussions.apple.com/index.jspa>, for people who use Apple products.) Locate relevant forums by searching one of the major Internet forum providers. For instance, in researching a health-related issue such as stress among college students, you might visit *Google Groups* <groups.google.com> or *Yahoo! Groups* <groups.yahoo.com> and join a related group.

Most Internet forums offer two options: You may either subscribe to and visit the forum via the Web or subscribe to and receive messages directly into your email in-box. (Electronic mailing lists, or e-lists, are essentially the same as Internet forums.) Messages may be sent to the entire group or to individual participants.

Material from these sources may be insightful but biased. Visit a variety of forums and/or subscribe to multiple e-lists to get a broad perspective on the issue. Some information posted on forums or sent to e-list subscribers is not moderated (approved by a reviewer prior to being posted). Unmoderated material is usually less reliable.



**E-Libraries.** Entirely searchable via the Internet, e-libraries are excellent research tools. Aside from the online sites sponsored by public libraries, the most notable and reliable e-library is the Internet Public Library at <www.ipl.org>. E-libraries include links to online books, magazines, newspapers, periodical databases, and other resources including “live” librarians.

Although e-libraries can be efficient stand-ins for traditional, physical libraries, they can never replace such libraries. Resources available in electronic form will not include current books under copyright or a wide range of magazine and news articles and other publications. Supplement what you discover at an e-library with hard-copy materials from a traditional library.

**Periodical Databases.** Virtually all libraries have their own Web site where a library cardholder or student can access periodical databases. These are electronic collections of articles from newspapers, magazines, journals, and other publications. You can search by title, author, keyword, and so on.

Some of the most popular general periodical databases include *InfoTrac*, *NewsBank*, *ProQuest*, and *EBSCOHost*. Your library may also subscribe to specialized databases in a variety of subject areas.

Before initiating a periodical database search, meet with your reference librarian for a tour of the various databases and instructions for searching effectively. Also be aware that some databases may not be accessible from school or home—you may need to visit your library in person.



### GUIDELINES for Researching on the Internet

- ▶ **Expect limited results from any one search engine or subject directory.** No single search engine can index more than a fraction of the material available on the Web. No subject directory will list the same Web sites as another.
- ▶ **When using a search engine, select keywords or search phrases that are varied and technical rather than general.** Some search terms generate more useful hits than others. In addition to “electromagnetic radiation,” for example, try “electromagnetic fields,” “power lines and health,” or “electrical fields.” Specialized terms (say, “vertigo” versus “dizziness”) offer the best access to reliable sites. However, if you are not able to locate much by using a specialized term, widen your search somewhat.
- ▶ **When using Wikipedia or other online encyclopedias, check out the footnotes and other citations.** These references can direct you to other sources, such as government documents, books in the library, or published journal articles.

- ▶ **Consider the domain type (where the site originates).** Standard domain types in the United States include .com (commercial organization), .edu (educational institution), .gov or .mil (government or military organization), .net (general usage), and .org (nonprofit organization).
- ▶ **Identify the site's purpose and sponsor.** Is the intent merely to relay information, to sell something, or to promote an ideology or agenda? The domain type might alert you to bias or a hidden agenda. A .com site might provide accurate information but also some type of sales pitch. An .org site might reflect a political or ideological bias. Looking for a site's sponsor can also help you evaluate its postings. For example, a Web site about the dangers of bioengineered foods that is sponsored by an advocacy organization may be biased. Figure 8.2 (page 154) shows a Web site that advocates a particular perspective.
- ▶ **Look beyond the style of a site.** Sometimes the most reliable material resides in less attractive, text-only sites. The fact that a Web site may look professional doesn't always mean that its content is reliable.
- ▶ **Assess the currency of the site's materials.** When was the material created, posted, and updated? Many sites have not been updated in months or years.
- ▶ **Assess the author's credentials and assertions.** Check the author's reputation, expertise, and institutional affiliation (university, company, environmental group). Do not confuse the *author* (the person who wrote the material) with the *Webmaster* (the person who created and maintains the site). Follow links to other sites that mention the author. Where, on the spectrum of expert opinion and accepted theory, does this author fall? Is each assertion supported by solid evidence? Verify any extreme claim through other sources, such as a professor or expert in the field. Consider whether your own biases might predispose you to accept certain ideas.
- ▶ **Use bookmarks and hotlists for quick access to favorite Web sites.** It is always frustrating when you can't find a helpful Web site that you accessed earlier but didn't bookmark.
- ▶ **Save or print what you need before it changes or disappears.** Web sites often change their content or "go dead." Always record the URL and your access date.
- ▶ **Download only what you need; use it ethically; obtain permission; and credit your sources.** Unless they are crucial to your research, omit graphics, sound, and video files. Do not use material created by others in a way that harms the material's creator. For any type of commercial use of material from the Web, obtain written permission from the material's owner and credit the source exactly as directed by its owner. For more information on copyright, see pages 147–49.

## Traditional Secondary Sources

As noted earlier, traditional secondary research tools are still of great value. Most hard-copy secondary sources are carefully reviewed and edited before they are published. Although the digitizing of hard-copy materials continues, many of these printed sources are not yet available on the Web, particularly the full texts of books.

Locate hard-copy  
secondary sources  
using your  
library's OPAC

Locate hard-copy sources by using your library's online public access catalog (OPAC). This catalog can be accessed through the Internet or at terminals in the library. You can search a library's holdings by subject, author, title, or keyword. Visit the library's Web site, or ask a librarian for help. To search catalogs from libraries worldwide, go to the *Library of Congress Gateway* at <[www.loc.gov/z3950](http://www.loc.gov/z3950)> or *LibrarySpot* at <[www.libraryspot.com](http://www.libraryspot.com)>.

Following are the principal categories of hard-copy sources found at libraries, as well as one type of source material (gray literature) that you will need to track down on your own.

**Books and Periodicals.** The larger or more specialized the library you visit, the more likely you are to find books by specialist publishers and periodicals that delve into more specific subject areas. When consulting books and periodicals, always check the copyright date and supplement the source with additional information from more recent sources, if necessary.

**Reference Works.** Reference works are general information sources that provide background and can lead to more specific information.

- **Bibliographies.** Bibliographies are lists of books and/or articles categorized by subject. To locate bibliographies in your field, begin by consulting the *Bibliographic Index Plus*, a list (by subject) of major bibliographies, which indexes over 500,000 bibliographies worldwide. You can also consult such general bibliographies as *Books in Print* or the *Readers' Guide to Periodical Literature*. Or, examine subject area bibliographies, such as *Bibliography of World War II History*, or highly focused bibliographies, such as *Health Hazards of Video Display Terminals: An Annotated Bibliography*.
- **Indexes.** Book and article bibliographies may also be referred to as "indexes." Yet there are other types of indexes that collect information not likely found in standard bibliographies. Examples include the *Index to Scientific and Technical Proceedings*, which indexes conference proceedings in the sciences and engineering. While limited versions of some of these indexes may be available for free on the Internet, most are only available via a library subscription. Other indexes that may be useful for your research include the following:

- **Newspaper indexes.** Most major newspapers, such as the *New York Times*, have an index covering almost the entire span of the paper's publication.
- **Periodical indexes.** These indexes list articles from magazines and journals. The most commonly known periodical index is the *Readers' Guide to Periodical Literature*.
- **Citation indexes.** Using a citation index, you can track down the publications in which original material has been cited, quoted, or verified.
- **Technical report indexes.** These indexes allow you to look for government and private sector reports. One example would be the *Scientific and Technical Aerospace Reports* index.
- **Patent indexes.** Patents are issued to protect rights to new inventions, products, or processes. You can search for patents by using the *Index of Patents Issued from the United States Patent and Trademark Office* or other similar indexes that cover both U.S. and international patents.
- **Encyclopedias.** Encyclopedias are alphabetically arranged collections of articles. You may want to start by consulting a general encyclopedia, such as *Encyclopedia Britannica* or the *Columbia Encyclopedia*, but then examine more subject-focused encyclopedias, such as *Encyclopedia of Nutritional Supplements*, *Encyclopedia of Business and Finance*, or *Illustrated Encyclopedia of Aircraft*.
- **Dictionaries.** Dictionaries are alphabetically arranged lists of words, including definitions, pronunciations, and word origins. If you can't locate a particular word in a general dictionary (e.g., a highly specialized term or jargon specific to a certain field), consult a specialized dictionary, such as *Dictionary of Engineering and Technology*, *Dictionary of Psychology*, or *Dictionary of Media and Communication Studies*.
- **Handbooks.** Handbooks offer condensed facts (formulas, tables, advice, examples) about particular fields. Examples include the *Civil Engineering Handbook* and *The McGraw-Hill Computer Handbook*.
- **Almanacs.** Almanacs are collections of factual and statistical data, usually arranged by subject area and published annually. Examples include general almanacs, such as the *World Almanac and Book of Facts*, or subject-specific almanacs, such as the *Almanac for Computers* or *Baer's Agricultural Almanac*.
- **Directories.** Directories provide updated information about organizations, companies, people, products, services, or careers, often listing addresses and phone numbers. Examples include *The Career Guide: Dun's Employment Opportunities Directory* and the *Directory of American Firms Operating in*

*Foreign Countries*. For electronic versions, ask your librarian about *Hoover's Company Capsules* (for basic information on thousands of companies) and *Hoover's Company Profiles* (for detailed information).

- **Abstracts.** Abstracts are collected summaries of books and/or articles. Reading abstracts can help you decide whether to read or skip an article and can save you from having to track down a journal you may not need. Abstracts usually are titled by discipline: *Biological Abstracts*, *Computer Abstracts*, and so on. For some current research, you might consult abstracts of doctoral dissertations in *Dissertation Abstracts International*.

Although the reference works mentioned here are available mainly as print documents, some are available on the Internet. Go to the Internet Public Library at <[www.ipl.org](http://www.ipl.org)> for links to many online reference works. When using a reference work, check the copyright date to make sure you are accessing the most current information available.

**Access Tools for Government Publications.** The federal government publishes maps, periodicals, books, pamphlets, manuals, research reports, and other information. An example would be the *Journal of Research of the National Bureau of Standards*. These publications may be available in digital as well as hard-copy formats. To help you find what you are looking for, you will need to use an access tool such as the following. (A librarian can teach you to use these tools.)

- The *Monthly Catalog of the United States Government* is the major pathway to government publications and reports.
- The *Government Reports Announcements and Index* is a listing (with summaries) of more than one million federally sponsored published research reports and patents issued since 1964.
- The *Statistical Abstract of the United States*, updated yearly, offers statistics on population, health, employment, and many other areas. It can be accessed via the Web. CD-ROM versions are now available.

**Gray Literature.** Some useful printed information may be unavailable at any library. This is known as "gray literature," or materials that are unpublished or not typically catalogued. Examples include pamphlets published by organizations or companies (such as medical pamphlets or company marketing materials), unpublished government documents (available under the Freedom of Information Act), dissertations by graduate students, papers presented at professional conferences, or self-published works.

The only way to track down gray literature is to contact those who produce such literature and request anything available in your subject area. For instance, you could

contact a professional organization and request any papers on your topic that were delivered at their recent annual conference, or contact a government agency for statistics relevant to your topic. Before doing so, be knowledgeable about your topic and know specifically whom to contact. Don't make vague, general requests.

Keep in mind that gray literature, like much material found on the Web, is often not carefully scrutinized for content by editors. Therefore, it may be unreliable and should be backed up by information from other sources.

## EXPLORING PRIMARY SOURCES

Once you have explored your research topic in depth by finding out what others have uncovered, supplement that knowledge with information you discover yourself by doing primary research. Primary sources include unsolicited inquiries, informational interviews, surveys, and observations or experiments.

Types of primary sources

### Unsolicited Inquiries

The most basic form of primary research is a simple, unsolicited inquiry. Letters, phone calls, or email inquiries to experts listed in Web pages or to people you identify in other ways can clarify or supplement information you already have. Try to contact the right individual instead of a company or department. Also, ask specific questions that cannot be answered elsewhere. Be sure what you ask about is not confidential or otherwise sensitive information.

Unsolicited inquiries uncover basic but important information

Unsolicited inquiries, especially by phone or email, can be intrusive or even offensive. Therefore, limit yourself to a few questions that don't require extensive research or thought on the part of the person you contact.

### Informational Interviews

An excellent primary source of information is the informational interview. Much of what an expert knows may never be published. Therefore, you can uncover highly original information by spending time with your respondent and asking pertinent questions. In addition, an interviewee might refer you to other experts or sources of information.

Informational interviews can lead to original, unpublished material

Of course, an expert's opinion can be just as mistaken or biased as anyone else's. Like patients who seek second opinions about medical conditions, researchers must seek a balanced range of expert opinions about complex problems or controversial issues. In researching the effects of electromagnetic fields (EMFs), for example, you would seek opinions not only from a company engineer and environmentalist, but also from presumably more objective third parties such as a professor or journalist who has studied the issue. Figure 7.7 provides a partial text of an interview about persuasive challenges faced by a corporation's manager.

Expert opinion is not always reliable

Probing and  
following up

Seeking  
clarification

Seeking  
clarification

Following up

Probing

**Q.** *Would you please summarize your communication responsibilities?*

**A.** The corporate relations office oversees three departments: customer service (which handles claims, adjustments, and queries), public relations, and employee relations. I supervise production of all documents generated by this office.

**Q.** *Isn't that a lot of responsibility?*

**A.** It is, considering we're trying to keep some people happy, getting others to cooperate, and trying to get everyone to change their thinking and see things in a positive light. Just about every document we write has to be persuasive.

**Q.** *What exactly do you mean by "persuasive"?*

**A.** The best way to explain is through examples of what we do. The customer service department responds to problems like these: Some users are unhappy with our software because it won't work for a particular application, or they find a glitch in one of our programs, or they're confused by the documentation, or someone wants the software modified to meet a specific need. In each case we have to persuade people that we've resolved the problem or are working to resolve it quickly.

The public relations department works to keep up our reputation through links outside the company. For instance, we keep in touch with this community, with consumers, the general public, government and educational agencies.

**Q.** *Can you be more specific? "Keeping in touch" doesn't sound much like persuasion.*

**A.** Okay, right now we're developing programs with colleges and universities, in which we offer heavily discounted software, backed up by an extensive support network (regional consultants, an 800 phone hotline, and a Web site). We're hoping to persuade them that our software is superior to our well-entrenched competitor's. And locally we're offering the same kind of service and support to business clients.

**Q.** *What about employee relations?*

**A.** Day to day we face the usual kinds of problems: trying to get 100 percent employee contributions to the United Way, or persuading employees to help out in the community, or getting them to abide by new company regulations restricting personal phone calls. Right now, we're facing a real persuasive challenge. Because of market saturation, software sales have flattened across the board. This means temporary layoffs for roughly 28 percent of our employees. Our only alternative is to persuade *all* employees to accept a 10-percent salary and benefit cut until the market improves.

**Q.** *How, exactly, do you persuade employees to accept a cut in pay and benefits?*

**A.** Basically, we have to make them see that by taking the cut, they're really investing in the company's future—and, of course, in their own.

[The interview continues.]

**FIGURE 7.7 Partial Text of an Informational Interview** This page from an informational interview shows you how to use clear, specific questions and how to follow up and seek clarification to answers.





## GUIDELINES for Informational Interviews

### Planning the Interview

- ▶ **Know exactly what you're looking for from whom.** Write out your plan.

I will interview Anne Hector, Chief Engineer at Northport Electric, to ask about the company's approaches to EMF (electromagnetic field) risk avoidance—in the company as well as in the community.

Audience and  
purpose  
statement

- ▶ **Do your homework.** Learn all you can. Be sure the information this person might provide is unavailable in print.
- ▶ **Make arrangements by phone, letter, or email.** (See Karen Granger's letter on page 390.) Ask whether this person objects to being quoted or taped. If possible, submit your questions beforehand.

### Preparing the Questions

- ▶ **Make each question clear and specific.** Avoid questions that can be answered "yes" or "no":

| In your opinion, can technology find ways to decrease EMF hazards?

An unproductive  
question

Instead, phrase your question to elicit a detailed response:

| Of the various technological solutions being proposed or considered, which do you consider most promising?

A clear and  
specific question

- ▶ **Avoid loaded questions.** A loaded question invites or promotes a particular bias:

| Wouldn't you agree that EMF hazards have been overstated?

A loaded  
question

Ask an impartial question instead:

| In your opinion, have EMF hazards been accurately stated, overstated, or understated?

An impartial  
question

- ▶ **Save the most difficult, complex, or sensitive questions for last.**
- ▶ **Write out each question on a separate notecard.** Use the notecard to summarize the responses during the interview.

### Conducting the Interview

- ▶ **Make a courteous start.** Express your gratitude; explain why you believe the respondent can be helpful; explain exactly how you will use the information.
- ▶ **Respect cultural differences.** Consider the level of formality, politeness, directness, and other behaviors appropriate in the given culture. (See Chapters 3 and 5.)
- ▶ **Let the respondent do most of the talking.**
- ▶ **Be a good listener.** For listening advice, see pages 90–91.



**GUIDELINES** *continued*Clarifying  
questions

- ▶ **Stick to your interview plan.** If the conversation wanders, politely nudge it back on track (unless the peripheral information is useful).
- ▶ **Ask for clarification if needed.** Keep asking until you understand.
  - | —Could you go over that again?
  - | —What did you mean by [word]?

Follow-up  
questions

- ▶ **Repeat major points in your own words and ask if your interpretation is correct.** But do not put words into the respondent's mouth.
- ▶ **Be ready with follow-up questions.**
  - | —Why is it like that?
  - | —Could you say something more about that?
  - | —What more needs to be done?

Concluding  
questions

- ▶ **Keep note taking to a minimum.** Record statistics, dates, names, and other precise data, but don't record every word. Jot key terms or phrases that can refresh your memory later.

**Concluding the Interview**

- ▶ **Ask for closing comments.** Perhaps these can point to additional information.
  - | —Would you care to add anything?
  - | —Is there anyone else I should talk to?
  - | —Can you suggest other sources that might help me better understand this issue?
- ▶ **Request permission to contact your respondent again, if new questions arise.**
- ▶ **Invite the respondent to review your version for accuracy.** If the interview is to be published, ask for the respondent's approval of your final draft. Offer to provide copies of any document in which this information appears.
- ▶ **Thank your respondent and leave promptly.**
- ▶ **As soon as possible, write a complete summary (or record one verbally).**

**Surveys**

Surveys provide multiple, fresh viewpoints on a topic

Surveys help you form impressions of the concerns, preferences, attitudes, beliefs, or perceptions of a large, identifiable group (a *target population*) by studying representatives of that group (a *sample*). While interviews allow for greater clarity and depth, surveys offer an inexpensive way to get the viewpoints of a large group. Respondents can answer privately and anonymously—and often more candidly than in an interview.

The tool for conducting surveys is the questionnaire. See Figures 7.8 and 7.9 for a sample questionnaire cover letter and questionnaire.

April 5, 20xx

House 10  
University of Massachusetts, Dartmouth  
North Dartmouth, MA 02747

Name, Title  
Company Name  
Address

Dear \_\_\_\_\_:

I am exploring ways to enhance relationships between UMD's Professional Communication Program and the local business community.

Specific areas of inquiry:

1. the communication needs of local companies and industries
2. the feasibility of on-campus and in-house seminars for employees
3. the feasibility of expanding communication course offerings at UMD

Please take a few minutes to complete the attached survey. Your response will provide an important contribution to my study.

All respondents will receive a copy of my report, scheduled to appear in the fall issue of *The Business and Industry Newsletter*. Thank you.

Sincerely,

L.S. Taylor  
Technical Communication Student

Use standard features of a letter (date, address, salutation)

Keep the introductory sentence short

Use bullets or a numbered list for ease of reading

Be polite and professional in tone

**FIGURE 7.8 A Questionnaire Cover Letter** Use a cover letter when you send out a questionnaire. If the questionnaire will be sent electronically, you can use email to write and send the cover letter.

Open-ended question (allows people to respond as they choose)

Closed-ended question (provides a limited choice of responses)

Questions and sentences are short and to the point

Page layout is clean and easy to read

Communication Questionnaire	
1. Describe your type of company (e.g., manufacturing, high tech)	_____
2. Number of employees (Please check one.)	_____
_____ 0-4	_____ 26-50
_____ 5-25	_____ 51-100
_____ 101-150	_____ 151-300
_____ 301-450	_____ 451+
3. What types of written communication occur in your company? (Label by frequency: daily, weekly, monthly, never.)	_____
_____ memos	_____ letters
_____ manuals	_____ reports
_____ procedures	_____ proposals
_____ email	_____ catalogs
_____ advertising	_____ newsletters
_____ other (Specify.)	_____
4. Who does most of the writing? (Pls. give titles.)	_____
5. Please characterize your employees' writing effectiveness.	_____
_____ good	_____ fair
_____ poor	_____
6. Does your company have formal guidelines for writing?	_____
_____ no	_____ yes (Pls. describe briefly.)
7. Do you offer in-house communication training?	_____
_____ no	_____ yes (Pls. describe briefly.)
8. Please rank the usefulness of the following areas in communication training (from 1-10, 1 being most important).	_____
_____ organizing information	_____ audience awareness
_____ summarizing information	_____ persuasive writing
_____ editing for style	_____ grammar
_____ document design	_____ researching
_____ email etiquette	_____ Web page design
_____ other (Pls. specify.)	_____
9. Please rank these skills in order of importance (from 1-6, 1 being most important).	_____
_____ reading	_____ listening
_____ writing	_____ collaborating
_____ speaking to groups	_____ speaking face-to-face
10. Do you provide tuition reimbursement for employees?	_____
_____ no	_____ yes
11. Would you consider having UMD communication interns work for you part-time?	_____
_____ no	_____ yes
12. Should UMD offer Saturday seminars in communication?	_____
_____ no	_____ yes
Additional comments/suggestions: _____	

FIGURE 7.9 A Questionnaire A questionnaire will help you gather answers to specific questions and topics.



## GUIDELINES for Surveys

- ▶ **Define the survey's purpose and target population.** Ask yourself, "Why is this survey being performed?" "What, exactly, is it measuring?" "How much background research do I need?" "How will the survey findings be used?" and "Who is the exact population being studied?"
- ▶ **Identify the sample group.** Determine how many respondents you need. Generally, the larger the sample surveyed the more dependable the results (assuming a well-chosen and representative sample). Also determine how the sample will be chosen. Will they be randomly chosen? In the statistical sense, *random* does not mean "haphazard": A random sample means that each member of the target population stands an equal chance of being in the sample group.
- ▶ **Define the survey method.** How will the survey be administered—by phone, by mail, or online? Each method has benefits and drawbacks: Phone surveys yield fast results and high response rates; however, they take longer than written surveys. Also, many people find them annoying and tend to be less candid when responding in person. Mail surveys promote candid responses, but many people won't bother returning the survey, and results can arrive slowly. Surveys via the Web or email yield quick results, but computer connections can fail, and (with Web surveys) you have less control over how often the same person responds.
- ▶ **Decide on types of questions.** Questions can be *open-* or *closed-ended*. Open-ended questions allow respondents to answer in any way they choose. Measuring the data gathered from such questions is more time-consuming, but they do provide a rich source of information. An open-ended question is worded like this:

| How much do you know about electromagnetic radiation at our school?

Open-ended  
question

Closed-ended questions give people a limited number of choices, and the data gathered are easier to measure. Here are some types of closed-ended questions:

| Are you interested in joining a group of concerned parents?

YES \_\_\_\_\_ NO \_\_\_\_\_

| Rate your degree of concern about EMFs at our school.

HIGH \_\_\_\_\_ MODERATE \_\_\_\_\_ LOW \_\_\_\_\_ NO CONCERN \_\_\_\_\_

Closed-ended  
questions

| Circle the number that indicates your view about the town's proposal to spend \$20,000 to hire its own EMF consultant.

1 . . . . 2 . . . . 3 . . . . 4 . . . . 5 . . . . 6 . . . . 7

| Strongly                      No                      Strongly  
Disapprove                  Opinion                  Approve

| How often do you . . . ?

ALWAYS \_\_\_\_\_ OFTEN \_\_\_\_\_ SOMETIMES \_\_\_\_\_ RARELY \_\_\_\_\_ NEVER \_\_\_\_\_

To measure exactly where people stand on an issue, choose closed-ended questions.



GUIDELINES *continued*

- **Develop an engaging introduction and provide appropriate information.** Persuade respondents that the questionnaire relates to their concerns, that their answers matter, and that their anonymity is ensured:

A survey introduction

Your answers will help our school board to speak accurately for your views at our next town meeting. All answers will be kept confidential. Thank you.

Researchers often include a cover letter with the questionnaire, as in Figure 7.8.

Begin with the easiest questions, usually the closed-ended ones. Respondents who commit to these are likely to answer later, more difficult questions.

- **Make each question unambiguous.** All respondents should be able to interpret identical questions identically. An ambiguous question allows for misinterpretation:

An ambiguous question

Do you favor weapons for campus police? YES \_\_\_\_\_ NO \_\_\_\_\_

“Weapons” might mean tear gas, clubs, handguns, tasers, or some combination of these. The limited “yes/no” format reduces an array of possible opinions to an either/or choice. Here is an unambiguous version:

A clear and incisive question

\_\_\_\_\_ **Do you favor** (check all that apply):  
 \_\_\_\_\_ Having campus police carry mace and a club?  
 \_\_\_\_\_ Having campus police carry nonlethal “stun guns”?  
 \_\_\_\_\_ Having campus police store handguns in their cruisers?  
 \_\_\_\_\_ Having campus police carry handguns?  
 \_\_\_\_\_ Having campus police carry large-caliber handguns?  
 \_\_\_\_\_ Having campus police carry no weapons?  
 \_\_\_\_\_ Don't know

To account for all possible responses, include options such as “Other,” “Don't know,” or an “Additional Comments” section.

- **Avoid biased questions:**

A loaded question

Should our campus tolerate the needless endangerment of innocent students by lethal weapons? YES \_\_\_\_\_ NO \_\_\_\_\_

Avoid emotionally loaded and judgmental words (“endangerment,” “innocent,” “needless”), which can influence a person's response (Hayakawa 40).

- **Make it brief, simple, and inviting.** Long questionnaires usually get few replies. And people who do reply tend to give less thought to their answers. Limit the number and types of questions. Include a stamped, return-addressed envelope, and stipulate a return date.
- **Have an expert review your questionnaire before use, whenever possible.**

## Observations and Experiments

Observations or experiments should be your final step, because you now know exactly what to look for.

When you make observations, have a plan in place. Know how, where, and when to look, and jot down or record your observations immediately. You might even take photos or draw sketches of what you observe.

Experiments are controlled forms of observations designed to verify assumptions (e.g., the role of fish oil in preventing heart disease) or to test something untried (e.g., the relationship between background music and productivity). Each field has its own guidelines for conducting experiments (e.g., you must use certain equipment, scrutinize your results in a certain way); follow those guidelines to the letter when conducting your own experiments.

Remember that observations and experiments are not foolproof. During observation or experimentation, you may be biased about what you see (focusing on the wrong events, ignoring something important). In addition, if you are observing people or experimenting with human subjects, they may be conscious of being observed and may alter their normal behaviors.

Observations and experiments offer proof to back up assumptions about a topic



**Chapter quiz, Exercises, Web links, and Flashcards**  
(Go to *Student Resources* > Chapter 7)



**Research Activities, Case studies, Quizzes, and Model documents**  
(Go to *The Research Process*)



## CONSIDER THIS: Frequently Asked Questions about Copyright

Research often involves working with copyrighted materials. Copyright laws have an ethical purpose: to balance the reward for intellectual labors with the public's right to use information freely.

### 1. What is a copyright?

A copyright is the exclusive legal right to reproduce, publish, and sell a literary, dramatic, musical, or artistic work that is fixed in a tangible medium (digital or print). Written permission must be obtained to use all copyrighted material except where fair use applies or in cases where the copyright holder has stated other terms of use. For example, a musician might use a Creative Commons "attribution" license as part of a song released on the Internet. This license allows others to copy, display, and per-

form the work without permission, but only if credit is given. For more about Creative Commons and types of licenses, see <[creativecommons.org/about/licenses](http://creativecommons.org/about/licenses)>.

### 2. What are the limits of copyright protection?

Copyright protection covers the exact wording of the original, but not the ideas or information it conveys. For example, Einstein's theory of relativity has no protection but his exact wording does (Abelman 33; Elias 3). Also, paraphrasing Einstein's ideas but failing to cite him as the source would constitute plagiarism.

### 3. How long does copyright protection last?

Works published before January 1, 1978 are protected for 95 years. Works published on or after January 1, 1978 are copyrighted for the author's life plus 70 years.

(Continued)



**CONSIDER THIS: (continued)**

4. *Must a copyright be officially registered in order to protect a work?*

No. Protection begins as soon as a work is created.

5. *Must a work be published in order to receive copyright protection?*

No.

6. *What is "fair use"?*

"Fair use" is the legal and limited use of copyrighted material without permission. The source should, of course, be acknowledged. Fair use does not ordinarily apply to case studies, charts and graphs, author's notes, or private letters ("Copyright Protection" 30).

7. *How is fair use determined?*

In determining fair use, the courts ask these questions:

- *Is the material being used for commercial or for nonprofit purposes?* For example, nonprofit educational use is viewed more favorably than for-profit use.
- *Is the copyrighted work published or unpublished?* Use of published work is viewed more favorably than use of unpublished essays, correspondence, and so on.
- *How much, and which part, of the original work is being used?* The smaller the part, the more favorably its use will be viewed. Never considered fair, however, is the use of a part that "forms the core, distinguishable, creative effort of the work being cited" (*Author's Guide* 30).
- *How will the economic value of the original work be affected?* Any use that reduces the potential market value of the original will be viewed unfavorably.

8. *What is the exact difference between copyright infringement and fair use?*

Although using ideas from an original work is considered fair, a paraphrase that incorporates too much of the original expression can be infringement—even when the source is cited (Abelman 41). Reproduction of a government document that includes material previously protected by copyright (graphs, images, company logos, slogans) is considered infringement. The United States Copyright Office offers this caution:

There is no specific number of words, lines, or notes that may safely be taken without permission.

Acknowledging the source of the copyrighted material does not substitute for obtaining permission. ("Fair Use" 1–2)

When in doubt, obtain written permission.

9. *What is material in the "public domain"?*

"Public domain" refers to material not protected by copyright or material on which copyright has expired. Works published in the United States 95 years before the current year are in the public domain. Most government publications and commonplace information, such as height and weight charts or a metric conversion table, are in the public domain. These works might contain copyrighted material (used with permission and properly acknowledged). If you are not sure whether an item is in the public domain, request permission ("Copyright Protection" 31).

10. *What about international copyright?*

Copyright protection varies among individual countries, and some countries offer little or no protection for foreign works:

There is no such thing as an "international copyright" that will automatically protect an author's writings throughout the world. ("International Copyright" 1-2)

In the United States all foreign works that meet certain requirements are protected by copyright (Abelman 36).

**11. Who owns the copyright to a work prepared as part of one's employment?**

A work prepared in the service of one's employer or under written contract for a client

is a "work made for hire." The employer or client is legally considered the author and therefore holds the copyright (Abelman 33-34). For example, a manual researched, designed, and written as part of one's employment would be a work made for hire.

For latest developments, visit the United States Copyright Office <[www.loc.gov/copyright](http://www.loc.gov/copyright)>.



## Projects

### GENERAL

Begin researching for the analytical report (Chapter 23) due at semester's end.

#### Phase One: Preliminary Steps

- Choose a topic that affects you, your workplace, or your community directly.
- Develop a tree chart (page 125) to help you ask the right questions.
- Complete an audience and use profile (page 31).
- Narrow your topic, checking with your instructor for approval and advice.
- Make a working bibliography to ensure sufficient primary and secondary sources.
- List what you already know about your topic.
- Write an audience and purpose statement (page 19) and submit it in a research proposal (page 586).
- Make a working outline.

#### Phase Two: Collecting, Evaluating, and Interpreting Data (Read Chapters 8-9 in preparation for this phase.)

- In your research, begin with general works for an overview, and then consult more specific sources.
- Skim the sources, looking for high points.

- Take notes selectively (page 676), summarize (page 172), and record each source.
- Plan and administer questionnaires, interviews, and inquiries.
- Try to conclude your research with direct observation.
- Evaluate each finding for accuracy, reliability, fairness, and completeness.
- Decide what your findings mean.
- Use the checklist on page 170 to reassess your methods, interpretation, and reasoning.

#### Phase Three: Organizing Your Data and Writing the Report

- Revise your working outline as needed.
- Document each source of information (page 680).
- Write your final draft according to the checklist on page 170.
- Proofread carefully. Add front and end matter supplements (Chapter 23).

#### Due Dates: To Be Assigned by Your Instructor

List of possible topics due:

Final topic due:

Proposal memo due: