

Writing Research Papers

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◊ *The point of writing is discovery.*

Research today is easier, more exciting, and more rewarding than ever. With access to electronic encyclopedias, the Internet, and services like ProQuest and LexisNexis, you have an enormous world of information at your command. Not only is finding that information easier, but communicating with others about your research is also easier than ever—whether using email to ask experts questions, sitting in on electronic discussion lists, or sending drafts out as attachments for others to review.

But researchers using the Web or other computerized sources can quickly find themselves **overwhelmed by too much information**, much of it dubious. So with more information come more responsibilities: to sort carefully, to focus tightly, to evaluate critically, to credit your sources honestly, and to create an effective report. We'll discuss these issues and more in this chapter.

The general approach for writing research papers, whether for a course, a magazine, an employer, or a client, includes three basic steps:

- 1 Selecting a topic
Pick a good topic

- Define your purpose
Identify your audience
Formulate a research question
- 2 Researching your topic
Set up a general search strategy
Use primary and secondary sources
Do original research
Make a research outline for using the library and the Web
Find things out for yourself
Be open to serendipity
Take notes
Manage sources and quotations
Manage and evaluate electronic sources
- 3 Writing your paper
Get started
Choose a plan of organization
Write a draft
Get responses
Finish your paper

• • SELECTING A TOPIC

A research paper requires a major investment on your part. So why not be good to yourself right from the start? If you choose a topic that truly interests you, one that will be fun to explore, you'll write with more of a sense of purpose. A good research paper topic has the following qualities:

- ◊ **The topic is interesting to you.** You'd really like to know more about it.
- ◊ **The topic has an argumentative edge.** You have a point you'd like to make with your reader.
- ◊ **The topic is tailored to a specific audience, or audiences.** You have in mind an audience that wants or needs to know more about the topic.

○ **The topic is narrow enough.** You have focused it on something you can cover adequately within the specifications given (see Chapter 3).

● PICK A GOOD TOPIC

When you have a range of choices, pick an area you **already know something about** and would enjoy exploring further. Here are examples of the kinds of topics students might choose to start with:

You might want to learn more about the Mayan civilization because last summer you went on an archeological dig at the Tikal ruins in Guatemala.

You might want to write a paper on Nelson Mandela, the civil rights leader who became president of South Africa after spending more than twenty-five years as a political prisoner in that country.

Some aspect of the life of that remarkable medieval queen, Eleanor of Aquitaine, might make a good topic for you.

Perhaps you can gather statistics on how many major symphony orchestras are conducted by women versus how many by men, and then go on to explore the causes for that disparity of numbers.

Or maybe you wonder why in most historical periods of painting, there are so few women artists represented.

● DEFINE YOUR PURPOSE

Know the **purpose behind your research**. Perhaps your instructor has specified that purpose in the assignment by using a term such as *analyze*, *explain*, *investigate*, *compare*, *prove*, or *discuss*. As you work on your draft, keep checking to see that you're doing what the assignment specifies.

Then think about your own purposes. Most readers want you to take a position on your subject, then use the information you collect to support and amplify that position. Remember that research papers are always better pieces of writing if they have an argumentative edge.

In this early stage of planning your paper, it's useful to get down a tentative *thesis sentence* that sums up the main points you plan to make and thus expresses that argumentative edge. For example,

Artemisia Gentileschi, a talented artist in seventeenth-century Italy, overcame formidable cultural, professional, and sexual obstacles to produce some of the finest art of her day; some of that art reveals a strong feminist theme.

Any such **thesis is only a working statement**; almost certainly you would want to revise and refine it for the final version of your paper.

● IDENTIFY YOUR AUDIENCE

Whether you are writing on an assigned topic or on a topic you've chosen, begin by considering **who your readers are** and **what they want to get from your paper**. First is your professor. Professors always hope to learn something new from their students—that's one of the bonuses of teaching. But in addition to reading for content—new information and interesting ways of looking at familiar information—professors read your research papers with several other concerns in mind:

- To evaluate your knowledge of your subject matter
- To determine your ability to make a valid claim, find information that will support it, and present your case in a clear and organized fashion
- To see how you got to the claim your paper makes, how you found the information you use to support it—to see enough of the workings of your research process itself so they can evaluate its strength
- To assess your mastery of the formal conventions of research writing in a given academic field; for example, the format recommended by the Modern Language Association (MLA) for an English paper, or the format recommended by the American Psychological Association (APA) for a paper in sociology or psychology (see "Mastering the Conventions of Documentation," pages 271–87).

To create a good research piece, it's useful to **identify another audience** besides your professors, an additional group of readers you would like to influence or inform. You could choose a magazine or other kind of periodical that might publish something about the topic you're writing on. For example, a travel magazine might be interested in an article on your visit to Tikal, the Mayan site in Guatemala. Today there are many online publications, such as *Salon* (salon.com), that you can browse right at your

own computer; select one of those and write your research paper as an article for it. (You can see a full listing at www.metagrid.com/.) Who knows—you might even decide to submit your piece to be considered for publication. At the very least, assume that you are writing for other students in the class for which you're writing the paper.

Whatever audience(s) you decide to write for, ask yourself these questions:

- ▷ What do they already know about my topic?
- ▷ What would they like to know?
- ▷ What kind of details are likely to interest them?
- ▷ What's in this topic for them—what might their stake in it be?

If you are writing your paper in a class where students respond to each other's rough drafts, asking yourself these questions as you are writing will be particularly helpful. Asking your peer reviewers these questions as they review your draft(s) will give them good ways to begin to respond to your work constructively.

● FORMULATE A RESEARCH QUESTION

Once you have decided on a tentative topic, you can begin to formulate a question (or questions) about your topic to answer through your research. You may, for instance, want to find out the answers to questions such as "What can the average citizen do on a daily basis to help protect the natural environment?" or "Why is California the site of so many earthquakes?" or "How do the film versions of Jane Austen's novels, such as *Sense and Sensibility*, compare with the novels themselves?"

If you were writing a paper on Artemisia Gentileschi, you might phrase your question like this: "Why have women painters from earlier centuries than the nineteenth received so little attention until now?" or "Why are painters like Artemisia Gentileschi so little known today?" or "How did Artemisia Gentileschi go about transcending the limitations which her culture and her personal history placed upon her?" You need to formulate your research question early in your research, and continue to reformulate, refocus, and sharpen it as you move through every step of the research process.

Resist the temptation to begin your research with questions that are built upon unproved assumptions or that lead to obvious or foregone conclusions. A question like "How has commercialism corrupted professional sports?" is inappropriate if the underlying assumption—commercialism has corrupted professional sports—cannot be convincingly established. When you are researching and writing about topics that are controversial or surrounded by debate, your first task may well be to show that you're arguing from valid assumptions. If you're going to have to spend half of the paper just establishing the validity of those assumptions, as you would have to in the topic of commercialism and professional sports, then reconsider your choice of topic.

How do you go about creating a research question? How, for example, do you get from "Artemisia Gentileschi" to "What is unique about the career of Artemisia Gentileschi?" or from "phytoplankton in Wilson Inlet" to "In what ways does the growth cycle of phytoplankton in Wilson Inlet allow us to anticipate the growth cycle of phytoplankton in the Ross Sea?"

One way to make that transformation is to ask these six questions about your topic: *Who* has noticed the work of Gentileschi? *What* is unusual about it? *Where* can her work be seen? *When* did she live? *How* did events in her life affect her work? *Why* was her work neglected? Each of these questions can help get your topic moving in the direction of being a question to be answered and an argument or arguments to be made.

Another technique for creating or discovering a research question, also one used by the authors of this book, is to look for *anomalies*, things that don't make sense, within the subject you are examining. Here are some examples:

"Why is it that Gentileschi's work was considered unimportant, yet some of her paintings were mistaken for the work of acknowledged masters such as Caravaggio?" What is the anomaly there?

"Why is it that city X continues to spend millions of dollars developing the buildings, parks, and sidewalks along the river that flows through the middle of town, but continues to do nothing about the terrible and deteriorating condition of the water quality in that river?" What is the anomaly there?

● ● ● RESEARCHING YOUR TOPIC

When students begin research, the *key mistake* they often make is going straight to the Web or straight to the library catalog to try to find the information they need. That step is properly in fact a *middle* step in a larger research and writing process. The parts of that larger process—including how to use both the Web and the library—are explained in the following sections.

● SET UP A GENERAL SEARCH STRATEGY

Only when you have defined your purpose, considered your audience, and formulated (or begun to formulate) your research question are you ready to begin your research. As you plan your research strategy, keep several important principles in mind:

① **Make a plan** for your time, working backward from your due date.

For example, if you receive your assignment on March 15 for a paper due on April 20, you might plan your time like this:

April 20: Submit revised final paper to instructor.

April 16: Receive annotated draft from instructor.

April 12: Give draft to instructor.

April 8–10: Revise and rewrite draft.

April 1–7: Write first draft. Confer with classmates or a second reader for feedback.

March 24–31: Refine and focus topic; do additional research online and in library. Make notes and rough out an outline.

March 16–23: Select topic; do preliminary research on the Internet, in ProQuest, and in LexisNexis.

It helps to set deadlines for yourself and post due dates in some prominent place where you'll see them every day.

② **Remember that everything will take longer than you think it will.**

Electronic sources are wonderful, but it's very time-consuming to search the Web and be appropriately critical of the results, or to search library databases and indexes (like LexisNexis, *Humanities Abstracts*, *Art Abstracts*, or the *Applied Science and Technology Index*) and then follow up on materials you find. Taking careful, thorough

notes on index cards or on your laptop, downloading articles and highlighting relevant passages, or making photocopies and annotating them is also slow going. Inevitably you'll run into snags—copy machines don't work, your Internet server goes down, or you can't locate a source. All are good reasons for delay, but your instructor doesn't want to hear excuses when the paper is due.

③ **Make some sort of research outline that tells you what sources you need to consult and the order in which you need to work through those sources.** In particular, if you are going to need to send away for information, set up interviews, or conduct surveys, take care of these time-consuming research tasks *first* so that you will have time to complete them and to think about your information before you begin to write your paper. Then if your research takes longer than you anticipated, you won't find yourself having to begin writing your paper without having consulted your most valuable sources. (Writing your paper is explained in more detail later in this chapter.)

④ **Set a deadline** when you must stop researching and begin drafting your paper. Sometimes it's tempting to keep looking for more information, especially when you discover new leads. However tantalizing these leads are, you may not be able to follow up on them, simply because you are running out of time. If this is the case, you might mention the potential value of these sources for further study in your conclusion or in an informational note.

● USE PRIMARY AND SECONDARY SOURCES

After setting up your research strategy, you can begin collecting material. Two types of sources will concern you: *primary* and *secondary*. **Primary sources are those that deal most directly with your topic**—reports of eyewitnesses, articles or letters from those directly involved in a situation, fact-finding reports, and so on. **Secondary sources generally comment on and help you to interpret your primary sources.**

In a research paper for a history course, for instance, your primary sources might be newspaper articles or government documents, letters or diary entries written or published during the historical period you are writing about, even photographs taken at the scene. Your secondary

sources might be books or articles written by historians who have also consulted those same primary sources. Remember that you need to bring a fresh perspective to those secondary sources.

In a research paper for a literature course, your primary sources would be the literary texts that you are interpreting or criticizing, or the letters or journals of the author whose work you are investigating. Secondary sources would include books, articles, lectures, and reviews by literary critics on the subject of your paper. In a scientific research paper, your own observations and experiments might be your primary sources, whereas reports of other scientific investigators on the same or a closely related topic would constitute your secondary sources.

● DO ORIGINAL RESEARCH

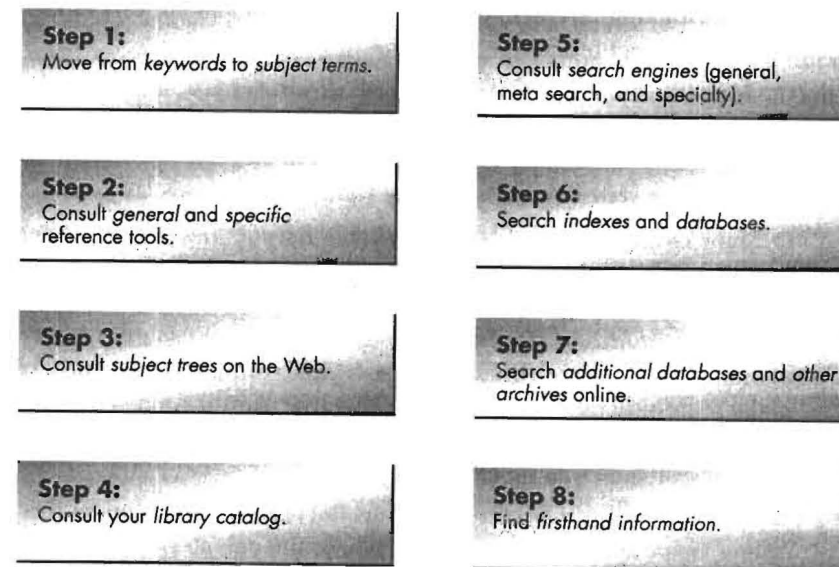
If you are asked to do **original research**, you must work almost entirely from primary sources. For example, suppose you were asked to do original research on student protests against the Vietnam War in the 1960s. First, you would probably go to an encyclopedia to find out when and where such protests took place; then you would pick a period and place on which to focus your attention—perhaps the protests at Kent State when four students were killed, or the protests at the Democratic National Convention in 1968. You would then go to indexes of newspapers like the *New York Times* and the *Los Angeles Times* to find news stories from those dates that would tell you what happened at such protests, writing your paper from the information you found in those papers or in magazines such as *Time* or *U.S. News and World Report*. You would not use more recent articles or books that reflected on the protests or tried to interpret them, although you might want to read such articles for your own enlightenment.

If you were asked to write a paper based on original research in an American literature course, you might pick a topic such as the images of women in Willa Cather's novels. You could then select four novels—perhaps *My Ántonia*, *The Professor's House*, *The Song of the Lark*, and *A Lost Lady*—read them carefully, analyze the way Cather portrays her women characters, and write a paper identifying and reflecting on her handling of the women characters. Resist the temptation to see what other writers have said—the professor who asks for original research wants to know *your* response, not that of the critics.

● MAKE A RESEARCH OUTLINE FOR USING THE LIBRARY AND THE WEB

This section presents a comprehensive outline for the research you do in the library and on the Web (see Figure 1). You will need to adapt this outline for your own project. Depending on the scope of your research paper, you may choose to skip some of the steps, and it's inevitable that some steps will prove to be more useful than others.

FIGURE 1: Steps in a complete, integrated search process



STEP 1: MOVING FROM KEYWORDS TO A SUBJECT SEARCH

Often a student will say something like “I want to do a paper on recycling,” or “I want to do something on arbitration.” In that case, the student's search process is **beginning with keywords** (the keywords are *recycling* or *arbitration*). **Keyword is the name for any word you might normally use to describe your topic.** The first step in a good research process is to move from the keyword stage to a search based on the right *subject terms*. If you start by looking up your keywords in your library's card catalog (or on the Web), you may waste hours of valuable time sorting through

useless information and never even find the right information for your paper.

Maybe all you know is that you want to write about a popular American novelist, or about painters, or recycling, or arbitration. How do you get from those words to subject terms—the terms librarians use to index books and articles—and from subject terms to a research question? Here are some of the ways:

- ❶ **Read about your topic;** talk to people who know about it; look for more information; try to find out through reading and conversation what the subject terms relevant to your topic might be.
- ❷ Go to the *Library of Congress Subject Headings List*, a multivolume bound book (the “big red book”) available at most library reference desks (to be discussed in more detail in step 4). It will help you translate your keywords into the right subject terms.
- ❸ Many online databases make available lists of “**descriptors**” (their name for subject terms), and you can consult such lists directly to find a particular database’s way(s) of naming your subject. For example, the *Thesaurus of Descriptors* for the Education Resources Information Clearinghouse (ERIC) database yields subject terms that make searching that database more effective. And if you use the ProQuest database and text retrieval service, one of its search screens will show you its list of subject terms.
- ❹ You can go to a *subject tree*, such as the one on the bottom of the Yahoo! home screen (www.yahoo.com/), or the one at The Virtual Library (www.vlib.org/), and by **clicking on the word from the first screen that most nearly matches your interest**, let the computer take you further and further into your search. (Subject trees are discussed in more detail in step 3.)

These techniques helped a student writer get from *arbitration* to *Shearson v. McMahon*. They can also be used to get from *women painters* to *Artemisia Gentileschi*, or from *contemporary novelists* to *Richard Russo*.

Another good way to find subject terms for your topic is to ask an expert. Yet another good way is to use a trick called *backward searching*; if you can find one good “hit”—one article or book exactly on your

topic—then you can look that article or book up in your library catalog or in the databases or indexes appropriate for your field (see step 4), find out what subject terms are used to index that item, and then feed those terms back into the database or library catalog you are using and see what else might be listed under them.

STEP 2: REFERENCE TOOLS

A really thorough research process begins with consulting reference tools—general encyclopedias, specialized encyclopedias, and other kinds of reference tools that may be particular to your topic’s own field. Whether you access these reference tools as bound volumes in the library or you access them on the Web, an important early part of any thorough research process is learning what sources such as *Encyclopaedia Britannica* (www.britannica.com/) say about your topic, or about the subject heading that is closest to your topic. Start with general encyclopedias, then go to specialized encyclopedias and/or dictionaries (there’s a great list of online encyclopedias and dictionaries at refdesk.com), and then in the library go to your field’s entry in *Balay’s Guide to Reference Books* to discover what other specialized reference tools there are for you to consult.

Starting your research by **consulting general reference tools and then moving on to specialized ones** gives your research paper a kind of background depth and texture that is hard to come by any other way. Researchers who start by diving right into the Web or the library catalog often write papers that, by comparison, are much more shallow. Often it is the information on the periphery of a subject—potential questions about the real economics of recycling, for instance, or about the history and authenticity of Gentileschi’s paintings—that makes for the most interesting research papers. Students who dive right into the middle of their topics may miss these potentially rich shadings of their topics entirely.

STEP 3: SUBJECT TREES

Ultimately, your topic and your research question will determine what kinds of research resources are most helpful to you. For topics that are very timely (for instance, legislation currently being discussed or enacted by Congress, or the latest developments in computer technology),

newspapers, periodicals, government documents, and government sites on the Web, such as *Thomas: Legislative Information on the Internet* (thomas.loc.gov/), are more likely sources of information than books or reference works such as encyclopedias, which require considerable lead time for publication. For the most up-to-date topics, the Web probably provides the most up-to-date information.

While you can access many encyclopedias directly on the Web, the Web's own evolving version of an encyclopedia may well be the search tool known as a *subject tree*. If you've ever looked at the bottom half of the Yahoo! search engine's home screen, you've seen something that looked like Figure 2. Most search engines have a similar function, or you can find a subject tree by itself at the WWW Virtual Library (www.vlib.org/). By entering "subject tree" into the text box of your favorite search engine, you can find lists of more subject trees (such as the one sorted by fields of study at bubl.ac.uk/link/menus.html).

Use a subject tree by finding the entry that most nearly matches your topic (for instance, if you're researching artists in general, you could start with "Arts & Humanities," go from there to "Art," and then follow

FIGURE 2: Simple subject tree found on Yahoo! home screen

Agriculture Agriculture, Gardening, Forestry, . . .	Arts & Humanities Literature, Photography, . . .
Business & Economy Economics, Finance, Shopping, . . .	Computing Internet, E-Commerce, Languages, . . .
Education Education, Applied Linguistics, K-12, . . .	Entertainment Movies, Music, Humor, . . .
Government Elections, Law, Taxes, . . .	Health Medicine, Diseases, Drugs, . . .
Recreation Sports, Games, Gardening, . . .	Regional African, Asian, Countries, US States, . . .
Science Animals, Astronomy, Engineering, . . .	Society Political Science, Religion, Social Sciences, . . .

down the succeeding choices until you get to a list of artists. Clicking on their individual links, or the history of art, or various movements in art such as the baroque period, will usually lead you somewhere interesting. You might want to try your topic in several different subject trees because different topics are treated more completely on different trees.

STEP 4: THE LIBRARY CATALOG

The library catalog stage of your research is much more rewarding if you have done the previous steps outlined here, and successfully moved from a vaguely formed idea of a research topic to a fairly sharply focused research question. If you are still working on the basis of a topic name alone, you absolutely must use the *Library of Congress Subject Headings List* to find the right words (the subject terms) to look up in the catalog. For example, a student starting her research process might be distressed to learn her university's library apparently contained no information on *madness*, *mental disorders*, or *mental diseases*. With the help of a librarian and the *Subject Headings List*, she was able to realize that the term she needed to be researching was in fact *mental illness*; the *Lists* entry for *mental illness* also told her what many of the related topics were (diagnosis, evaluation, treatment, and so on).

As you do your research in the library catalog, perhaps by using specific subject headings, or by using the names of particular authors, books, or journals you are already aware of, remember you can also search *backward*. That is, if you find one "hit," one source that is exactly on your topic, you can often use that item's catalog entry to tell you how that item is indexed. Then you can feed the index terms you find back into the catalog's search function as search terms, thus discovering new materials that will often shed new light on your subject.

You can also *search sideways*, finding other sources by the same author, or even looking for other books on the same shelf as one you find that looks useful. You can also do a sideways search for books via an unusual commercial search tool, Amazon's "Customers who bought this book also bought" function (www.amazon.com). Give it the name of one reasonably current book on your topic, and see what other, similar books it suggests.

You can also *search deeper*, checking out your subject terms in the catalog of the Library of Congress itself (www.loc.gov/). If you've started your research early enough, your own library may be able to borrow those other books for you through interlibrary loan.

STEP 5: SEARCH ENGINES

Search engines are Web-based computer utilities that allow you either to access a subject tree (discussed under step 3) or to type your own search terms—whether keywords or subject terms—into the search engine's text box and let the search engine find results for you. Popular search engines include Yahoo! (www.yahoo.com/), Alta Vista (altavista.com/), and Google (www.google.com/), among many others. You can find a very full listing and more detailed discussions at Search Engine Watch, www.searchenginewatch.com/. Working your subject through a variety of search engines, and a variety of types of search engines, will yield many results. Later on in this chapter we will discuss how to broaden those results, how to narrow them, and the essential task of making judgments about their reliability.

Two kinds of searches and three kinds of search engines concern us here: basic searches and advanced searches; and general search engines (such as the ones listed above), meta search engines (which search several search engines at once), and specialty search engines (which search only in one area, such as law, medicine, or science).

BASIC AND ADVANCED SEARCHES. Most search engines allow both kinds of searches. A **basic search involves simply typing your search term or terms into the search engine's text box.** Thus, on Alta Vista, a student interested in Pocahontas can type *Pocahontas* into the text box. Unfortunately, that yields 154,000 hits! Adding more terms to the basic search is one way to *narrow the search*: "*Pocahontas descendants*" (you must use the quotation marks to let the computer know you want the words considered as a phrase) brings the number of hits down to 91.

You can do narrower or broader searches even better by switching to the **advanced search screen, which lets you use words like AND, AND NOT, and NEAR to refine your searching.** Thus you can rule out the references to Disney's movie about Pocahontas by switching from the basic search (*Pocahontas*) to the advanced search ("*Pocahontas AND NOT Dis-*

ney"). The resulting 90,000 hits would still need narrowing, however, so you could also scroll down on the advanced screen and limit your search to items posted within the last month, which brings the number of hits to 9. Most search engines have these same capabilities, although they all work a little differently.

GENERAL SEARCH ENGINES. General search engines such as those listed above compete with each other to cover the biggest part of the Web and to "rank" their results most effectively. Imagine a search that yields 150 hits—wouldn't it be nice if those hits were presented in something other than random order? Search engines use many sophisticated methods for this ranking, such as ranking by how many other pages link to a particular page (having more links moves the page up the rankings) or by how many people click onto a site when they see it in the search engine results. **Some search engines rank highest the pages whose owners have paid a fee to the search engine.** Obviously, these ranking systems are often unreliable, maybe even useless, for scholarly research. So, because different general search engines search different parts of the Web and rank their results different ways, it's always a good idea to do your search on several different search engines (Google, Alta Vista, and Fast Search, for example).

META SEARCH ENGINES. Wouldn't it be nice if there were search engines that **searched multiple search engines for you?** Meta search engines do. Ixquick Metasearch (www.ixquick.com/), for example, searches eleven general search engines. A search for "Pocahontas descendants" that yielded 9 results on Alta Vista yields 39 on Ixquick. Other popular meta search engines include Dogpile (www.dogpile.com/) and Metacrawler (www.metacrawler.com/index.html). (There's a complete listing on the Search Engine Watch site mentioned earlier.)

SPECIALTY SEARCH ENGINES. **Specialty search engines focus on one area**—travel, science, law, art, population statistics, or medicine, for example—and search that area more deeply. If you intend to do research in a particular field for several years (for example, if that field is your major in college), it's well worth knowing if there is a specialty search engine just for that field. You can find a short list of specialty search engines on the Search Engine Watch site and much fuller lists at the ZDNet Search IQ site (www.zdnet.com/searchiq/subjects/).