seventh grader, needing information for a French class project about Christmas celebrations in the Congo, arrived during break at the university library where I work. As a college reference librarian, I normally do not work with middle school students, but her request gave me an opportunity to see how well I could manipulate our new online catalog. I began not on the computer, but by checking encyclopedias on holidays around the world and reference books concerning Africa. Then, after using the library's catalog, I tried looking in children's books on Christmas and other books on Central Africa. Next, I tried the index for the past 100 years of the National Geographic Magazine. Since all of these failed to provide anything on Christmas celebrations in the Congo, I searched different computerized magazine, journal, and newspaper indexes that are available in the library. There were no relevant articles. I then checked five Web search engines, including Yahoo, AltaVista, Excite, InfoSeek, and Lycos, entering the search terms in both English and French, and found no relevant hits on the entire World Wide Web. After two hours of ransacking the shelves and searching our library databases and the World Wide Web, I found almost nothing.

There were many difficulties with this research project. Two nations are known as “The Congo”: the Republic of Congo, and the former country of Zaire, which recently changed its name to the Democratic Republic of the Congo. Unlike Ethiopia, which has had Christian communities for almost two millennia, Christianity is a new arrival in both countries. (The first missionaries arrived in the mid to late 1800s.) Many people there still practice native religions or are first generation converts (Murray 31–32). Probably due to this lack of history, the Christmas-around-the-world books and Web sites that I consulted ignored both countries. In the Republic of Congo, December 25 is a holiday, but it is called “Children’s Day” (Prescott-Decie). According to the Central Intelligence Agency, the Democratic Republic of the Congo currently is in a state of war and lacks a viable government, and the Republic of Congo also has suffered recently from civil strife. I could find articles on refugees and the fighting taking place on December 25, but nothing on celebrating Christmas. Because French is the official language, I searched in French, as well, in the hope of finding French language publications, but to no avail.

Making Use of the Librarian’s Expertise

Few things frustrate librarians—whether called media specialists, information scientists, or cybrarians—more than being unable to fulfill a library user’s request. On the other hand, nothing excites us more than successfully finding knowledge for students and other library users and assisting them in becoming information literate, adept researchers—whether they are first graders or renowned scholars.

Librarians should be natural collaborators with teachers and researchers on all levels to improve
education and support lifelong learning. They can assist students in their learning and support teaching faculty in their efforts to update skills and knowledge.

Research proficiencies are more essential now than ever, due to the overabundance of material in this “information age” and the difficulty of filtering relevant knowledge from flotsam. “Information literacy” is touted in the media and special reports. Librarians feel that it is their responsibility to help educate each person to become an information literate, lifelong learner. The American Library Association Presidential Committee on Information Literacy declared:

Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand.

In addition, librarians have proselytized to make information literacy and research a central component of education. In 1988, the American Library Association and the Association for Educational Communications and Technology first published this vision statement. The mission was as follows:

to provide intellectual access to information through learning activities that are integrated into the curriculum and that help all students achieve information literacy by developing effective cognitive strategies for selecting, retrieving, analyzing, evaluating, synthesizing, creating, and communicating information in all formats and in all content areas of the curriculum.

Ten years later, the organizations reiterated the same vision; the mission was unchanged, despite the revolution in new technologies.

Librarians dedicate their professional lives both to mastering traditional research techniques and pioneering the most current information technology. We were among the first to use the Internet, yet we and our institutions are frequently overlooked.

**Appropriate Research Assignments**

Research projects and assignments must allow students to be successful in their inquiries so that they can learn how to access information and enjoy the research process:

One would expect to find every student engaged in at least one open-ended, long-term quest for an answer to a serious social, scientific, aesthetic, or political problem. Students’ quests would involve not only searching print, electronic, and video data, but also interviewing people inside and outside of school. As a result, learning would be more self-initiated. There would be more reading of original sources and more extended writing. Both students and teachers would be familiar with the intellectual and emotional demands of asking productive questions, gathering data of all kinds, reducing and synthesizing information, and analyzing, interpreting, and evaluating information in all its forms. (American Library Association)

At the reference desk, students frequently confound me with puzzling or inappropriate research topics or projects.

Often these goals are not fulfilled due to inappropriate assignments. At the reference desk, students frequently confound me with puzzling or inappropriate research topics or projects. For instance, instructors often assign library “treasure hunts” that may be woefully dated, require resources unavailable in a particular library, or request such obscure facts that even a librarian would be challenged. For instance, one treasure hunt that I had to deal with requested the body temperature of an elephant. Although one of our veterinary manuals did provide that vital statistic, none of the normal sources on elephants, or even mammals, included such data. Only a librarian would be able to find this information. The assignment also wanted the Nielsen television ratings for a particular two-week period during February 1992. I never did figure out where those rankings were supposed to be published, since the Nielsen ratings are usually tallied only weekly or monthly.
When confronted by difficult library assignments, I try to track down their source. I asked the students who their instructor was and what course required these strange answers. I discovered that the assignment was being suggested to all the adjunct instructors who taught introductory speech on our campus. The assignment was supposed to teach library use, but all it did was frustrate students and librarians alike. After numerous telephone calls, I ended up collaborating with the head of the introductory speech course, and we developed a worksheet that required the students to use library resources that actually helped in researching and composing a current events speech. The instructors have informed me that, not only have the students’ bibliographies improved, their speeches have become more informative and persuasive.

When designing assignments that involve resources outside textbooks or a student's own experiences, a school’s librarian or one of the local public librarians should be consulted. Many instructors assume that if an assignment worked well in one location, it should be fine in another. Although most libraries contain certain basic references, individual libraries may vary widely in their collections. College and university libraries build up certain areas. Professors tend to request books centered around their narrow research interests, so a library may have a first-rate collection on fresh water turtles, for instance, and none on their marine cousins. Or the library may own many books and journals on or by Spenser, but hardly any concerning Marlowe. Larry Hardesty and Collette Mak discovered that the average college library collection overlaps very little with those of similar institutions. Among sixty-four liberal arts college libraries, “nearly half of more than 3.2 million titles studied were held by one library; over 90 percent were held by 10 or fewer libraries; and only 641 titles were held in common by 55 or more libraries” (Hardesty and Mak 365). Major university research libraries, since they can afford to buy a higher percentage of all materials published, have larger overlaps with other research institutions, but also own many unique items (Hardesty and Mak 366).

By assigning research projects that take local collections into account, teachers can make students’ research more rewarding and successful. Although it is possible to discover these strengths and weaknesses independently by searching a library’s catalog, librarians usually are well aware of their collection’s scope. For instance, tiny Gulfport Public Library in Gulfport, Florida, serves a town of only 13,500 and has over two thousand books in the Russian language! This collection was developed because, in the past century, many Russian émigrés retired to this small beach community and donated their personal books to the library.

Students may learn important research and composition skills from assignments other than the traditional research paper. The literature in library science contains hundreds of suggestions for innovative assignments that teach research methods and sources and critical thinking that would be appropriate for English teachers to use in their courses. For instance, critical thinking and writing skills may be honed through the creation of a critical, annotated bibliography. Such annotations require more than just listing the contents of a work; they also require doing a critical analysis of its worth, including comparisons with similar books or articles. An expansion of this assignment might be to tell students that with X amount of money, they are to create a collection of materials on a particular topic. This would also teach economic skills, as students would need to balance content and financial criteria.

Students may learn important research and composition skills from assignments other than the traditional research paper.

Other assignments include letters to the editor on a particular issue, Web pages, grant proposals, or creative fiction that requires background research. For instance, Earlham College, a leader in integrating student research into the curriculum, has pioneered many innovative assignments that developed out of collaboration between professors and librarians. Librarians who attend Earlham Library’s workshops are requested to invite an instructor from their schools to attend, as well, in order to encourage more cooperation between librarians.
and faculty. Evan Farber, Library Director Emeritus of Earlham College, has written Alternatives to the Term Paper, which lists many projects that could be used or modified slightly for the high school level as well as college.

Although information literacy and research prowess are goals, assignments that support content in the curriculum work most effectively. When students perceive that a library project is busy work, they may develop a negative attitude toward all libraries and research. For instance, there rarely is a pedagogical reason for library exercises like the “birthday” assignment. This project requires students to photocopy the newspaper headlines that appeared on the day they were born. The students must pull the newspaper microfilm out of the cabinet, load it into the copier, and print the front page. Although students may be curious as to what occurred on their birthdays, there usually is no follow-up in terms of history, science, or politics. For instance, after identifying issues or events, maybe the students could research their causes or their current status.

For example, the ocean liner, Titanic, has recently become a popular topic. Although students can find many current articles and books about the ship, their research may be enhanced using historical materials. I have helped students find the original accounts from 1911 of the ship’s launch and its subsequent sinking in 1912. This assignment required the use of the microfilm and old print indexes, and many of the students became fascinated with this primary literature.

Finding the Right Sources

Once students have appropriate assignments, librarians can help them find the required research materials. One recent problem that students have in locating information is that they—and their instructors—assume that everything is on the Internet. But many subjects are not covered on the Net and are addressed best by using traditional books, articles, or government reports.

Copyright restrictions play a major role in keeping materials off the Internet, as does the cost of digitizing older materials. Most of the free, thoughtful, useful Internet sites that have materials suitable for academic research are created and posted by dedicated volunteers, universities, libraries, nonprofit organizations, and governmental entities, who have donated their efforts in order to benefit the public. Because of copyright restrictions, however, books rarely are available legally on the Internet unless the author has been dead over fifty years or has voluntarily waived the rights to his or her creations. In addition, very few articles from reputable magazines and journals are accessible without charge. Most full text articles on the Internet are accessed through a subscription-based database or by using a “pay per view” credit card. Even some statistics gathered by the United States government, such as the National Trade Database, can be obtained only through the purchase of an online subscription. Local libraries or consortia sometimes underwrite these services to their communities.

For example, it is possible to access some back issues of the New York Times from their Web site at http://www.nytimes.com, but the user would be charged. The same information is free on microfilm or electronically at a local library, depending on the library’s subscriptions. Yet it is possible that all of the New York Times back to 1851 may never be available on the Internet, even for a fee, due to the extremely labor intensive process required to scan in the old, not very legible, non-standard-size pages. The New York Times may not find it sufficiently remunerative, and a volunteer group may lack the time and funding.

Many students want to research the same topic, one that is currently in the news. Unless key materials are placed on reserve, there may not be enough books and articles for all of the students. The first students check out all the books, and some unethical library users rip out the best articles. These problems can be avoided if faculty and students vary their research topics. “Drug abuse” is too vast a subject area; instead, it could be narrowed to “drug abuse among the aged” or less publicized addictions to amphetamines, morphine, or prescription medicines such as Valium. Students are competing for materials with not just others in their class, but those in other sections at their institution, and even other high schools and universities in the area.

Evaluating Sources

Due to the information glut, the problem is not usually the inability to find anything, but finding the best materials. Librarians strive to select the most relevant and most authoritative materials for
their collections, while still promoting diversity on many issues. Students may not want to spend the time or they may lack the expertise to evaluate the materials effectively, but part of every research assignment should be an evaluation of sources.

Universities, government agencies, and well-known, mainstream publishers and nonprofit organizations tend to be more reliable and objective. For example, publications on terrorism produced by the Oxford University Press are more authoritative than those published by Paladin Press, notorious for books such as *The Guerrilla’s Arsenal: Advanced Techniques for Making Explosives and Time-Delayed Bombs or Unconventional Warfare: Selective Assassination as an Instrument of National Policy.*

An electronic source may be changed daily without leaving a trace and may disappear forever with a computer crash or file deletion. An electronic source may be changed daily without leaving a trace and may disappear forever with a computer crash or file deletion. Even if stored on a disk, electronic sources become inaccessible when the program in which they are written becomes obsolete, and magnetic tapes at best only last decades.

Developing Sophisticated Research Skills

Librarians have a special role in assisting writing instructors with these new challenges. They can help teachers and students learn about the latest resources and develop more sophisticated research skills. Libraries have expanded their offerings to include access to fee-based databases, online catalogs, and other aspects of the Internet and the World Wide Web. Many libraries provide links so that users can find reliable resources through their library home pages. Despite the claims of marketers, most people need *human* guides to find appropriate materials, and librarians can serve as valuable collaborators.

Successful traditional and online research requires practice and knowledge. When teaching about computerized searches, I begin with controlled databases such as online catalogs or full-text or citation indexes. Most of these do provide directions, and they also serve to teach the Boolean operators that allow one to manipulate a computer more effectively. There currently is no standardization in databases or on the search engines of the Web, except for the Boolean commands of AND, OR, NOT, and NEAR. Even so, each system may use these commands differently. Working with a variety of databases and search engines allows a researcher to become proficient at creating—and narrowing—online searches. On the information superhighway, the danger is rarely finding too little information (unless one cannot spell or type) but in being overrun by thousands of search “hits,” most of which, unfortunately, are not on the desired topic.
As part of my research methods seminars, I usually include some Web sites on Internet evaluation as part of the course. Some favorites include The Good, the Bad, and the Ugly: or, Why It’s a Good Idea to Evaluate Web Sources by Susan E. Beck, Instruction Coordinator, New Mexico State University Library; Evaluating Web Pages by Jan Alexander and Marsha Tate, at the Wolfgram Memorial Library, Widener University; and Evaluation of Information Sources by Alastair Smith, which is part of the World Wide Web Virtual Library.

Surfing the Internet requires critical thinking on the part of the user because many Internet sources do not meet academic or journalistic standards. Almost anything available in a college or high school library probably would be acceptable in an introductory composition course. Public libraries also try to select materials from reputable sources, although patron demands sometimes require questionable purchases on pseudoscientific topics. Librarians carefully choose materials from authoritative sources—the National Enquirer is not purchased. A majority of World Wide Web sites, however, would not be considered scholarly, reliable sources and even could mislead searchers. For instance, http://www.harvard.com, http://www.harvard.org, and http://www.harvard.edu all are different Web sites, owned by different organizations.

Everyone who uses the Internet should be able to interpret Internet addresses, called URLs or Uniform Resource Locators. URLs indicate who sponsors a Web page or is providing a file over the Internet and how it can be accessed. Studying the sidebar should be helpful in understanding how to interpret URLs; however, although it is possible to guess a URL if these conventions are followed, Internet addresses are assigned on a first come, first served basis, and many entities may share the same names or acronyms. For instance, the American Marketing Association is at http://www.ama.org, while the American Medical Association has the URL http://www.ama-assn.org. Web sites may be evaluated partly by whether they are educational (edu), governmental (gov), or organizational (org) as those domains usually contain more authoritative information than commercial sites (com).

Of course, exceptions abound. For instance, some state government Web sites do not end in “gov” but do have similar URLs, like these examples for Indiana and Oregon, with the two letter abbreviation for the state, followed by “us” which represents “United States”: Indiana: http://www.state.in.us and Oregon: http://www.state.or.us. Non-profit organizations and associations occasionally obtain space on commercial computers if they lack their own computer resources. Some commercial or disreputable Web sites, in addition, often deliberately mimic a popular or legitimate Web site, to lure Internet searchers. Once when I was teaching how to use the Internet, I asked the student to type

<table>
<thead>
<tr>
<th><strong>Key to URLs—Uniform Resource Locators</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protocol</strong> is the term before “://”. It indicates what kind of Internet access is occurring.</td>
</tr>
<tr>
<td><strong>HTTP</strong> = HyperText Transfer Protocol (used on most Web pages)</td>
</tr>
<tr>
<td><strong>FTP</strong> = File Transfer Protocol (for moving programs from one server to another)</td>
</tr>
<tr>
<td><strong>TELNET</strong> = text-based Internet client that lets you access another server</td>
</tr>
<tr>
<td><strong>File extension</strong> (after the “dot”) indicates the type of file.</td>
</tr>
<tr>
<td>.html or .htm = HyperText Markup Language (most Web sites)</td>
</tr>
<tr>
<td>.exe = executable program (Watch out for viruses!)</td>
</tr>
<tr>
<td>.txt = ASCII text, which can be used by most word processing programs</td>
</tr>
<tr>
<td>.wav = Wave or sound file</td>
</tr>
<tr>
<td>.gif = graphics format</td>
</tr>
<tr>
<td>.jpg = graphics format</td>
</tr>
<tr>
<td>.pdf = Portable Data File</td>
</tr>
<tr>
<td><strong>Host</strong> is the term for the organization that owns the Web site’s source computer.</td>
</tr>
<tr>
<td><strong>Server</strong> (name usually begins with www) is the computer that processes the Internet connection.</td>
</tr>
<tr>
<td><strong>Path</strong> indicates the directories and subdirectories used to find a Web page or file. A slash mark (/) appears between parts of the address.</td>
</tr>
<tr>
<td><strong>Domain</strong> is an indication of the type of site (if 3 letters) or the country of its origin (if 2 letters).</td>
</tr>
<tr>
<td>.com = commercial</td>
</tr>
<tr>
<td>.edu = educational</td>
</tr>
<tr>
<td>.gov = government</td>
</tr>
<tr>
<td>.mil = military</td>
</tr>
<tr>
<td>.net = network</td>
</tr>
<tr>
<td>.org = organization</td>
</tr>
<tr>
<td>.gov = government</td>
</tr>
<tr>
<td>.mil = military</td>
</tr>
<tr>
<td>.net = network</td>
</tr>
<tr>
<td>.org = organization</td>
</tr>
<tr>
<td>(usually nonprofit)</td>
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</tbody>
</table>
in the Web site for the White House. The student, without thinking, entered http://www.whitehouse.com without thinking about the domain. That happens to be a pornography site, instead of the true White House, which is at http://www.whitehouse.gov.

Librarians diligently have been indexing or cataloging the most useful computerized sources, both on the Internet and in print. Many libraries provide links from the library’s own Web site to Internet sites deemed most useful to their users. Library publications such as College and Research Library News, Choice, School Library Journal, and Library Journal, profile and rate Internet search engines, databases, and Web sites. The Librarians’ Index to the Internet at http://sunsite.berkeley.edu/InternetIndex is a searchable, annotated subject directory of more than 4,300 Internet resources selected and evaluated by librarians for their usefulness to the public library user’s information needs. The OCLC research database system known as FirstSearch provides links to librarian-approved Web sites from their fee-based system and is available at many libraries.

Determining biases and the reliability of data and texts can be challenging, however, for librarians or students. Susan Beck has produced a useful Web site on evaluating Internet sources: http://lib.nmsu.edu/staff/susabeck/evalcrit.html. As part of her online instruction, she also created a Web site in impeccable APA style on the “Feline Reactions to Bearded Men” at http://lib.nmsu.edu/staff/susabeck/cat.html. It can be a useful exercise to see how quickly students figure out that the experiment and Web site are a hoax.

In order to navigate the information superhighway, students need to discover what media or databases are most appropriate for their subject areas. They must manipulate proprietary fee-based databases and the Internet search engines, mastering the Boolean logic and the idiosyncratic rules governing each individual system. Pierre Salinger, John F. Kennedy’s press secretary and former ABC News correspondent, learned this to his disgrace when he announced in 1997 that TWA Flight 800 had been destroyed accidentally by a missile test-fired from a United States naval vessel based on “evidence” from Internet conspiracy sites. All researchers must learn how to test the content of each source for validity and reliability, in a medium where misinformation sometimes drowns out knowledge.

**Conclusion**

Librarians need to work in collaboration with English instructors. They can inform teaching faculty about the library’s latest text and electronic acquisitions and coach them on how to use the new technologies. Librarians can teach students how to research their assignments successfully so that they can acquire the skills they need to survive in the information age and experience the joy of intellectual inquiry. Librarians also can provide feedback to instructors on the problems that their students are having in researching their assignments.

There are several steps that will ensure a positive research experience for students:

- Consult a librarian to find out about unique, local resources, as well as access to electronic databases and the Internet.
- Consider inviting a librarian to instruct the class on research techniques and sources.
- Place materials on reserve if they will be required by multiple students.
- Require several types of sources, including some using traditional print materials or research tools.
- Contact the librarian to see if the students are being successful in their projects, and modify the assignments as necessary.

Librarians also want to ensure that students will produce the highest quality writing, whether it is creative or factual, on paper, or in electronic format. English instructors and librarians, working together, can help students succeed as students, writers, and lifelong learners.

**Works Cited**


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EJ 25 YEARS AGO

The Power of Logical Thinking

“In this day of clashing opinions in education, it is imperative that logical debate become a part of the resolution of confusions. The current emphasis on freedom of self-expression divorced from logic and specific ideas, as well as self-discipline, is not just a tragedy. It is a threat! Controversy which is not resolved by logical, clear debate is destructive, and what could be destroyed is not just the human ability for clarity in the seeking of truth, but 2000 years of a tremendous intellectual and cultural heritage.”


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