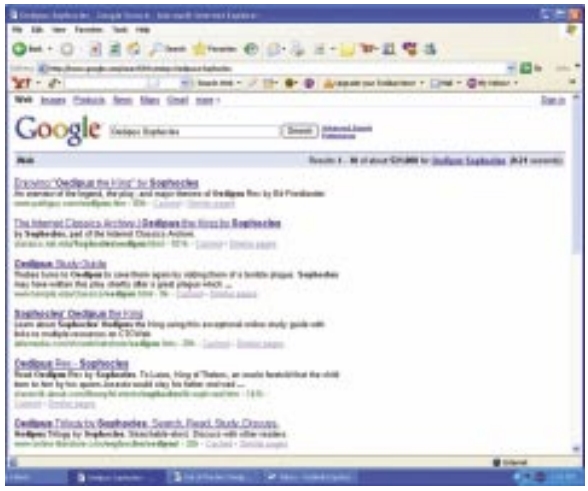
Guiding Students Through the WORLD WIDE WEB

BY LAUREN MATACIO AND BRUCE CLOSSER



In our roles as director of Andrews University's writing center and reference librarian, we deal with a variety of requests from students seeking assistance with their writing projects. Recently, we met with a student who had come for help in smoothing the transitions in one of his thesis chapters. As we worked with him, we discovered that some of his sources were incorrectly cited. When we pointed this out, trying to be helpful, the student replied, "Oh, that's from Wikipedia. I was going to ask you how to document Wikipedia entries because I've got several of them."

Not wanting to pass up a teachable moment, we asked the student if he knew how Wikipedia, the so-called "people's encyclopedia," was created. He said he supposed that the Wikipedia people hired experts to write the entries. He listened politely while we explained that anyone, regardless of experience or professional expertise, can create, expand, or revise an entry.[1] We suggested that the student might want to find sources other than Wikipedia to support his conclusions, but we're reasonably sure that he submitted his project with the numerous Wikipedia references in place.

Clearly, this student was more interested in finding sources than evaluating them. And he is not unusual. Many, if not most, of our students take the majority of their sources from the first screen or two that an Internet search engine produces, satisfied at finding the requisite number of sources as quickly as possible. A study of students' use of the Internet at Wellesley College by Panagiotis Metaxas and Leah Graham noted that without training and encouragement, students typically failed to verify information they found on the Internet, ceasing their research when they felt they had a credible answer.[2]

Herein lies perhaps the most significant problem with computer-based research. Peter J. Nicholson, president of the Council of Canadian Academies, recently argued that people have traditionally assumed a direct relationship between intellectual authority and expertise moderated by the "tried and true . . . processes of peer review and of the forms of elite consensus building."[3] Regarding the Web, this assumption is no longer true.

A recent Pew study conducted by Deborah Fallows found that most young adult computer users are confident that they possess adequate Internet search skills. The younger they are, the more confidence they feel, even though they cannot distinguish between paid and unpaid Websites.[4]

Furthermore, students resist training in using the Internet. "The typical freshman," observes Stanley Wilder in a 2005 article in *The Chronicle of Higher Education*, "assumes that she is already an expert user of the Internet, and her daily experience leads her to believe that she can get what she wants online without having to undergo a training program."[5]

Nicholson calls upon librarians to find ways to contribute constructively to "new information seeking and usage behaviours [sic] of students and faculty alike."[6] In the remainder of this article, we will make some suggestions for accomplishing this goal.

Promises and Problems on the Internet

Those of us who pre-date the Internet remember answering questions like "How many animals have become extinct since 1900?" might require a lengthy visit to the library and many hours' reading. Today, a few computer key strokes can produce immediate answers to virtually any question. Say you need a quick summary of the plot of Sophocles' *Oedipus Rex* for a discussion you're planning about the Oedipus complex. You type *Oedipus* and *Sophocles* into your favorite search engine, and in a matter of seconds, you've got 583,000 Oedipus-related entries. The first of these is Ed Friedlander's "Enjoying 'Oedipus the King,' by Sophocles."[7] Scanning the article, you find the section labeled "The Folk Tale," and you have the plot. In the same way, one can access nearly unlimited online databases, locate electronic books or relevant journal articles and read them online, or order them via interlibrary loan.

However, the quality of sources available online is often suspect. In the days when students got their resource information primarily from a library, teachers could assume that those sources had been vetted through a peer review. The Internet has demolished those gates. Anyone who owns a computer, possesses basic knowledge about Web page design, and has access to an Internet connection can publish his or her ideas without submitting them to any sort of review process. Consequently, teachers can't take for granted that the information students find on the Internet and use in their research is accurate, relevant, or reliable.

Things Students—and Teachers—Need to Know

Teachers and researchers need to understand how the Internet works so that they can help their students use it responsibly. Here are some important areas to consider:

The nature of the Web. The Internet resembles a conversation between friends. We have all joined ongoing conversations, added an opinion or observation, or kept silent if we didn't really know much about the topic. And we have politely ignored comments from people who clearly didn't know what they were talking about.

Similarly, the Internet is a conversation that anyone can join regardless of training, authority, or experience. As teachers, we must help students recognize that not everyone who creates a Web page is necessarily an authority on the topic of that page, and that they need to evaluate the quality of each source they encounter, discarding those of questionable or inferior quality.

The kinds of conversations that can be found on the Web. The World Wide Web offers opportunities for many kinds of conversations, some more useful than others. In the same way one would ask advice about diet from a nutritionist rather than a health-food store clerk or use information from certain books and journals but not others, so students must consider the type of Internet site when drawing conclusions about the validity of the information it contains. Material from online chat groups or usernets, where amateurs meet to talk about their various interests will not be as reliable as material from electronic journals or books, or Websites hosted by professional organizations.

The presence of bias. Because they've had so many calls from telemarketers trying to sell some product or service, visits from friends who call only when they want something and excuses from students regarding their missing homework, most teachers have developed a healthy cynicism about what other people tell them. Often, people are trying to convince us of something we may not want to believe or are promoting an idea with which we may not be comfortable. Teachers know that even scholarly print sources that have undergone a careful review process will have a bias, and part of their duty as researchers and scholars is to help students identify and account for a writer's perspective when using his or her material in their work.

Tips for Students

The free and open nature of the Internet and the fact that anyone can post anything points to the urgency of teaching our students how to evaluate Internet sources responsibly. Here are seven helpful tips:

Assess each Website's authority. Every Website has one or more authors. Look for their names. If no author name(s) appears, look for the name of a sponsoring university or professional organization. This information will help students identify whether the site is likely to contain reliable information.

As an example, let's return to the Website, "Enjoying 'Oedipus the King,' by Sophocles," mentioned earlier. We know the name of the author—Ed Friedlander—but who is he? The M.D. after his name indicates that Friedlander is a medical doctor, which does not suggest he's an authority on classical literature.

Do his other credentials lend authority to his comments on *Oedipus the King*? The *.edu* extension on his e-mail address, erf@kcumb.edu, tells us that he is associated with a university. Knowing that most educational institutions have a Web address that is similar to their e-mail address, we can learn more about Friedlander by searching the Website http://www.kcumb.edu. A quick search of the university's Website reveals that Friedlander is chairman of the Department of Pathology at Kansas City University of Medicine and Biosciences. In his personal Website, http://www.pathguy.com, we find a literature section with links to his self-published articles on various classic works of literature. The majority of Friedlander's professional publications have appeared in medical journals. His one article with a literary bent is "Using Poetry in the Classroom," published in *Academic Medicine*.

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Is Friedlander an authority on Oedipal literature? Perhaps; however, his occupation, education, and professional publications suggest that he is not. That doesn't mean that the information on his Website is worthless, but students should compare this source carefully with others of greater authority.

Identify the Website's institutional support. Just as books published by reputable publishing houses command more respect than those published by vanity presses, so Internet sites sponsored by professional organizations carry more weight than personal Websites or sites whose primary objective is to promote or sell a product. The second Website from our initial search for Oedipus, "Study Guide for Sophocles' *Oedipus the King*" (http://temple.edu/classics/oedipus.html) is authored by Robin Mitchell-Boyask.[8]

While the information available at this Website may not represent scholarly research, the author's credentials suggest that he is an authority on classical literature. From the Website, we learn that Mitchell-Boyask teaches Classical Mythology at Temple University, a large public research institution located in Philadelphia, Pennsylvania. Mitchell-Boyask's association with Temple University and his various acknowledgements suggest that this is probably a source students can trust.

Determine the Website's URL (Uniform Resource Locator or Web address). A Website's domain extension (.gov, .edu, .net, .com) suggests something about the purpose of the information in that site. The Literature Network (http://www.onlineliterature.com/sophocles/oedipus/), another of the top 10 results in our Oedipus search, is a .com site.[9] These commercial sites are almost always trying to sell something—in this case, brief summaries and links to the text of classic works of literature, quotations, Shakespeare, and the Bible. This site also offers a forum where users can post questions and discuss books. This might lead students to feel confident about the source; however, the fact that this site advertises essay and term paper writing services suggests that it is not to be trusted.

By using a search engine's advanced search mode capabilities, students can limit a search to a particular type of URL—for example, only .edu (educational institutions), .org (professional or-

ganizations or groups), or .gov (government) sites. Similarly, certain types of URL can be eliminated from a search, such as .coms. Knowing the range of extensions on URLs can increase students' confidence in the material they find on a Website.[10]

Assess the currency of information in a Website. In areas of study where ideas may change dramatically over time, the date of publication may be significant. Dieticians and nutritionists have recently redefined the food pyramid, for instance, so the date on the page is important. If students are researching topics where information changes rapidly—the status of weapons development in Iran or the latest research on cancer treatments—they should look for the date when the Website was created or last updated. Although Friedlander and Mitchell-Boyask both provide the dates of their most recent revisions, these dates probably aren't important, since the plot summary of the Oedipus story won't change over time.

Determine a Website's bias. Every writer has a "point of view" that is shaped by past experiences, education, philosophical beliefs, and/or personality. Bias becomes a problem when it skews objectivity or deliberately misleads the reader to prove a preconceived point. Some authors plainly state their biases; others do not. Friedlander states on his Website that he is a Modernist and a Christian. These biases may not invalidate his information, but they do suggest the lens through which he interprets the story.

For any topic, but even more importantly for controversial topics like abortion or gun control, students should be aware that sponsoring organizations like the National Right to Life or the National Rifle Association can be expected to advance their own agendas.

Determine a Website's relevance. Even if a site passes all of the above criteria with flying colors, it must pass another important test: It must meet the student's research needs. Regardless of the author's credentials, institutional support, currency, lack of bias, and writing expertise, if students don't discover useful information at the site, they shouldn't include the source just to obtain a required number of references.

Assess the Website's attention to style and detail. Finally, students should be sensitive to the quality of an author's writing. Scholarly material that has been subjected to rigorous review has been carefully revised and edited. Observe whether the material is easy to read, whether the ideas are clearly organized and well developed. Notice as well whether the author of a site has been careful to proofread its contents. Writers who are careful with their ideas tend to be careful with their writing as well; sloppy writing and documentation should be considered suspect.

Conversely, students should not allow themselves to be dazzled by fancy graphics and a "professional look"; just because the Website "looks good" is no indication of the quality of the material it contains.

Document the Web source correctly. The infinite variety of Web pages makes creating citations tricky. Any good research writing manual will provide direction for constructing a citation in the preferred styles. Many Web pages now provide links to citations in the Modern Language, American Psychological Association, or other major formats. Students may also download software for creating citations. Firefox, for instance, now offers a free download to help students manage their research materials. Students should know that every Website citation must include, in addition to the title of the site, the URL or Web address correctly reproduced and the date the site was accessed.

A Source Evaluation Rubric

Sabrina Riley, now at Union College in Lincoln, Nebraska, developed the following matrix while she was a librarian at the James White Library at Andrews University. We use the matrix to help students evaluate a Website's reliability:

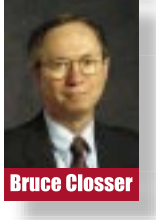
- Who is the author of the document?
- Is the author the original creator of the document?
- Does the author list his or her occupation, years of experience, position, and education? If so, what are they?
- What are the author's qualifications to write on the topic?
- What institution (company, government, university, etc.) or Internet Provider (IP) supports this information?
- If the site is a commercial Internet Provider, does the author appear to have any affiliation with a larger institution or national organization?
- Does the institution appear to filter the information appearing under its own name?
- Does the author's affiliation with this particular institution or organization appear to bias the information? If so, how?
- When was the information created or last updated?
- What appears to be the purpose of this information? To inform? Explain? Persuade? Sell?
- Based on the information you collected above, is this document a reliable source of information? Why or why not?

Conclusions

While the Internet saves research time and effort, it also shifts much of the responsibility for assessing the quality of sources away from publishers, librarians, and teachers to students, who are faced with an overwhelming number of sources of uncertain reliability. "An information-literate person," observes Topsy Smalley, a Cabrillo Community College librarian, "has built up layers of knowledge about how information is organized and accessed and is able to devise information research strategies."[11]

Our job as teachers and librarians is to help students achieve this objective. While we're teaching them to select and narrow topics, read sources and take notes, and clearly introduce and document sources, we must also urge them to take the extra time to evaluate sources and introduce them to strategies for performing this important aspect of research in a Web environment. ✎

Lauren Matacio


Bruce Closser

This article has been peer reviewed.

Lauren Matacio *is a reference librarian in the James White Library on the campus of Andrews University in Berrien Springs, Michigan. She provides training to students learning to use the library's electronic catalogue and the Internet.* **Bruce Closser** *is a faculty member in Andrews University's English Department, where he directs the university's Writing Center and teaches a variety of writing courses. Matacio and Closser have team-taught several sections of the required general-education sophomore research writing course at the university.*

NOTES AND REFERENCES'

1. An article appearing on the BBC News Website for December 15, 2005 (http://news.bbc.co.uk/1/hi/technology/4530930.stm, accessed November 28, 2007) notes that Wikipedia, which allows anyone to add to or revise entries, relies on 13,000 volunteer experts in various fields to edit previously submitted entries. The article cites a study conducted by *Nature* magazine, which found few differences in accuracy between Wikipedia and the well-known and respected *Encyclopedia Britannica* on selected scientific entries. (See "Internet Encyclopaedias Go Head to Head," *Nature* [December 15, 2005], pages 900 and 901.)

Wikipedia, responding to criticisms of its accuracy, has tightened procedures for submitting entries. This incident raises the more serious question of students citing Wikipedia in their research projects. Neil Waters, a history professor at Middlebury College in Middlebury, Connecticut, notes that while Wikipedia entries in the sciences are relatively reliable, in the area of history they are much less so. (See "Why You Can't Cite Wikipedia in My Class," *Communications of the ACM* 50.9 [September 2007], pages 15-17.)

2. Panagiotis Metaxas and Leah Graham, "Of Course It's True; I Saw It on the Internet: Critical Thinking in the Internet Era," *Communications of the ACM* 46.5 (May 2003), pp. 70-75.

3. Peter J. Nicholson, "The Changing Role of Intellectual Authority." *ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC* 247 (August 2006), pp. 1-5.

4. Deborah Fallows, *Search Engine Users* (Washington, D.C.: Pew Internet and American Life Project, 2005), pp. ii-iv, Accessed September 3, 2007, at http://www.pewinternet.org/pdfs/PIP_Searchengine_users.pdf.

5. Quoted in Doug Achterman, "Surviving Wikipedia: Improving Student Search Habits Through Information Literacy and Teacher Collaboration," *Knowledge Quest* 33.5 (May/June 2005), p. 38.

6. Nicholson, op cit., pp. 3, 4.

7. Ed Friedlander, "Enjoying 'Oedipus the King,' by Sophocles" (1999). Accessed June 12, 2007, at http://www.pathguy.com/oedipus.htm.

8. Robin Mitchell-Boyask, "Study Guide for Sophocles' *Oedipus the King*" (Temple University, 1999). Accessed June 12, 2007, at http://www.temple.edu/classics/oedipus.html.

9. "Oedipus Trilogy," *The Literature Network*. Accessed September 3, 2007, at http://www.online-literature.com/sophocles/oedipus/.

10. Josetta McLaughlin, Deborah Pavelka, and Gerald McLaughlin offer useful advice for assessing the legitimacy of a Website, the integrity of data and information listed therein, and issues surrounding the use of data and information in an article entitled "Assessing the Integrity of Web Sites Providing Data and Information on Corporate Behavior" (*Journal of Education for Business* 80:6 [July/August 2005], pp. 333-337).

11. Topsy N. Smalley, "College Success: High School Librarians Make the Difference," *Journal of Academic Librarianship* 30:3 (May 2004), p. 197.

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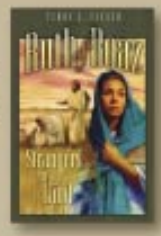

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