

NOTES

TEACHING TOOLS FOR EVALUATING WORLD WIDE WEB RESOURCES*

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WITH THE EXPLOSIVE and exponential growth of Web sites, the Internet has become an important (if often flawed) information resource. As more scholarly journals, reports, statistics, and polling data become available online, the academic value of this resource grows. Many textbooks and publishers now have supplements and guides to the Internet for sociologists and their students (Ferrante and Vaughn 1997; Rivard 1997). However, access to this glut of information is not always useful if one does not know how to select and evaluate the best and most reliable sites.

Recognizing when to turn to the Web for information and when to rely on more traditional resources such as library catalogs, periodical and citation indexes, and subject encyclopedias is equally important. (See, for example, Abowitz's [1994] Appendix.) Despite the media hype, the Web is not a comprehensive information resource.

This article illustrates a series of teaching tools useful for addressing these issues. After first examining the need for teaching the evaluation of Web resources, I suggest criteria for appraising Web pages, pose a possible format for citing Web pages, and briefly discuss how to assess students' mastery of the topic.

TEACHING WEB EVALUATION

Some sociologists feel that effective teaching occurs when students actively discover

knowledge (Wagenaar 1995). Active learning in sociology courses challenges students to use a variety of information sources. Librarians refer to these skills, which include identifying and stating an information need, accessing and retrieving appropriate information, analyzing and evaluating the information, and synthesizing information into a useable format, as "information literacy" (Breivik and Jones 1993; Workgroup on Information Competence 1995).

The World Wide Web poses unique challenges to those who teach these skills. As many have discovered, few undergraduates carefully evaluate information in any format. Between the adoption of the World Wide Web as an information resource and the ease of publishing Web pages, the need to nurture our students' analytical skills becomes crucial. Undocumented hearsay on the Web mixes with valid, academic research. Unlike a bookstore or a library, the Web does not always sort fiction from non-fiction. As Rothenberg (1997) states in a recent article in *Chronicle of Higher Education* on the decline of student research papers:

The placelessness of the Web leads to an ethereal randomness of thought. Gone are the pathways of logic and passion, the sense of the progress of an argument. Chance holds sway, and it more often misses than hits. Judgment must be taught, as well as the methods of exploration. (P. A44)

In addition to millions of individual home pages, an increasing number of peer-reviewed journals, government agencies, scholarly societies, and researchers worldwide are publishing information on the Web. How do we help our students make sense of this glut of information? What criteria

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Editor's note: The reviewers were Thomas Sullivan, Randy Stoecker, Raymond Bucko, and Mary Benin.

should students use to assess the authority, accuracy, integrity, viewpoint, and currency of Web-based information? What questions can we, as educators, pose to guide students through the maze of unfiltered dreck resulting from many Web searches?

Students utilize the various Web search engines well and can often turn up information quickly. However, how credible is this information and its source? How can we encourage students to effectively use these search engines and Web tools, so they may move beyond looking at the first 10 of 12,457 hits before giving up? Users must learn to discriminate between information resources of varying quality, to detect bias and conflict of interest, and to look beyond advertising and marketing strategies to identify useful content. Faculty members across the disciplines express concerns that students are relying solely on the Web as their first and last resource, excluding scholarly books and journals.

VARIED APPROACHES TO WEB EVALUATION

Dozens of academically oriented sites now focus on how to evaluate information gathered from the Web. However, the criteria stated in most are quite similar. Grassian's (1997) "Thinking Critically about World Wide Web Resources" was among the first to address the issue, listing criteria for general and discipline-specific Web sites. Alexander and Tate (1996) created a series of pages that differentiate criteria by type of Web site—advocacy, business/marketing, news, informational, and personal home pages. Harris (1997) took a narrative approach, focusing on how to determine a reliable source and identify "indicators of lack of credibility." Tillman's (1997) conversational narrative includes a discussion of the merits of various Web search engines. The librarians at Cal Poly, San Luis Obispo (1998) have developed a self-paced tutorial as part of their Information Competency efforts. Several gateway sites have been developed that categorize and link many

good evaluative pages. Examples of this work are Smith's (1998) contribution to the World Wide Web Virtual Library and Boyer's (1997) "Evaluating Internet Sources." I developed my own "Evaluating Web Resources" site in 1997 as a teaching tool to use in my classes. I needed a simple page with direct links to examples that I could easily cover in one class session.

THE COURSE MODULE

I developed this Web evaluation module as one component of my Library and Information Research in the Social Sciences course (<http://libweb.sonoma.edu/hammett/>) at Sonoma State University, but it is broad and general enough to be used in a wide range of social science classes. I use the module midway through my course as a 90-minute, in-class presentation and discussion session. Students can also access it independently via the Web (see "Evaluating Web Resources" at <http://libweb.sonoma.edu/Resources/eval.html>). It can also be easily modified to include additional criteria and examples.

On the Sonoma State University campus, which is part of the California State University system, most students have had some exposure to the World Wide Web. I usually start my presentations with a few words about the nature of the Internet, emphasizing that anyone with a computer, modem, and minimal computing skills can publish a Web page. The consumers of information, or the students, are responsible for analyzing each site.

My class meets in a networked computer lab, permitting me to use a live Web demonstration projected on a screen. From my course schedule Web page, I connect to "Evaluating Web Resources," a page I created to list the criteria and questions for students to consider. To illustrate my points, I list links to actual Web sites that provide examples for closer evaluation. I print out copies of "Evaluating Web Resources" so students in the back rows can also follow along.

I use examples from current events to explain the importance of viewing Web-

based resources with a critical eye. For example, the headline of an article in the February 1997 issue of *Internet World* stated, "Doctor's Advice: You Can Tap into a Growing Cadre of Medical Experts Who Are Dispensing Advice for Free—With No Appointments and No Waiting Rooms." Discussion of this headline allows us to ask questions such as: Who are these medical experts and what are their credentials? What impact could wrong or discredited information have? What if people use this information to exclude seeking qualified health care professionals.

CRITERIA FOR EVALUATION

Drawing from several of the resources mentioned above and my own experiences teaching with the Web, I group a series of questions around six basic concepts:

- (1) authority,
- (2) purpose,
- (3) accuracy,
- (4) timeliness,
- (5) integrity of information, and
- (6) viewpoint.

See the Appendix for a detailed list of these questions. The Appendix is by no means a complete list. Instead, it illustrates the types of questions students should ask. I brainstorm with students about other categories they feel are important and discuss how different types of Web pages necessitate the use of different or additional criteria. For example, a student was looking for the text of the inaugural poem written by Maya Angelou. She found it on the Web and then discovered that it differed from a version she found in a book. Clearly, an additional criteria for literary works might be that the Web version matches the original?

Each conceptual section on my page also links to at least two sample Web pages that can illustrate cogent points. The concept of "authority" has three examples. The first links to a peer-reviewed journal article in *Sociological Research Online*, titled "Some Methodological and Epistemological Issues

Raised by Doing Feminist Research on Non-Feminist Women" (1997). The author, Diane Millen, and her institutional affiliation are clearly identified. The article discusses her methodology, results, and conclusions of the research. The page carefully documents Millen's sources and includes a literature review. The hallmarks of scholarly research are clearly evident.

The second example, "The 'Social Cost' of Smoking," refers to reports and statistics on health care costs and addiction, including a study that found: "High tobacco taxes and social security savings gained by premature deaths made the French government a net profit of 18.5 billion francs (dlrs 3.5 billion) in 1990." None of these sources are cited. The page does not identify an author or organization.

The third example, "Holocaust Revision" (1991), is a tricky one. The author is clearly identified as an associate professor with a doctorate who teaches at a respected American university. He claims that he has irrefutable evidence that the Jewish Holocaust did not happen. While examining this page, students must move beyond the stated criteria and use their own analytical skills.

By working through these concepts and questions together in class, students have an opportunity to understand and engage in evaluation. Students comment, both after this session and on course evaluations, that this class makes vague concepts more concrete. They gain confidence in identifying useful and authoritative information on their own. Their papers and final projects demonstrate critical analysis of resources. Citing these Web resources in proper format, however, requires additional instruction.

CITING WEB PAGES

Given the "free-for-all" nature of the Web and the ease of "cut and paste," I examine ethical problems that arise utilizing the Web, including citation, plagiarism, copyright, and intellectual property issues. After discussing the concepts and questions and looking at several examples, I walk students through the citation of a Web page. Students

repeatedly express confusion and anxiety about citing Web resources, so I often spend extra time on this topic. Many Web pages fail to provide complete information, which makes citation quite difficult. I stress that simply listing a URL (Uniform Resource Locator, or full Web address) is not sufficient. If an author, title, date, or source of information is unidentifiable on a page, I encourage students to reconsider using it as an information source.

We first discuss the basic elements of a Web citation:

- (1) author(s),
- (2) date created or updated,
- (3) title of the page,
- (4) title of the complete Web site (if different from the page),
- (5) URL (full Web address), and
- (6) date accessed.

I then put these elements into proper format. According to the *American Sociological Association Style Guide* (1997) these elements would follow this pattern:

Author's last name, First name. Date. "Title of the page." *Title of the complete site*. Retrieved date (<http://full.web.address>).

In ASA format the citation reads:

Millen, Dianne. 1997 "Some Methodological and Epistemological Issues Raised by Doing Feminist Research on Non-Feminist Women," *Sociological Research Online* 2(3). Retrieved October 5, 1997 (<http://www.socresonline.org.uk/socresonline/2/3/3.html>).

See my "Citation Styles for Internet Sources" (1996) for links to examples of different formats.

As I work through an example, I start with an "easy" page, or one with complete information. I then move to an incomplete site, or a site with information that is difficult to discern. Sometimes, the process of identifying all the needed elements of a citation helps students decide on the credibility of the page. Citing Web pages can be difficult, so when students request help, I review new

examples.

AN ASSIGNMENT

In order to assess students' ability to adequately evaluate a Web page, I give them a simple assignment:

- (1) Find a Web page of interest to you or one that is appropriate to your project.
- (2) Cite this page completely, in ASA format. (See example at the bottom of <http://libweb.sonoma.edu/Resources/eval.html>)
- (3) Write two to three paragraphs evaluating the site you chose. Be sure to address the criteria suggested on "Evaluating Web Resources," as well as evaluate the content of the page.
- (4) Print a copy of the Web page and attach it to your evaluation.
- (5) Be prepared to show this Web page to the class and discuss its merits or shortcomings.

I ask students to print a copy of the page they evaluate and attach it to their assignment so I do not have to spend time finding that Web site. This requirement helps if they have cited it incompletely, recorded the URL incorrectly, or if the network crashes during the time I have to grade the assignments.

Depending on time constraints and students' sophistication, I complete this assignment in two sessions. During the first 90-minute session, I demonstrate the concepts and questions, discuss Web citation, and provide time for students to explore the Web on their own. In the shorter, second session of about 15 to 30 minutes, I ask several students to connect to the page they found interesting, using the projector so the entire class can see, and then walk the class through the page while utilizing the evaluation criteria.

ASSESSMENT

Since this is a graded assignment, worth 10

points out of a course total of 100, I use a detailed scoring rubric, detailed in Figure 1, which makes my expectations clear. I measure two performance traits (Walvoord and McCarthy 1991) through this learning activity, each worth 5 points:

- (1) The student understands and can apply basic criteria for evaluating information.
- (2) The student can correctly cite information in appropriate citation style.

In addition to outlining my expectations for the assignment, the scoring rubric helps students determine their grade before they turn in an assignment.

EFFECTIVENESS

Colleagues in sociology, environmental studies, political science, nursing, geography, criminal justice, communications, history, English, and women’s studies have adapted this Web evaluation page for their own courses, often adding criteria appropriate to their discipline. Librarians also use this Web page to introduce these concepts during their course-integrated library instruction. In a recent survey (n=15), instructors describe the page as an effective tool for conveying concepts and criteria for

evaluating and citing Web pages. Comments included: “It’s an excellent page, and I use it all the time in every course I teach;” “80% of my students did it right the first time after training;” “The citation part is especially helpful. Your criteria also encourage development of critical thinking skills;” “It [can] be adapted well in any discipline to already existing assignments.” While this survey is small, I also receive requests from faculty members all over the country for permission to link to this module. Student evaluations and assignments reflect their own confidence and increased ability to evaluate information resources and to effectively discern credible information on the Web. I plan to revise my pretest at the beginning of the semester to include citing a Web page, so I can assess the effectiveness of this specific module.

REFLECTIONS

Students rely more and more on Web-based resources for their information needs. Faculty members need to take the lead in helping students think critically and apply their information literacy skills to this new and often unfiltered source. This module is a useful tool for faculty members who desire an easy way to integrate Web evaluation and citation skills into their courses.

Figure 1. Scoring Rubric for Evaluating Web Resources

Evaluating Web Resources: 10 points (out of 100)					
Trait	5	4	3	2	1
Student understands and can apply basic criteria for evaluating information.	Review is well-written and includes discussion and evaluation of content as well as all criteria (authority, purpose, audience, coverage, accuracy, timeliness, integrity, and point of view).	Review includes discussion of all criteria, but limited evaluation of content.	Review includes discussion of some of the criteria, with little or no evaluation.	Review addresses some criteria, but vaguely.	Criteria not addressed.
Student can correctly cite information in appropriate citation style.	Page is cited completely, using correct citation style.	Page is cited completely, but not in correct format.	Page is cited incompletely, with no indication of missing elements.	Page is cited only by URL.	Page is not cited.

APPENDIX. QUESTIONS AND CRITERIA FOR EVALUATING WEB RESOURCES

(Available, with examples, at <http://libweb.sonoma.edu/Resources/eval.html>)

- (1) Authority
 - Is the author of the page clearly identified? What are his or her credentials for writing on this topic?
 - Is the author affiliated with an organization? What is the reputation of that organization?
 - Is there a link back to the organization's page or an alternative way to contact the organization or verify its credibility (i.e., address, phone number, or e-mail address)?
- (2) Purpose and coverage
 - Are the purpose and objectives of the page clear?
 - Is it geared to a particular audience or level of expertise?
 - Is the primary purpose to provide information? to sell a product? to make a political point? to have fun? to parody a person or organization or idea?
 - Is it a comprehensive resource or does it focus on a narrow range of information? Is it clear about this focus?
 - If it is an information database, are the dates of coverage clear and appropriate to your needs? Is it easy to search? Does it present information in a usable format?
 - If the page is interactive (a database or simulation, for instance), does it effectively present the information in a usable format?
- (3) Accuracy
 - Is the page part of an edited or peer-reviewed publication?
 - Does the content of the page convey the amount, depth, and significance of the evidence being presented? Are the arguments persuasive?
 - Can factual information be verified through footnotes or bibliographies to other credible sources?
 - Has the site been evaluated by one of the Web subject indexes, a rating service, or a library? If so, can you tell what criteria they used?
 - Did you find this source using one of the broad search engines such as Alta Vista or Hot Bot? They neither select the best pages nor filter out questionable ones, so you need to evaluate the choices more carefully.
 - Based on what you already know about the subject (or have checked from other sources), does this information seem credible?
 - Are there obvious mistakes or misspelled words or other signs of sloppiness?
- (4) Timeliness
 - Is it clear when the information was published?
 - When was it last updated?
 - Are there any indications that an attempt is made to keep the pages current?
 - If there are links to other Web pages, are they current?
- (5) Integrity of the information
 - Is the source of any factual information clearly stated?
 - Are the source, scope, and date of any statistics clearly labeled?
 - Is it clear whether or not the information has been excerpted from a larger piece?
 - Is there a way to tell if this is the most recent version of a particular piece?
 - Does the page rely on photographic images to make a point? If so, be aware that digital images can be easily manipulated.
- (6) Objectivity or Point of View
 - Does the page display a particular bias or perspective? Is it clear and forthcoming about its view of the subject? Does it use inflammatory or provocative language?
 - If the page contains advertising, are the ads clearly distinguishable from the content?
 - Is any conflict of interest discernible between content and advertising?

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