Chucking the Checklist: A Contextual Approach to Teaching Undergraduates Web-Site Evaluation

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abstract: This paper criticizes the checklist model approach (authority, accuracy, objectivity, currency, coverage) to teaching undergraduates how to evaluate Web sites. The checklist model rests on faulty assumptions about the nature of information available through the Web, mistaken beliefs about student evaluation skills, and an exaggerated sense of librarian expertise in evaluating information. The checklist model is difficult to implement in practice and encourages a mechanistic way of evaluating that is at odds with critical thinking. A contextual approach is offered as an alternative. A contextual approach uses three techniques: promoting peer- and editorially-reviewed resources, comparison, and corroboration. The contextual approach promotes library resources, teaches information literacy, and encourages reasoned judgments of information quality.

Introduction

Academic librarians have been arguing since the mid-1990s that students need instruction in evaluating the quality of information found on Web sites and that librarians should provide this instruction.[1] Academic teaching faculty have also bemoaned the use of inferior Web sites in student papers,[2] and they frequently look to librarians for instruction classes in evaluating Web sites. In books, articles, and Web-page tutorials, a typical librarian approach is to promote the use of checklists of various criteria.[3] Recent articles, however, suggest that the checklist model, although important and useful, is in need of revision. Ann Scholz-Crane, for example, found the simple checklist to be an unsatisfactory teaching tool in a study of how undergraduate students evaluate Web sites.[4] John Fritch and Robert Cromwell have developed a filtering model as an alternative to the checklist model.[5] This paper points

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out additional problems with the checklist model and presents as an alternative—a contextual approach—that uses peer review, comparison, and corroboration as methods for teaching Web-site evaluation.

Ditching the Dogma

Why do librarians believe they need to teach students how to evaluate Web sites? The following line of reasoning is common in the literature and has become something of an unquestioned dogma of contemporary librarianship.[6] The World Wide Web has no standards. Anyone can publish anything on the Web. High quality resources and Web sites of dubious distinction co-exist alongside each other on the Web. Today's students use the Web for their papers, but they do not know how to tell the difference between good information and bad information. In fact, students believe that anything that comes from the Web is the absolute truth. Students are using low quality Web sites as sources for their research papers—this is a problem. Libraries, in contrast to the Web, have standards. Librarians have been evaluating information for a long time. They are experts in evaluating information. Librarians evaluate information using a checklist of criteria, and, therefore, should teach undergraduates how to evaluate information by using a checklist.

Jim Kapoun presents five checklist criteria for evaluating Web pages based on those that a librarian would use when evaluating print items for inclusion in a library collection: accuracy, authority, objectivity, currency, and coverage.[7] He presents these in a two-column chart along with questions to aid the student in thinking critically about each of the criteria. For example, under accuracy there are questions such as: "Who wrote the page, and can you contact him or her?" and "Is this person qualified to write this document?" Under authority there are questions such as: "Who published the document, and is it separate from the Webmaster?"[8] In total, Kapoun provides 27 questions or statements that are designed to provoke critical thinking and aid in the evaluation of Web pages.

Variations of this same approach can be found in Janet Alexander and Marsha Ann Tate's book and companion Web site and on many library Web sites.[9] In journal articles, in books, and on the Web, librarians seem to have reached a consensus about how to teach the evaluation of Web sites: the checklist model. As we will see, however, both the assumptions behind this model and the way it is taught in practice are problematic.

Debunking the "No Standards" Myth

A common complaint about the Web is that it lacks sufficient standards. According to Judith Pask and Carl Snow, for example, there is "an attitude that anything goes" on the Internet, and "information added to the Internet is not reviewed by a publisher or a librarian as printed articles and books may be."[10] Others describe this situation as an absence of "gatekeepers."[11] Fritch and Cromwell assert that "information on the Internet can be published by almost anyone," that there is "virtually no filtering of information on the Internet," and that "filters of information typically present in a print environment (publishing houses, editors, reviewers, librarians/selectors) are often not present on the Internet."[12]

These claims may seem to be truisms, yet they are in fact not precisely true and present a misleading picture of the nature of information available on the Internet or, more accurately, the part of the Internet known as the World Wide Web. Although there is a tremendous amount of information on the Web that has not been through the traditional processes of peer or editorial review, there is now a large amount of information available through the Web that has. This includes the fulltext equivalents of journal, magazine, and newspaper articles that college and university libraries make available to students at great expense through Web-interface subscription databases. To casually slip from the notion that because there is no central Internet authority that vets content to the conclusion that, therefore, nothing on the Web has been vetted is a mistake. This way of thinking neglects how the Web can function as an information delivery mechanism for the electronic equivalents of venerable peer-reviewed journals. Just as any eighth-grader with an AOL account can make a Web page, prestigious journals and national newspapers can make their content available through JSTOR and Lexis-Nexis.

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This distinction between the free Web and the fee-based Web is important and not merely pedantic. When college and university librarians claim that "the Web has no standards," they render invisible an entire group of high quality information products that are, in fact, just as easily available as free-Web content to most college and university students through library Web-interface subscription databases. By equating the entire Internet with what Chris Sherman and Gary Price call the "visible" or free Web, librarians cede the Web to its worst elements while deflating the precise part of the Web (fee-based subscription databases) that includes the most consistently high quality information.[13] Ironically, most checklist proponents begin by stating that standards for free-Web documents are less than those for peer- and editorially-reviewed documents and that reviewed documents have higher cognitive authority. They then stop talking about reviewed sources entirely, presumably since they do not need evaluation, and focus their evaluative efforts exclusively on the free Web. But if you have an entire set of documents that have higher cognitive authority than the free-Web, why not use them to evaluate the sources that are on the free Web? More on this strategy later.

Doubting Student Hyper-Gullibility

Another assumption behind the discussion about the need for teaching Web-site evaluation is the attribution of exaggerated ignorance to students. College students are often portrayed as unsuspecting simpletons who are completely unaware of any type of information sources besides Google or Yahoo and are easily duped by the most obviously fraudulent Web pages. Although this type of attitude is more evident in conversation than in written journal articles, Susan Hahn reveals much about librarian thinking when she begins an article with this sentence—"We all agree: Students think the Internet has all the answers, and any and all information that comes off a computer screen, especially from the Internet, is gospel truth."[14] Because we see some students using poor quality Web sites, it is simple to over-generalize and assume that all students use only poor quality Web sites. Yet, according to a recent study, this picture of student use of the Web is inaccurate.

A 2001–2002 OCLC survey of more than 1,000 college students from all regions of the United States found that college students believe accuracy is the "most important" attribute of information and that college students did realize that the Web falls "considerably short" in meeting this criterion.[15] According to the study, "only half agree completely that information on the Web is acceptable or approved for study assignments," and students in general "are aware that the Web does not meet all of their needs."[16] The study concludes, "In short, the survey describes college students as confident and savvy users of electronic information resources who value access to accurate, up-to-date information with easily identifiable authors."[17]

Yet even when confronted with this survey of more than 1,000 students, librarians still have trouble believing these results and, instead, prefer to trust their own perceptions. When asked about the OCLC survey, the *Chronicle of Higher Education* reported that Winthrop University Librarian Mark Herring believed that "despite the study's conclusions, his experience has been that students are much more willing to use a Web-based resource than a paper resource, even if the paper resource is more complete."[18] Note how Herring equates Web-based resources with free Web resources, ignoring the high quality peer-reviewed journal equivalents that are available on the Web through library subscription databases. He then implies that quality resources are "paper resources," relegating the library to an antiquated role and diminishing all the work librarians have done and the money their institutions have spent to make high quality resources accessible through the library's Web site. Herring goes on to state his version of the no standards myth: "The Internet in many ways is the triumph of narcissism. ...Anybody can put anything up, so you have a real danger of students doing a search on the Internet and getting the Unabomber's rantings about technology and using that in a paper as if they are the same as Neil Postman's [scholarly writings]. That's the problem—students do not see the difference in that."[19]

If the results of the OCLC survey are to be believed, however, students may be more skilled in evaluating information than many librarians think. According to the survey, students already value three of the five criteria librarians use for evaluating information: accuracy, currency, and authority. An alternate explanation of why students use information from the free Web in their papers is not that they are so easily deceived but that they do not want to do any more work than necessary, and their

professors allow them to get away with using dubious Web sites in their bibliographies. Students can recognize blatant bias on the Web, but they will choose the easy way out if their grade does not suffer because of it.[20] Librarians who plan lessons around demonstrating that Web sites devoted to the Unabomber's rantings do not contain objective information risk sounding didactic, obvious, condescending, and perhaps even naive.

Deflating the Value of Librarian Expertise

Another shibboleth of Web-site evaluation instruction is the idea that librarians are experts at evaluating information; and, therefore, they are the most suited to provide instruction in the evaluation of Web sites.[21] This is another half-truth perhaps derived from William Katz's inclusion of a small section on the evaluation of reference materials in his classic handbook and the traditional role that librarians play in selecting resources for their institutions.[22]

Selecting resources for a library collection, however, is different from evaluating the accuracy of information for inclusion in a research paper. Evaluating materials for inclusion in a library collection entails the consideration of details such as cost, purpose of the collection, comprehensiveness, and the teaching and research needs of the institutional community. When not constrained by cost, librarians, in fact, tend to be less evaluative and more inclusive of materials—reasoning that someone, somewhere may find an item useful some day. These considerations are not as relevant to undergraduates writing research papers.

Although librarians do make decisions about what to include and not to include in library collections, ultimately it is subject experts who are truly capable of evaluating information. When a piece of information is in dispute, our society calls on subject experts for judgments, not librarians. If a scholarly controversy arises, does anyone ever ask a librarian to step in and resolve it? If a question about the accuracy of political or economic information occurs, are librarians ever invited to Sunday morning talk shows to evaluate?

The great bulk of librarians' experience in evaluation has been with traditional formats, such as books, in which it is much easier to apply the checklist of criteria than it is on the free Web. The location for information about authors and publishers has been standardized in book publishing but not so on the free Web. This makes the traditional evaluative criteria for print more difficult to apply to the free Web, especially when an author's name is not present or when it is not completely clear if fraud could be involved. Therefore, simple transference of traditional library criteria to the evaluation of Web sites is not a complete solution, especially in the more problematic cases where evaluation is most needed.

Finally, to claim that librarians are and have always been experts in the evaluation of information is at best an unjustified overstatement. Although librarians do make decisions about what to include and not to include in library collections, ultimately it is subject experts who are truly capable of evaluating information. When a piece of information is in dispute, our society calls on subject experts for judgments, not librarians. If a scholarly controversy arises, does anyone ever ask a librarian to step in and resolve it? If a question about the accuracy of political or economic information occurs, are librarians ever invited to Sunday morning talk shows to evaluate? In courts of law, when medical or psychological information is presented, are librarians ever invited to testify about the accuracy of the information? When push comes to shove and information needs to be evaluated, it is subject expertise and not librarian expertise that is valued.

Questioning the Questions

I would now like to point out some difficulties relating to the use of the checklist model in practice. The checklist model—in addition to promoting some variation of criteria, such as authority, accuracy, objectivity, currency, and coverage—also tends to include a series of questions designed to help students decide whether the Web site under consideration meets the specified criteria.

One problem with the list-of-questions approach is that often the questions are question-begging and give slim guidance how they should be answered. For example, under the criteria for accuracy, one author lists as a question: "Is the information reliable and error free?"[23] But this is exactly what we, as evaluators of information, are trying to find out! How is the student supposed to find the answer to this question? As a method to determine if the site is accurate or not, this question is vacuous and unhelpful.

Sometimes the questions that accompany checklists, even if answered correctly, are not a reliable predictor of the quality of a Web site. Under his criteria for accuracy, Kapoun lists the question: "Who wrote the page and can you contact him or her?" By way of explanation, Kapoun then urges: "Make sure author provides e-mail or a contact address/phone number."[24] By this reasoning, if a person creates a Web page and writes a fraudulent name and e-mail address on it, then the very act of listing the name and e-mail is an indication of accuracy. Notice that Kapoun does not advise students to actually try to contact the person, only to make sure the person *could* be contacted. Even if students were to try to contact the author, however, what would they ask? "Excuse me, is your Web site accurate?" And could we really expect the author to say, "No, I'm sorry, my Web site is not accurate; do not use it for your research paper."

Conversely, the fact that a Web site does not have contact information does not necessarily mean that the information is of low quality. Some authorities who are extremely well-known or reclusive would naturally be reluctant to give out their e-mail address. Stephen Hawking may have other things to do besides answer e-mail from college students. J.D. Salinger probably does not want to be on your buddy list. And what about contact address or phone number? Junk mail, spam, stalking, and identity theft are all legitimate concerns that make it unfair to criticize an author for not including this contact information on a Web site.

One response to these problems is to increase the number of questions on a checklist so that the answers more reliably predict the quality of a Web site. For example, Alexander and Tate, in addition to including the question, "Is there a way of contacting the author? That is, does the person list a phone number, mailing address, and e-mail address?" also include the question, "Is there a way of verifying the author's qualifications? That is, is there an indication of his or her expertise in the subject area, or a listing of memberships in professional organizations related to the topic."[25] Although this may solve one problem, it creates another. Some checklists have so many questions they can become incredibly confusing to use and unrealistic to teach. Alexander and Tate list at least 112 questions for evaluating information on Web sites, some of which have additional questions embedded in them. How can a student be expected to apply 112 questions or have the judgment to know when to apply some and not the others? How can a librarian be expected to teach 112 questions in the time given for teaching Web-site evaluation, which is usually only one part of a one-shot class?

Dismantling the Mechanism

Another problem with the application of the checklist model in practice is that it can serve to promote a mechanical and algorithmic way of evaluation that is at odds with the higher-level judgment and intuition that we presumably seek to cultivate as part of critical thinking. The checklist format can give the impression that the checklist is a kind of machine that spits out correct Web-site evaluations when given the right input. The checklist promotes the idea that students who proceed down the list and successfully check off the questions can mechanically arrive at a determination of quality, in the same way that by following a recipe you can produce a cake. Yet good cooking, like good research, is more than simply following a recipe; it requires interpretation, experience, practice, and a healthy amount of creativity.

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A good example of this positivistic tendency of the checklist model are checklists that assign numeric scores to Web sites based on whether the site meets or does not meet the specified criteria on the checklist. "The Virtually Earned Scholarly Average" Web page of the Wartburg College Library, for instance, assigns three points to a site updated within the last month, two points for a site updated in the last three months, one point for the last six months, and zero points for sites not updated within the last

six months or that have no date included. ("The Virtually Earned Scholarly Average" Web site, itself, at last viewing, in fact, did not have a date.) Similar point scores are provided for other areas of the checklist. Web sites scoring five points or more are regarded as "excellent sources."[26] Other more complicated scoring formulas are provided on the "Consumer Health Web-Site Evaluation Checklist" and at the "Information Quality Tool" site.[27]

Although numeric scores may provide comfort to users who long for the certainty commonly associated with numbers, in this case that kind of numeric certainty is misplaced and misleading. Web-site evaluation is inherently qualitative not quantitative. If assessing the quality of a Web site could be accomplished with an algorithmic formula, by now someone would have written such a formula, turned it into a Java applet, and incorporated it into the major search engines. For proof that numeric scores are problematic, see the disclaimer attached to the "Information Quality Tool," which essentially says that the creators of the tool can make no guarantee that it actually works.

Even if we could quantify Web-site evaluation and write a computer program that would do it for us, it is questionable whether we would want to do so. Assessing the quality and value of information is an important part of the research process. Sifting through the current research on a topic and deciding what is important and what is not help us to synthesize information and to eventually construct our own interpretation and our own point of view on the topic. If we teach students to surrender evaluation to a mechanical process, we teach them to sacrifice part of their autonomy as learners and knowers. We should be trying to cultivate researchers who ultimately create new knowledge by learning how to decide for themselves what is accurate and trustworthy not encouraging them to simply re-present information from an "authoritative" Web site.

A Contextual Approach to Web-Site Evaluation

The preceding sections should at least raise some serious questions about the checklist model approach to teaching Web-site evaluation. As an alternative to the checklist model, I offer what I call a contextual approach. The checklist model is very much an internal method of evaluation. It concentrates on the internal characteristics of the Web site in question—who wrote it, is it authoritative, when was it written—to decide if the site should be used in a research paper. A contextual approach makes use of information *external* to the Web site in order to evaluate it. In using external information to evaluate Web sites, information is located within its wider social context, facilitating reasoned judgments of information quality. The contextual approach uses the following three techniques:

1. Promoting and explaining reviewed resources
2. Comparison
3. Corroboration

Promoting and Explaining Reviewed Resources

Promoting peer- and editorially-reviewed electronic resources is a kind of sidestepping of the whole "problem" of teaching Web-site evaluation. Instead of assuming that stu-

dents will only use the free Web and are ignorant of the evils that lurk there, this method assumes that students do value accurate sources but are not informed enough about the high quality, Web-accessible, vetted resources that college and university libraries make available through the Web. In the first years of the free Web's emergence, there were fewer peer-reviewed resources available through the Web than there are today. At that time, the checklist model may have been a reasonable approach to evaluation—now, however, a new approach is required.

When approached by a teaching professor seeking instruction for a class in "evaluating Web sites," instead of running to the checklist, librarians can now inform the professor that the library provides access through the Web to high quality information that has already been vetted. By asking for a session on the evaluation of Web sites, a professor may really be asking, "How can I get my students to use high quality information?" The answer is for the librarian to promote the library's subscription-based electronic resources and for the professor to require that those resources be used in the assignment. This puts some of the onus back on the professor, the subject expert, to demand that high quality resources be used in student papers. The subsequent library class session can focus on teaching what databases students have access to, how students can get to them, how they can use them, and how to tell the difference between a reviewed source and a non-reviewed source. This way, the librarian promotes the use of electronic resources that the library pays for and that are just as easy to use (in terms of mode of access) as free Web sites but are of intrinsically higher quality. Students save time, because they do not have to run through a checklist comprised of tens or hundreds of questions to determine if they should use a source or not. If the information is from a subscription database provided by the library, students can assume at least some degree of accuracy and reliability.

To reinforce the message about peer-reviewed resources, librarians can also explain the nature and role of peer and editorial review in academic discourse. Although students are familiar with the Internet, television, and with mainstream press books and magazines, the world of academic publishing—with its university presses and peer-reviewed academic journals—is completely new to many of them. Explaining how university presses have faculty review boards and how articles in refereed journals are first examined and critiqued by faculty reviewers reveals the mechanisms behind peer review. Explaining how peer review works reveals how and why these sources are held to be more reliable than non-reviewed sources and demonstrates how these sources derive their authority. To prevent students from concluding that peer review is an automatic guarantee of truth, problems with peer review can also be discussed—such as its inherent conservatism or the distortions arising from reviewer fallibility including deceit, petty jealousy, or ideological power battles.[28]

Comparison

Promoting and explaining peer-reviewed resources does not completely address the problem of Web evaluation, because free Web sites exist that may be useful and of high quality. Librarians and students cannot simply sidestep the entire free Web. For free Web sites, a simple alternative to the checklist that does not get enough attention from

librarians is comparison. Comparison is the examination of the similarities and differences between two or more items. When applied to the evaluation of free Web sites, comparing means analyzing the similarities and differences in the content of two or more free Web sites to each other or comparing the content from free Web sites to other information formats such as newspaper or magazine articles, peer-reviewed journal articles, or scholarly books.

Librarians and students cannot simply sidestep the entire free Web. For free Web sites, a simple alternative to the checklist that does not get enough attention from librarians is comparison. Comparison is the examination of the similarities and differences between two or more items.

Comparative thinking plays a key role in evaluative judgments. When we evaluate something, we assign a measure of quality to that item based on a reference point. Without having a standard of quality to use as a reference point, we have no scale by which to judge whether one item is better or worse than another. When students compare at least two Web sites, one site can function as a beginning reference point. The second site is then compared to the first, and if it is judged to be of higher quality, that site becomes the new reference point. The more Web sites students encounter and compare, the better they will become at assessing what counts as high quality information and what does not. When reviewed sources are added to the comparison, in some cases it will become obvious very quickly why reviewed sources are generally valued more highly than free Web sites. In other cases, even librarians may be surprised at the quality or uniqueness of items that can be found on the free Web.

Comparison can reveal the depth of information available on a topic. Suppose a person is looking for information on the My Lai massacre, an event that occurred during the Vietnam War. The first Web site retrieved from a Google search performed on September 17, 2003, contained six paragraphs. The second site contained 42 paragraphs including extensive quotes and links to supporting information, such as further documents, testimony, and photographs. A comparison of the content of the two sites reveals that some factual information is similar but that the second site includes more background, context, and details. A search of the library's databases turns up a 20-page article in a peer-reviewed scholarly journal available in fulltext in electronic form. The article delves into the psychological and moral aspects of the event. Only by comparing these sources can students even know what it is they are missing if they simply stop with the first site retrieved from Google.

Comparison can reveal specific areas of a topic that are controversial and that need special attention and verification. In the My Lai example, various Web sites put the number of Vietnamese killed at 300; 347; 500; and 504. One even makes reference to hundreds of thousands killed. What is the accurate number? These varying figures suggest that there is controversy over the precise number or how the number is calculated. Perhaps the exact number will never be known. Comparing the figures at least informs the student that there is a controversy and that the topic either needs further investigation or requires careful treatment.

Comparison also helps students to recognize bias. For a student who is an intellectual novice in a particular knowledge domain, detecting bias can be difficult since the student has such a small frame of reference. Comparison provides tangible examples of what balanced and biased views actually look like. Again turning to the My Lai example, balanced sites use relatively neutral language while biased sites use inflammatory language. One site, for example, includes language such as "the American soldiers had degraded themselves to the status of filthy, evil, bloodthirsty animals."[29] By using comparison, students can see firsthand what biased information is. Students comparing neutral and biased sites are more likely to pick up on biases.

Comparison also turns up information that is perhaps unique to the Web. Missing from many print accounts of the My Lai massacre are photographs taken by a photographer present at the event. Some of these photographs are extremely graphic, disturbing, and upsetting. Perhaps it is for this reason that they are not included in editorially-reviewed print sources, such as the *Encyclopedia Americana*. Perhaps there were problems with copyright, or there was simply not enough space. Of course none of these barriers will stop someone from posting these pictures on a Web page, where images of the massacre can be viewed in all its gore and gruesomeness. Whether this is good or bad is debatable, but the photographs do exist and are part of the truth of what happened. If one digs deeply enough, one can even find a video clip of a 1971 news broadcast from the BBC about the incident.[30] The ease of being able to use this primary source document that would be otherwise unavailable is a remarkable example of the power of the free Web.

Comparison of similarities and differences is a simple but powerful cognitive process. It is simple enough that even young children can understand and apply it, yet it is sufficiently sophisticated in explanatory power that it is used by academic researchers in anthropology, psychology, political science, sociology, and communication studies. The Massachusetts Institute of Technology, for example, has an entire academic program in Comparative Media Studies. It is time librarians adopted comparison as an evaluative method as well. Comparing Web sites to each other and to reviewed sources provides an understanding of the depth of information available, reveals the controversial areas of a topic that need special attention, and gives students a feel for the different kinds of information available across formats. Comparison plays a key role in the evaluation of any type of information.

Corroboration

Corroboration is another simple and powerful evaluative tool that can be used by librarians to teach Web-site evaluation. To corroborate information is to verify it against one or more different sources. The technique is common in situations where the truth of information is in dispute, such as in journalism, witness testimony, and government intelligence work. For example, in May 2003 NBC News reported on the finding of a memo with information about the selling of nuclear material to Iraq. The reporter, however, was quick to add, "The authenticity of this memo has not been independently corroborated."[31] Later that same month, a British official admitted that British intelligence information about the ability of Saddam Hussein to use chemical or biological

weapons within 45 minutes was "single-sourced, not corroborated."[32] Clearly, in these cases, the information in question is viewed as less reliable, because it had not been corroborated by outside sources.

Although corroboration is used outside librarianship, librarians generally do not present it as a Web-site evaluation strategy. But this method is tailor-made for evaluating information on Web sites in an information-rich environment. Since more information is available and accessible, this information can be used to verify individual Web sites that may be questionable. The more sources that can be found to corroborate the information, there is a greater probability that the information is reliable.

Could corroboration help, for instance, in the controversy about the number of Vietnamese killed in the My Lai massacre? It can certainly help in approximating the number killed to be in the hundreds instead of the thousands or millions since most information sources place the figure within the range of 300 to 500. The more sources that have the figure in the hundreds, the less likely it is that they are all wrong. This is not trivial because it can deter students from making wildly uninformed claims, such as equating the My Lai massacre with, say, the Killing Fields in Cambodia in which millions are believed to have perished. Fixing a precise number is riskier, since an erroneous number could be copied by a multitude of sources and repeated over and over again—a distinct possibility in the copy and paste world of the free Web. For more precise determinations, corroborating with peer-reviewed or at least editorially-reviewed sources is recommended. If corroboration can come from different sources that have different motivations—the United States and Vietnamese governments, for example—this increases the probability that the number is accurate. A simple rule for students could be: do not use information unless you have corroborated it. Corroboration with varied and reviewed sources increases the probability of accuracy.

Conclusion

The checklist model has been the dominant method for teaching undergraduates Web-site evaluation since the mid-1990s. Although the nature of information available through the Web has changed since then, the checklist model has not. Both the assumptions behind the checklist model and the implementation of the model in practice need revision. The checklist model is an internal model: it focuses on criteria internal to the Web page in question. An alternative to the checklist model is the contextual approach. The contextual approach uses peer and editorial review, comparison, and corroboration to bring external criteria to bear on target Web sites. The contextual approach uses information to evaluate information—it promotes the library's resources, teaches information literacy, and encourages reasoned judgments of information quality.

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