Information Literacy is generally described as the ability to access, evaluate, organize, and use information from a variety of sources. In part 1 of this article (Spring/Summer 2004), the argument was presented for recognition of information literacy as a legitimate area of concern for educators. In part 2 of this article (Fall 2004/Winter 2005), a call to develop quality student research practice utilizing information literacy guidelines was discussed. The third part of this article is focused on strategies for finding quality information on the world wide web.

Less than 10 years ago, most students dealt with some carefully selected collections of reference materials in academic and public libraries, as well as a fairly limited range of widely accepted authoritative texts in the classroom. The power and authority that has historically been afforded the printed word has been an enduring and widely held belief. With the advent of the Internet anyone can now make a Web page. Eighty percent of the students and faculty members who responded to a 2002 national survey stated that the Internet has changed the way in which they use libraries. More than one-third of those that responded now use the library less than they did just two years ago. (Friedlander, 2002) This illustrates the rapid shift from print to electronic media.

So, how can you tell if the information on the internet is reliable or not? A critical point about using the Internet is that individuals posting information aren't required to pass through traditional editorial constraints or undergo any kind of fact-checking required in conventional published print media. Similar approaches to determining the quality of online information exist (Schrock, 1999; Alexander & Tate, 1999). What follows is a discussion of issues and strategies intended to provide teachers and students a set of tools when evaluating web resources:

**EVALUATING WEB RESOURCES**

**Traditional Evaluation Criteria for Information Resources:**

**Accuracy/False**
- How reliable and free from error is the information?
- Are there editors and fact checkers?

**Factors affecting Accuracy of Web Resources**
- Almost anyone can publish on the Web
- Many Web resources not verified by editors and/or fact checkers
- Web standards to ensure accuracy not fully developed

**Authority**
- What are the author's qualifications for writing on the subject?
- How reputable is the publisher?

**Factors affecting Authority of Web Resources**
- Often difficult to determine authorship of Web resources
- If author's name listed, his/her qualifications frequently absent
- Publisher responsibility often not indicated

**Objectivity/Bias**
- Is the information presented with a minimum of bias?

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• To what extent is the information trying to sway the opinion of the audience?

**Factors affecting Objectivity of Web Resources**
- Web often functions as a "virtual soapbox"
- Goals/aims of persons or groups presenting material often not clearly stated

**Currency**
- Is the content of the work up to date?
- Is the publication date clearly indicated?

**Factors affecting Currency of Web Resources**
- Dates not always included on Web pages
- If included, a date may have various meanings:
  - Date first created
  - Date placed on the web
  - Date last revised

**Additional Concerns Presented by Web Resources:**

**Use of Hypertext Links**
- Quality of Web pages linked to original Web page may vary
- Main page high quality linked to Poor quality web page

  Strategy: Evaluate each Web page independently

**Use of Frames**
- Remember, Each Frame Displays a Separate Web Page

  Coping Strategy:
  Evaluate Each Frame Independently

**Search Engines Can Retrieve Web Pages Out of Context**
- Search engines often index pages that are not relevant to the search term entered

  Coping Strategy:
  Always try to return to the "home page" to determine the source of information

**Marketing-Oriented Web Pages**
- In other media, there usually are clear visual and/or audio distinctions between advertising and information.
- On the Web, distinctions between advertising and information can become extremely blurred.

  Coping Strategy:
  Try to determine if advertising and informational content are supplied by the same person or organization

**Blending of Entertainment, Information, and Advertising**
- Web has brought "infomercial" concept to new heights

  Coping Strategy:
  Be skeptical of information accuracy

**Instability of Web Pages**
- Web Pages May Move or Disappear Without Notice
- User May Not be Able to Refer Back to a Web Page
Coping Strategy:
• Try to determine the stability of your source
• Document the source to the fullest extent possible (annotated web reference lists)

TYPES OF WEB PAGES OFTEN USED AS INFORMATION SOURCES

Web pages may be generally described as either advocacy pages, marketing pages, informational pages, news-based pages or personal pages. The following discussion explains each type of page and provides questions that may be employed to determine each of the traditional criteria to evaluate information sources previously presented (Alexander & Tate, 1999).

Advocacy Web Page
An Advocacy Web Page is one sponsored by an organization attempting to influence public opinion. The web address of the page frequently carries the .org (organization) domain designation.

Authority
1. Which organization is responsible for the contents of the page? Does the page provide a description of the goals of the organization?
2. Can you verifying the legitimacy of this organization? Contact information? (Simply an email address is not enough.)
3. Is there a statement that the content of the page has the official approval of the organization?
4. Is it clear whether this is a page from the national or local chapter of the organization?
5. Is there a statement giving the organization's name as copyright holder?

Accuracy
1. Are the sources for information clearly listed so they can be verified in another source?
2. Is the information free of grammatical, spelling, and typographical errors?

Objectivity
1. Are the organization's biases clearly stated?
2. If there is any advertising on the page, is it clearly separated from the informational content?

Currency
Are there dates on the page to indicate:
1. When the page was written?
2. When the page was last revised?
3. Any other indications that the material is kept current?

Marketing Web Page
A Marketing Web Page is one sponsored by a commercial enterprise. The web address of the page frequently ends in .com (commercial) indicating the commercial domain.

Authority
1. Is it clear what company is responsible for the contents of the page?
2. Is there a link to a page describing the nature of the company, who owns the company, and the types of products the company sells?
3. Is there a way of verifying the legitimacy of this company? Is there a contact phone number or address? (An email address is not enough.)
4. Is there a way of determining the stability of this company?
5. Is there a statement that the content of the page has the official approval of the company? Is there a statement giving the company's name as copyright holder?
Accuracy/Fallacy
1. Has the company provided a link to outside sources such as product reviews or reports filed with the government which can be used to verify company claims?
2. Are the sources for any factual information clearly listed so they can be verified in another source?
3. Is the information free of grammatical, spelling, and typographical errors?

Objectivity/Bias
1. For any given piece of information, is it clear what the company’s motivation is for providing it?
2. If there is any advertising on the page, is it clearly separated from the informational content?

Currency
Are there dates on the page to indicate:
1. When the page was written?
2. When the page was last revised?
3. Any other indications that the material is kept current?
4. For financial information, is there an indication it was filed with the SEC and is the filing date listed?

Informational Web Page
An Informational Web Page is one whose purpose is to present factual information. The web address frequently has .edu or .gov as the address domain because many of these pages are sponsored by educational institutions or government agencies.

Authority
1. Is it clear who is responsible for the contents of the page?
2. Is there a link to a page describing the purpose of the sponsoring organization?
3. Is there a way of verifying the legitimacy of this page’s sponsor? Is there a contact phone number or address? (An email address is not enough.)
4. Is it clear who wrote the material and are the author’s qualifications for writing on this topic clearly stated?
5. If the material is protected by copyright, is the name of the copyright holder given?

Accuracy/Fallacy
1. Is it clear who has the ultimate responsibility for the accuracy of the content of the material?
2. Are the sources for any factual information clearly listed so they can be verified in another source?
3. Is the information free of grammatical, spelling, and typographical errors?

Objectivity/Bias
1. Is the information provided as a public service?
2. Is the information free of advertising?
3. If there is any advertising on the page, is it clearly separated from the informational content?

Currency
Are there dates on the page to indicate:
1. When the page was written?
2. When the page was last revised?
3. Any other indications that the material is kept current?
4. If material is presented in graphs and/or charts, is it clearly stated when the data was gathered?
5. If the information is published in different editions, is it clearly labeled what edition the page is from?

News-Based Web Page
A News-Based Web Page is one whose primary purpose is to provide extremely current information. The web address of the page usually has .com as the address domain because commercial newspapers, magazines or media brokers are responsible for the information posted on the site.
Authority
1. Is it clear who is responsible for the contents of the page?
2. Is there a link to a page describing the purpose of the sponsoring organization?
3. Is there a way of verifying the legitimacy of this page's sponsor? Is there a contact phone number or address? (An email address is not enough.)
4. Is there a non-Web equivalent version of this material which would provide a way of verifying its legitimacy?
5. If the page contains an individual article, do you know who wrote the article and his or her qualifications for writing on this topic?
6. Is it clear who is ultimately responsible for the content of the material?
7. Is there a statement giving the company's name as copyright holder?

Accuracy/Fallacy
1. Are there editors monitoring the accuracy of the information being published?
2. Are the sources for any factual information clearly listed so they can be verified in another source?
3. Is the information free of grammatical, spelling, and typographical errors?

Objectivity/Bias
1. Are the editorials and opinion pieces clearly labeled?
2. If there is any advertising on the page, is it clearly separated from the informational content?

Currency
Are there dates on the page to indicate:
1. When the page was written?
2. When the page was last revised?
3. Any other indications that the material is kept current?
4. If a newspaper, does it indicate what edition of the paper the page belongs to? If a broadcast, does it indicate the date and time the information on the page was originally broadcast?

Personal Web Page
A Personal Web Page is one published by an individual who may or may not be affiliated with a larger institution. Although the web address of the page may be published under a variety of domains a tilde ( ~ ) is frequently embedded somewhere in the address.

Authority
1. Is it clear who is responsible for the contents of the page?
2. Does the individual responsible for the page indicate his or her qualifications for writing on this topic?
3. Is there a way of verifying the legitimacy of this individual?

Accuracy/Fallacy
1. Are the sources for any factual information clearly listed so they can be verified in another source?
2. Is the information free of grammatical, spelling, and typographical errors?

Objectivity/Bias
1. Are the person's biases clearly stated?

Currency
Are there dates on the page to indicate:
1. When the page was written?
2. When the page was last revised?
3. Any other indications that the material is kept current?
CONCLUSION

Each of the strategies described in this article is intended to help the classroom teacher in their efforts to teach students the best way to critically evaluate the information that they find on the internet when related to the purpose for which they have gathered this information. One of the greatest things we can do for this and future generations is to produce a digitally literate population that is equipped to learn throughout their lifetimes. Teaching ways critical evaluation of electronic information is central to this task.

REFERENCES

