

The Big 6 Teaching Technology Information Skills

NEWSLETTER

Applying Big6™ Skills and Information Literacy Standards to Internet Research



By Janet Murray

Library media specialists know that Big6 Skills and the national information literacy standards provide a powerful repertoire of research tools to

integrate technology into every area of the curriculum. Our challenge is to share that understanding with our colleagues. Teachers who use the Big6 Skills may acquire an appreciation of the national information literacy standards by seeing them in a familiar framework. Teachers who have not yet used World Wide Web resources to support student research may be more enthusiastic if they can see the experience as a way to learn information problem-solving skills.

To make it easier for teachers to see the connection between the research process and using World Wide Web information sources effectively, I created a matrix of activities related to research on the Internet that may help clarify the relationships between Big6 Skills and the national information literacy standards for student learning.

"Applying Big6 Skills and Information Literacy Standards to Internet Research" <www.surflinone.jp/janetm/big6info.htm>

- Lists the Big6 Skills,
- Connects them to indicators from the

national information literacy standards developed by the American Association of School Librarians <www.ala.org/aasl/> and Association for Educational and Communications Technology <www.aect.org/>, and

- Links to hands-on activities to apply each step in the research process.

Technology-anxious adults who are intimidated by the thought of using the Internet with their students may be more enthusiastic if they see "research" in personal terms. Consider this analogy:

George wants to buy a new car. He knows that he needs accurate and complete information in order to make an intelligent decision. He realizes that his friendly local car dealer may not be the best source of an unbiased opinion. He knows that his life will not be magically transformed into the nirvana depicted in television ads just because he purchases a particular make or model. What sources of information might he use?

He could (and probably will) poll his friends, but his transportation needs may be different from theirs. He's seen automobile magazines featuring ratings of different models; how can he find the one that rates the models in which he's interested? He may be familiar with consumer organizations that evaluate products, but, again, where can he find the one he needs? He tries a search for " Broncos" on the Internet, and retrieves as much information about horses and football as about cars. Even the Web pages about cars turn out to be personal testimonials and dealer promotions.

George needs a

librarian who is familiar with a variety of sources and capable of navigating the Internet to locate authoritative information. The Georges of the future need to have learned these information literacy skills in school. Library media specialists can help teachers become comfortable using Internet resources for student research by sharing activities that illuminate the application of Big6 Skills.

Task Definition

The first Big6 skill, "Task Definition," includes two subordinate items—

- 1.1 Define the information problem, and
- 1.2 Identify information needed in order to complete the task (to solve the information problem)—

that correlate with specific indicators in the information literacy standards:

- 1.1 Recognizes the need for information, and
- 1.3 Formulates a question based on information needs.

George's question is "What kind of car should I buy?" At first, it's unmanageably broad. How often have we seen students in our libraries looking for "psychology" or "history" or another huge topic? At the other end of the spectrum, students are often disappointed to learn that we don't have a whole book about some nearly extinct South American tree toad. Students need guidance to recast their inquiry in terms appropriate to the assignment. Concept maps are useful tools to help students and teachers clarify hierarchical relationships. There are many

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other graphic organizers that will help teachers teach students to visualize their thinking or brainstorming process. <www.sdcoe.k12.ca.us/score/actbank/torganiz.htm>

Information Seeking Strategies

Step 2 of the Big6, "Information Seeking Strategies," includes two subordinate items—

- 2.1 Determine the range of possible sources (brainstorm), and
- 2.2 Evaluate the different possible sources to determine priorities— (select the best sources)—

that correlate with specific indicators in the information literacy standards:

- 1.4 Identifies a variety of potential sources of information, and
- 2.4 Selects information appropriate to the problem or question at hand.

Exploring the Internet can be compared to "browsing" the library stacks. Patrons often select a book based on a colorful cover or enticing publisher's blurb only to discover that the book is not what they expected. Internet novices frequently throw up their hands in disgust or despair when their first attempts to locate information result in an overwhelming array of sources that are only minimally relevant to their inquiry. Encourage new users to start with a subject directory of evaluated resources that organizes information hierarchically. Kathy Schrock's Guide for Educators <school.discovery.com/schrockguide> is particularly useful.

Because anyone can publish on the World Wide Web, it is critically important that students and teachers learn to evaluate Web sites. Kathy Schrock's presentation at the National Educational Computing Conference (1999), the "ABC's of Web Site Evaluation," neatly summarizes the factors to be considered. <school.discovery.com/schrockguide/presentations/abc.ppt>

Selecting resources appropriate to the task is also an essential element of effective information gathering. Library media specialists will recognize that print resources are still valuable, but they may have trouble convincing their students! Students and teachers need to understand the limitations of the Internet as an information resource: While it is ideally suited for explorations of subjects that change rapidly (e.g., science and

Big6 Skill	Information Literacy Standards	Basic Activities	Advanced Activities
1. Task Definition	1.1 1.3	Concept Mapping	Graphic Organizers
2. Information Seeking Strategies	1.4 2.4	Subject Directories Evaluating Web Sites	Web Site Evaluation
3. Location & Access	1.5	Keyword Searching	Multithreaded Search Engines
	7.1	Boolean Logic	Search Engine Pros
4. Use of Information	2.1 2.2	Analyze Sources	Identify Point of View
	3.1 3.4 9.1	Critical Thinking Appropriate Product Bibliographic Citation	Classroom Applications
6. Evaluation	6.1	Assessment Rubrics	Information Power

current events), it is less comprehensive in its coverage of historical and literary topics.

Location and Access

Step 3 of the Big6, "Location and Access," includes two subordinate items—

- 3.1 Locate sources (intellectually and physically), and
- 3.2 Find information within sources—that correlate with specific indicators in the information literacy standards:
- 1.5 Develops and uses successful strategies for learning information, and
- 7.1 Seeks information from diverse sources, contents, disciplines, and cultures.

To accomplish research on the Internet, students and teachers must learn to navigate it skillfully by using search engines. Skillful navigation requires an awareness of the different results likely to be obtained from different search engines. Use a simple quantitative comparison: How many results do you obtain from the same query entered in different search engines? The variation is obviously significant. This realization leads one to investigate how different search engines structure their queries and

compile their results.

Of course, these conclusions change frequently, but Web articles evaluating search engines appear almost as frequently. Like ocean currents or desert dunes, the landscape of the World Wide Web is constantly shifting. We need to teach searching skills that are adaptable to evolving tools rather than to specific characteristics of particular search engines.

As Internet resources increase exponentially, computerized tools for searching the World Wide Web continually become more sophisticated. Understanding the rudiments of Boolean logic will help teachers and students refine their searches to retrieve specific and useful information. Excite <www.excite.com> identifies related search terms, with occasionally unexpected results. Teachers should always preview a search before assigning it to students. Northern Light <www.northernlight.com/> organizes the results of a simple search into custom folders to help students focus and refine their topics. Explore advanced features of search engines by reading their help screens or tips for searching. Multithreaded search engines combine the results of searches from several different sources and compile them. The Big Hub <www.thebighub.com/> offers classified specialty search engines by category as well as "megasearching."

Use of Information

Step 4 of the Big6, "Use of Information," includes two subordinate items—

- 3.1 Engage (e.g., read, hear, view, touch) the information in a source, and
- 3.2 Extract relevant information from a source—

that correlate with specific indicators in the information literacy standards:

- 2.1 Determines accuracy, relevance, and comprehensiveness, and
- 2.2 Distinguishes among facts, point of view, and opinion.

Helping students and teachers evaluate Internet sources of information continues to be one of our biggest challenges. It is critically important that students and teachers learn to evaluate Web sites for authority, accuracy, objectivity, currency, and relevance.

Student researchers should consider the authority of the site, identifying the author and his qualifications as well as the organization that sponsors the site. Domains identified as

.com (commercial) may be tailoring the information they provide to sell a product. Students should assess the accuracy and objectivity of the information provided by distinguishing among facts, point of view, and opinion. One can find diametrically opposed points of view from authoritative sources on scientific issues such as the use of animals in research

or the seriousness of environmental problems. Students need to be aware of the ways that opinion, misleading information, and bias can influence their understanding of a problem.

Students should consider the currency of information by checking revision dates. They should also evaluate the relevance of the information; it is easy to lose track of one's original research question when confronted with an overwhelming profusion of resources.

Synthesis

Step 5 of the Big6, "Synthesis," includes two subordinate items—

- 5.1 Organize information from multiple sources and
- 5.2 Present the information—

that correlate with specific indicators in the information literacy standards:

- 3.1 Organizes information for practical application and
 - 3.4 Produces and communicates information and ideas in appropriate formats.
- 9.1 shares knowledge and information with others

Teaching information literacy skills in such a way that students will be able to assimilate them into life-long information problem-solving strategies requires that teachers re-evaluate their traditional research project assignments. Doug Johnson ("Designing Research Projects Students [and Teachers] Love" <www.infotoday.com/MMSchools/nov99/Johnson.htm> concludes that appropriate activities challenge students to engage in critical thinking, work collaboratively in groups, apply the results of their information-gathering to real-world problems, and present their results in a variety of formats. Content learning is more likely to be remembered when students establish connections with their prior knowledge. Clearly stated expectations and authentic assessment tend to improve the quality of the final product. Well-designed WebQuests<edweb.sdsu.edu/webquest/overview.htm> encourage collaborative learning, the thoughtful analysis of Web resources, and the creation of original products.

Evaluation

Step 6 of the Big6, "Evaluation," includes two subordinate items—

- 6.1 Judge the product (effectiveness), and
- 6.2 Judge the information problem-solving process (efficiency)—

that correlate with a specific indicator in the information literacy standards:

- 6.1 Assesses the quality of the process and products of one's own information-seeking.

In order to see whether or not our implementation of Big6 Skills and information literacy standards is making a difference in the way stu-

dents and teachers approach research, we need to develop appropriate assessment tools. "New Times Demand New Ways of Learning" <www.ncrel.org/sdrs/edtalk> is a thought-provoking article from NCREL (North Central Regional Educational Laboratory) describing indicators of engaged learning in a technology-enriched environment. *Information Power* (American Library Association, 1998) includes an appendix describing assessment strategies for the process of information-gathering as well as the products of student synthesis. Kathy Schrock has collected assessment rubrics<school.discovery.com/schrockguide/assess.html> that can be used to evaluate student projects.

Mike Eisenberg and Doug Johnson's application of the Big6 Skills to technology (Computer Skills for Information Problem-Solving: Learning and Teaching Technology in Context, ERIC Digests, March, 1996, <www.ed.gov/databases/ERIC_Digests/ed392463.html> provides some very helpful ways of thinking about using computers to acquire research and information-processing skills.

Introducing the World Wide Web as a tool for school research is a daunting task that easily can seem overwhelming to library media specialists and teachers who are used to conducting research in print sources. Combining the Big6 Skills with information literacy standards can help us systematize our instruction and break it into manageable pieces. **BR**

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