

Information Literacy Toolkit: Meeting the Challenge of a Large Research University

John T. Butler, University of Minnesota, Twin Cities
Jerilyn R. Veldof, University of Minnesota, Twin Cities

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Abstract

The University of Minnesota's Information Literacy Toolkit was developed as a means to scale-up an information literacy initiative for a campus enrollment of over 46,000 students, including a large segment of distance and online learners. A collaborative team of librarians, instructional designers, interface designers, web programmers, and faculty are responsible for its creation and ongoing development. While the Toolkit delivers numerous self-guided tools in the hands of learners, it also provides instructors and librarians with an efficient means to develop customized learning resources in a time of expanding availability of information resources and more complex information access.

We live in what Richard Saul Wurman calls the “Age of Also.” [1] In this “Age,” the old piles upon the new, so that we not only have the telephone, but we also have faxes and email; we not only have computers, but we also have more paper than ever before. The Age of Also challenges the present-day library researcher to know not only how to navigate in the old bricks-and-mortar library, but also how to navigate the online virtual library and the free, unorganized Web outside the library’s virtual presence. Given these challenges, faculty should not be expected to be the sole beacons in the fog for students needing direction in this complex information environment. They must have campus support and an infrastructure that eases the burden on the faculty and helps to build information literate students.

Information literacy encompasses the skills and knowledge necessary to thrive in an information rich society. This literacy is defined by five major Information Literacy Standards. [2]

1. Need -- Articulating the nature and extent of the information needed
2. Access -- Accessing information effectively and efficiently
3. Evaluation -- Evaluating information and its sources critically and incorporating selected information into one's own knowledge base and value system
4. Use -- Using information effectively to accomplish a specific purpose
5. Issues -- Understanding many of the economic, legal, and social issues surrounding the use of information and its ethical and legal access.

Each of these standards are divided into three to seven performance indicators and these are further divided into two to seven outcomes each. For some faculty this can be an overwhelming amount of material to fold into their teaching responsibilities without substantial resources and support. In 1997, the University of Minnesota Libraries began to build a suite of online tools designed to meet this challenge. This “toolkit” was to meet the following ten criteria:

1. Build information literacy competencies – provide faculty with plug-and-play information literacy tools
2. Add value – improve student learning by providing the means to incorporate information literacy competencies into the curriculum and improve faculty effectiveness at building an information literate campus
3. Build worth – help faculty see the value of information literacy and the library’s role
4. Curriculum-integrated – provide faculty with tools that are easily integrated into the existing curriculum
5. Support distributed learners – available to learners at point, place, and time of need
6. User-centered – designed and tested from the user’s perspective
7. Easy and fast – create little or no work for faculty; build technologically efficient processes for librarians
8. Customizable – able to be modularized, available for tailoring and re-use

9. Scalable— able to reach large numbers of students so that many can benefit from the work of a few
10. Enterprise-ready – ensure that tools can benefit from, and contribute to other institution-level data systems (e.g., portals, course and content management systems)

Guided by these criteria and inspired by technological opportunity, the Information Literacy Toolkit has been built incrementally over the past five years to meet the challenges of mounting an information literacy initiative on a campus of over 46,000 students, including a large segment of distance and online learners. A collaborative team of librarians, instructional designers, interface designers, Web programmers, faculty, and students have contributed to its creation and ongoing development.

The Toolkit

The Toolkit currently consists of an integrated suite of six tools that support a wide range of learning activities and information research needs. The six components are the Idea Exchange; CourseLib: Library Resources for Your Course; QuickStudy: Library Research Guide; the Assignment Calculator; Research QuickStart; and the FAQ Database. It is critical to note that the Toolkit, collectively, is designed to serve the needs of all three players in the information literacy enterprise -- students, faculty, and librarians.

What makes each a “tool” varies. That is, in some components, like CourseLib, the librarian benefits from an easy-to-use Web authoring tool that facilitates the rapid production of a customized library Web page for a course. With other components, like Research QuickStart and the Assignment Calculator, students and faculty hold the tools, interacting with them to generate pages or resources using parameters that they define on the spot.

1) Idea Exchange – <http://www.lib.umn.edu/idea-exchange/>

(Currently under development) The Idea Exchange addresses all five of the Information Literacy Standards. Each year half of the University of Minnesota instructors in English Composition (a basic

first-year program with over 80 sections in the fall semester) are new to teaching and new to Composition. This group, coupled with other new hires across campus, amounts to a sizable pool of instructors who are faced with designing a semester curriculum perhaps for the first time. They may only be teaching from that curriculum just a few times before they graduate or move onto another teaching position. Because there is not a lot of time for trial and error or revision, getting curriculum right the first time is important. The Idea Exchange is a Web-based repository of effective lesson plans and assignments that help students increase their information literacy and writing abilities. Faculty can draw from a suite of curricular components as well as see how other instructors have pulled these components into a sequenced curriculum building towards a well-written and researched final project. The Idea Exchange depends on contributions of content from faculty and librarians. In this capacity, it serves as an important communication forum for learning strategies and content sharing.

2) *CourseLib: Library Resources for Your Course* – <http://courses.lib.umn.edu>

CourseLib addresses Information Literacy Standard 1,2, and 3, but can be used to address all standards. Academic librarians have long seen the value of integrating an information skills curriculum into academic courses and programs. However, faculty assumptions and attitudes about whether students need these activities have generally not been conducive to supporting such integration. [3, 4, 5] This may change. In recent years, the surge of faculty involvement in re-casting courses for online delivery has presented mutually recognized opportunities for librarians and faculty to collaborate in this area, and add value to the faculty member's primary instructional product -- the course.

CourseLib is a Web-based authoring and database tool designed to support customized library page creation and instruction for specific courses and programs. The tool presents an easy-to-use, forms-based authoring environment, with crosswalks to local database resources, such as online tutorials, course page templates and interfaces, e-resources, and service links. The design enables staff to create and maintain customized pages in the most efficient and scalable way possible. From a CourseLib page, students have

one-stop access to the core information resources and services relevant to their course, including databases, e-journals, electronic course reserves, online research services, information research tutorial modules, and more. These customized pages are linked directly from course Web pages or syllabi.

3) *QuickStudy: Library Research Guide* – <http://tutorial.lib.umn.edu/>

QuickStudy address all Information Literacy Standards Rarely do all the students come to a university with the same skills and knowledge about research. At the University of Minnesota, for example, students come from various types of secondary schools; some with a full media center/library and librarian and others without a media center at all. Once at the University, there is no basic research requirement or standard. And although 62% of University freshmen take English Composition at the 1000 level, research is not a required component of the course. As a result, by the time students have enrolled in an upper level course it is quite possible for some to have completely avoided the library, while others may have had several in-depth research papers assigned in previous classes. QuickStudy can ensure the instructor that his/her students have a uniform level of research skills and knowledge. In eight modules with several lessons within each module, QuickStudy instructs the student in each step of the research process from “Starting your Research” through “Citing Sources.” Guided exercises allow students to try what they are learning and the module quizzes provide some assurance to the instructor for how much the students have learned.

4) *Assignment Calculator* – <http://www.lib.umn.edu/help/calculator/>

The Assignment Calculator addresses Information Literacy Standard 1, 2, 3, 4. The Assignment Calculator helps transform what would have been a last-minute dash to the library into a much more successful research experience. This tool teaches students that research and writing is a process, that this process includes many steps, and that time for these steps needs to be planned and managed. Students enter the start and due dates for their paper and the Calculator recommends dates for completion of each

of the 12 steps and provides the resources and support services to help them with each of these steps. Instructors also use the Calculator to help pace a large research paper. An instructor, for example, may choose to have an outline, bibliography, and first draft due prior to the final completed paper. The Calculator helps them choose feasible deadlines for these components of the final paper.

5) *Research QuickStart* – <http://research.lib.umn.edu>

Research QuickStart addresses Information Literacy Standard 1 & 2 In the networked information environment, students face the growing challenge of making good information decisions given an overwhelming abundance of choices. [6] In fact, the sheer quantity of information resources so suddenly and conveniently available to students has given rise to convenience-driven decision-making regarding appropriate, and even trustworthy, information resources. [7, 8, 9] Whereas students from the previous generation may have asked, “How do I access what I need?” Students now may ask “How do I choose from all that there is?”

Research QuickStart helps students focus the field of choices by presenting them with key resources for starting their research in a particular subject area. It is a wizard-like tool that generates dynamic resource pages for over 200 subjects. QuickStart result pages contain links to both online subscription databases and Web sites, and listings of key print reference sources. Resources are often accompanied by annotations that link to online guided exercises on how the resources can be searched or used. QuickStart is particularly oriented to undergraduates tackling term papers, developing speeches, or other class assignments requiring information research.

6) *FAQ Database* – <http://FAQ.lib.umn.edu>

The FAQ addresses Information Literacy Standard 2. Librarians consider reference questions to be teaching and learning opportunities. Yet, how many questions are never asked because reference librarians are not (and cannot be) at the point-of-need? Reference service made available by phone, e-

mail, and interactive digital formats address some of this need, but there remain times that students, by choice or circumstance, do not ask their question and the opportunity is lost. The FAQ (Frequently Asked Questions) database is a growing archive of answers to common research and library use questions, available to users at all times. Beyond simply providing answers to questions, FAQ Database records are written to provide instructional guidance to those using this self-help resource. The goal here is to “teach to fish” rather than “give a fish.”

Multiple Toolkit Paths

Faculty and students may take numerous and sometimes unpredictable paths through the Toolkit. A faculty member’s path often intersects with a library liaison through a variety of channels, including the Idea Exchange, non-library instructional support personnel (e.g., instruction designers in academic departments), library consultation services, and through related library services (e.g., a faculty member participating in electronic course reserves may be offered a customized library page for their course). These opportunities often lead to a process in which strategies are made and actions taken to integrate library instructional content into assignments, learning activities, the syllabus, or even more broadly into the curriculum. It is important to note that some faculty interact with the Toolkit independent of the liaison, electing to use many of the components without librarian mediation.

Student interaction with the Toolkit may begin with the path prescribed by the faculty member in the syllabus or the librarian presenting to the class. In addition to these more structured approaches, student use is often spontaneous and even serendipitous. For this reason, Toolkit components are cross-linked and presented as a complementary set of tools. Therefore, wherever the student “jumps in,” other components are only a link away.

The Technology Behind the Toolkit

The challenges met by the Toolkit required a new technology strategy. Solutions needed to be scalable, provide the capacity to customize resources, and present an intuitive way in which Web pages are authored. Creating and maintaining flat html pages was considered an obsolete approach, especially noting the need to support thousands of unique Web pages, subject to frequent changes. Also, in managing flat pages, existing data are hardly leveraged for re-use. Noting this, the technology design objectives for the Toolkit were to:

- Optimize use, re-use, and sharing of data (input once, use many)
- Eliminate duplicative maintenance of Web pages (use of dynamic updating)
- Make authoring easy and intuitive (forms-based and graphical interfaces; no html or other coding required)
- Facilitate customization (position existing resources for quick replication and tailoring)

It is noted that these objectives share some similarities to the concept of “reusable learning objects” (RLOs), which have emerged with the development of open source courseware and learning management systems [10].

The initial Toolkit design involved the creation of multiple databases, one for each Toolkit component as it was developed. These databases held information resources records, annotations, tutorial modules, guided exercises, library service locations, library subject specialists, page templates, images, and more. As the Toolkit expanded to include more components, “crosswalks” between databases were developed so that one Toolkit component could draw data from another. [11] The Toolkit is now being re-engineered into a data warehouse model. Here, data and files of all kinds are deposited into a complex master database through a host of easy-to-use input tools. Then, on the production end, authoring tools and/or algorithms are used to generate end user products and tools. Data are created only once, updated in only one place, but used in multiple instances. The use of static pages is minimized. The combination of

database-delivered content and intuitive authoring tools provides a vehicle for rapid page creation and customization.

Evaluation

Does the Information Literacy Toolkit work? A meaningful response to this question requires an evaluation of the Toolkit's performance from the perspectives of all three major players – students, faculty, and librarians. While such an evaluation is progressing incrementally, it remains at the very early stages.

The main goals of the Toolkit are to have a positive impact on student learning and to help prepare them to become information literacy citizens and professionals. Plans to measure progress towards these goals employ the "Kirkpatrick Model," [12] which was chosen as a framework for evaluating learning outcomes in progressive stages. The model, adapted for this purpose, is staged in four levels (noting that each level of measurement may be considered increasingly more important and increasingly more difficult to accomplish):

- 1) Reaction (do they respond favorably to the Toolkit and its various components?)
- 2) Learning (do they learn what we want them to learn?)
- 3) Behavior (do they apply their learning?)
- 4) Results (does it make a difference academically?)

With three of the six Toolkit components – CourseLib, QuickStudy, and Research QuickStart – formal evaluations have begun involving student and faculty respondents. The preliminary results from students demonstrate a high degree success at level one – Reaction. This can also be said for faculty, whose initial response to the availability of these tools for their students and in their courses has been overwhelmingly positive. A small amount of work has begun to measure the next level – Learning. This involves benchmarking results of quizzing modules as well as involving faculty in evaluating the degree of

information literacy competencies in evidence in term papers and other student products. Efforts involving the next two stages – measuring Behavior and Results – have not yet taken place.

Feedback from librarians has indicated that the Toolkit has been largely embraced for two key reasons. First, it has presented a means to efficiently scale-up delivery of instructional and customized course support. Second, the Toolkit has provided a vehicle for librarian-faculty collaboration resulting in opportunities to advance the library's information literacy initiative.

Ultimately, the Toolkit will be evaluated for its return on investment. [13] The bottom line will need to weigh the Toolkit's impact on learning across a large student population given finite resources available to support the effort. While this final assessment has not yet occurred, there is now considerable interest and willpower among library and university administrators to support further development and deployment.

Conclusion

A recent Pew Internet & American Life Project study concludes that "The Internet, rather than the library, is the primary site of [college students'] information searches." [14] While this isn't entirely surprising, an OCLC study, also recently conducted, reveals what this might mean for libraries and information literacy initiatives. [15] Specifically, this study finds several significant gaps between the attributes of the Web that are important to students and how well the Web performs in meeting those expectations. It concludes by suggesting that there are real opportunities for academic librarians to help close this gap, through connecting students with libraries' high quality resources.

The Information Literacy Toolkit is one vehicle designed to seize those opportunities. Whether the specific solutions presented by the Toolkit are the right ones and set in the most effective array, time will tell. What is clear is that traditional strategies for supporting a large-scale information literacy initiative are by themselves insufficient.

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While it is not possible to list all those that have played a part, the authors would like to acknowledge the key project leaders and contributors. Leading the project (or its components) at various points in its evolution have been Kay Kane, Chris Loring, Karen Beavers, Kate McCready, Gregg Richardson, Barbara Kautz, Jim Stemper, John Butler, and Jerilyn Veldof. Key contributors have been Ilene Alexander, Chris Ament, Kashif Asdi, Kate Gandrud, Malaika Grant, Laurel Haycock, Dave Johnson, Shane Nackerud, Travis Noll, Kate Rattenborg, Bill Tantzen, Jen Tantzen, Cynthia Teague, and Chris Tobkin.

Notes

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