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Best Practices for Online Information-Literacy Courses

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Abstract

Remote access to resources has become increasingly important in academic libraries, spurred largely by the growth of online education. Through bibliographic instruction (BI) courses, librarians must prepare both on-site and remote patrons in information literacy. Challenges exist for remote-user BI: among them are perceived characteristics of the typical "virtual patron" and limitations of current software and infrastructure. However, recent remote-patron BI models—stand-alone Web pages, video-based programs, and class-integrated electronic modules—offer librarians templates for future best practices.

A large part of the challenge of the rise of electronic media in and as our classrooms has to do with our students' skills in locating, evaluating, and using information. Often, online learning is hampered by students' unfamiliarity with the "sea of text" that confronts them; they sometimes have difficulty in knowing how to find and utilize important information while screening out irrelevant data. At the same time, educators find themselves in the midst of a cultural shift toward a 24/7 information culture. Increasingly, one of the key questions for higher education is one of how to ensure that our students are successfully "information literate."

Since the early 1990s, when electronic databases and catalogs at major U.S. academic libraries became widely accessible via the Internet, remote access to resources has developed as an important issue in academic libraries, primarily because of the growth of online education and the increasing expectations of students to gain access to information without physically visiting the library. In 1992, Lizabeth Wilson foresaw a new role for librarians at the advent of electronic access:

> With [the] availability of telecommunication networks, an expanded computer hardware base, and an ever increasing number of online catalogs and databases available through remote access, an increasing number of users will become invisible users: . . . [who are] older than the typical on-site user . . . [and] occasional users with high expectations for service. (pp. 38-39)

Later, Karen Wielhorski (1994) noted that the "invisible users" were becoming less rare:

> Remote users are no longer a small segment of library users. . . . They ask questions of reference librarians through e-mail, requesting answers via fax machines. Remote users

> are no longer limited to just dial access; they surf the Internet to locate resources that meet their needs. (p. 5)

Concomitant with the expansion of access to the library's resources, academic librarians must now prepare patrons, via bibliographic instruction (BI, also known as information literacy), to identify, evaluate, and use information not only within the library, but on the Internet as well: "Staff are challenged to use new electronic capabilities to enhance traditional methods of bibliographic instruction and to reinvent themselves and library services" (Wielhorski, p. 5). While many academic libraries have allocated significant resources toward improving and increasing remote access to information since 1990, others have not made similar commitments to instructing their remote patrons in becoming educated users of new information systems. Chief among the challenges to offering effective BI in the online environment is the perceived character of the typical "virtual patron."

Mental Models of Library Users

Most remote-user BI programs adopt a mental model that "may facilitate or impede the organization's ability to carry out its work. The reference desk, as a concept of how certain services should be rendered, represents an example of a mental model in library service" (Harris, 1996, p. 51). Librarians sometimes assume that students come to BI sessions with few or no information-literacy skills, and that students do not themselves always perceive this: "Students generally fail to realize the substantial differences between school/public and academic libraries and therefore overestimate the extent of their knowledge of the latter" (Tiefel, 1989, p. 256). Further, librarians often think that students have few analytical skills; we also assume (and studies largely support the notion) that students come to BI expecting quick and easy solutions to their information needs:

> The mental model we saw in our students [was] the racing model. In the race to get their articles, students exhibit fairly limited research methods. They browse the [online catalog] . . . or pick the first few citations in a database they have used before. Usually, they will ask for help only when the old standbys fail them—and even then, it is often amazing how long they will keep trying the old system without getting results. (Veldof & Beavers, 2001, p. 9)

A last common assumption is that most students arrive with advanced technological understanding, in terms of being able both to use equipment and to intuit the structure and purpose of electronic media. This is seldom correct. Kate Manuel relates one example:

> Beyond technological issues, students were poorly prepared for the cognitive demands of a Web-based learning environment. . . . There is a tendency among both instructors and students to assume that those who can surf the Net also know how to learn in this medium. (Manuel, 2001, p. 222)

A seemingly contradictory note is sounded by studies (e.g., Maughan, 2001) demonstrating that the average library user has indeed become more technologically savvy—and at an earlier age—since the mid-1990s; however, advances in most patrons' technological knowledge consistently lag behind technological change, and do not always indicate information literacy.

In addition to these assumptions about the characteristics of the typical remote student, online patrons are increasingly seen to be demographically indistinguishable from on-site patrons in terms of age distribution, gender, and basic skill level (Budd, 1998). Although this would seem to encourage narrowing information-literacy classes to address the "typical" student, the homogenization of the user population remains a long way off. However, the basic information-literacy skills required of all users, online and on-site, are definable.

Standards for Information Literacy

The International Society for Technology in Education National Educational Technology Standards Project (ISTE/NETS) *Information Literacy Standards* were adopted in consultation with the American Library Association in 1998, and are meant to apply to all students from the elementary grades through graduate work. Of the nine standards adopted for general information literacy, five of them form a solid basis for the efficient, ethical, and effective use of information at the collegiate level:

> Standard 1: The student who is information literate accesses information efficiently and effectively.
> Standard 2: The student who is information literate evaluates information critically and competently.
> Standard 3: The student who is information literate uses information accurately and creatively . . . .
> Standard 6: The student who is an independent learner is information literate and strives for excellence in information seeking and knowledge generation.
> Standard 8: The student who contributes positively to the learning community and to society is information literate and practices ethical behavior in regard to information and information technology. (ISTE/NETS, 2004)

Based in part on the ISTE/NETS standards, the Association of College and Research Libraries (ACRL) recently published its own *Information Literacy Competency Standards for Higher Education*:

> Standard One: The information literate student determines the nature and extent of the information needed.
> Standard Two: The information literate student accesses needed information effectively and efficiently.
> Standard Three: The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.
> Standard Four: The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
> Standard Five: The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally. (ACRL, 2000, pp. 8-14)

The components of information literacy in the standards of both the ISTE/NETS and ACRL seem to serve remote and on-campus students equally well, but ACRL Standards Four and Five

present special challenges for remote-patron BI classes. The "specific purpose" of BI is often perceived by online students as being much narrower (i.e., the ability to find any source to satisfy a particular assignment) than the purpose assumed by the institution (i.e., intellectual curiosity and rigor, lifelong information skills). Likewise, librarians who teach remote-patron BI often struggle against the "ideology of ease" which dictates that material found electronically is "free": devoid of the very "economic, legal, and social issues" that the ACRL expects information-literate students to apply in order to "use information ethically and legally."

Fortunately, based on several recent remote-patron BI models—stand-alone Web pages, videotape-based programs, and subject/class-integrated electronic modules—it is possible to compile a list of best practices for distance-based BI. Although the nascent field of remote-user BI requires further research, the following models are a useful guide for librarians putting together tomorrow's online-patron BI programs.

In 1995, Harvey Sager predicted that information-literacy sessions for remote users might not work:

> Matching information to a user's need has been the traditional role of BI and the reference interview. Intelligent, interactive interfaces may provide future assistance in this area, but for now, remote invisible users are at a distinct disadvantage in this regard. (p. 55)

Current online information-literacy classes come close to the "intelligent, interactive interfaces" Sager predicted; however, they face several challenges: the mindset of "invisible" users, limitations of delivery media, and new technological skills needed by remote patrons.

Recently, Nancy Dewald, Ann Scholtz-Crane, Austin Boot, and Cynthia Levine (2000) identified three means of offering BI classes to remote users: "Information literacy in a distance learning environment can be provided through credit courses taught by a librarian, as an integrated component of a discipline-based distance education course, or as stand-alone Web tutorials" (p. 37). A fourth distance education medium predates the Web: video. Indeed, video is a good place to begin an investigation of remote-patron BI.

Videotape

Video learning has a long history as an educational medium. Many Internet- and CD-ROM-based techniques are based on practices developed using videotape, cable television, and closed-circuit television. Online students often benefit from videotaped modules and segments meant to be shown to on-site viewers.

An exemplary videotape-based BI program is *Navigating the Sea of Information*, an 18-minute videocassette produced by the University of Pittsburgh (1998). The videotape presents a student struggling with a biology class essay, for which she must use a given style manual and cite three books and five peer-reviewed journal articles. Although the student is shown using the library in person, the librarian makes clear how students can gain remote access to the library's resources using the skills demonstrated on the tape. Actors often mention that the student might wish to "log on from home" in order to complete her research. Because video is not interactive, *Navigating the Sea of Information* might be expected to be less effective than, say, a Web site, but the tape avoids many of the pitfalls of "push" media by focusing on common student problems. For instance, instead of demonstrating how to use the library by covering major skill sets, the tape focuses on one specific assignment, assuming the mental model of the student

rather than that of the librarian. Also, the student begins not at the library at all, but by asking her friends about how to begin, mirroring what many students do when faced with a similar task:

> Since college students are more likely to be in their homes and dorms when they need help using the Web, they rely upon their friends first—61% ask a friend or classmate for help. More than one-third (36%) of students ask their professors or teaching assistants for help with using the Web, and one-in-five (21%) ask librarians. (OCLC Online Computer Library Center, 2002, p. 5)

Once the student is pointed toward the library by a friend who tells her not to get started "so soon" (a week before the due date), she walks directly into the stacks, right past the electronic help screen on the library's computers.

Navigating the Sea of Information shows the student doing a "poor" search, getting thousands of hits in the online public-access catalog (OPAC) from terms like "pollution" and no results using "litter." The librarian stops by, and, throughout the videotape, mentions only four techniques: starting with encyclopedias and handbooks for an overview of a topic, using "pearl seeding" from known sources to find controlled-vocabulary subject headings, searching databases for non-monographic literature, and using the Boolean AND operator in order to narrow search results.

None of these methods is formally named; instead of using "Boolean search," for instance, the librarian simply uses "search strategy." There is no assumption that viewers have access to—or are even in—a particular library: the video extrapolates general information-literacy skills for using any academic library. The characters never use library jargon, and each strategy is explained with an analogy (e.g., relating subject-heading vocabulary to ingredients in a recipe). Other concepts are hinted at: inter-library loan (ILL) is briefly mentioned with the caveat, "if you have the time, we can get you just about anything," but the librarian does not say how to request ILL materials.

Since the videotape is brief and pitched to a general audience of college students, it omits many of the complex information-literacy skills advocated by the ACRL, including evaluating the trustworthiness of a source and assessing Internet content. A help screen displays "Finding Material on the Web," suggesting that the video's producers may have originally considered including this topic. Over all, *Navigating the Sea of Information* is a good example of videotape-based remote-user BI because it addresses the subject from a student point of view, demonstrating typical "poor" practices and then good information literacy in a simple and concise manner.

Videotape is not the only means of delivering video content. Indeed, Wielhorski predicted in 1994 that video would soon stream into patrons' living rooms: "Emerging technologies for delivering instruction, such as on-demand video, offer interesting possibilities for the future. Once commercial ventures provide this service to users' homes, libraries may be able to use this delivery mechanism for instructional purposes" (Wierlhorski, 1994, p. 14). Later, Jan Zastrow (1997) illustrated the potential of Web video, listing as components

> online text-based user guides [and] video demonstrations of how to search an online library catalog or CD-ROM database using Web-based streaming video technology like RealVideo (although frankly, mailing videocassettes to learning sites is still more practical until Web video is perfected). (1997, Support Services, 2. Bibliographic instruction)

Zastrow's last admission is telling: although the technology existed in 1997 to offer Internet video, the quality of Web video was poor. Add the low number of U.S. households then connected to the Internet, as well as the low bandwidth available (56K dial-up access was cutting-edge), and it is easy to see why mailing videocassettes was still an option. Today, BI librarians continue to face similar problems with Web video: high-quality Internet video exists today, but it is hampered by the dearth of still-expensive high-speed Internet connections. However, as bandwidth continues to expand and drop in price, a sufficient percentage of the online-user population will eventually have high-speed Internet connections.

One way around the problem of delivering Internet video is to "can" the BI video, not on videotape, but on a CD-ROM. Many institutions have created hybrid programs with stand-alone electronic tutorials incorporating CD-video elements, such as that at Michigan State University:

> Every student will be given a CD-ROM called MSU Wired. MSU Wired offers how-to text and video advising students to take seven steps to computing awareness for "Week Zero." A video, *Tales from the Stacks*, uses student presenters and fast-paced graphics to explain, for instance, the difference between a scholarly journal and a popular magazine. But convincing students to look beyond the public Web is a huge uphill battle, running counter to some of their previous experiences in school and out. (Matthews & Wiggans, 2001, p. 35)

The CD-based program at MSU is a good bridge to another common form of remote-user BI, the stand-alone Web tutorial.

Stand-Alone Web Tutorials

Stand-alone Web tutorials are a good compromise between students' desire to use BI for specific class-related tasks and librarians' desire to instill information-literacy skills. Most online information-literacy tutorials emphasize ease of use:

> the Web is the environment of choice for library instruction support. Instruction delivered as a Web page can be disseminated widely, updated easily, and used asynchronously. Moreover, a student can negotiate the site, when it is developed carefully, without support from a nearby librarian. (Evans, 2000, p. 41; for more on this topic, see Cox & Pratt, 2002)

Two exemplary models of stand-alone BI tutorials are those at Bowling Green State University and at Colorado State University.

The library tutorial created by Bowling Green State University assumes that students will utilize it a bit at a time, dipping in to learn specific portions of the library's information-seeking apparatus. The tutorial exists as a series of interconnected Web pages which need not be navigated in a linear fashion:

> The Bowling Green State University (BGSU) tutorial, FALCON, . . . models a standard library instructional session on the use of the library's Web-based catalog. . . . It is interactive, self-contained and focuses on a single resource. . . . The tutorial's self-containment, achieved with a complex system of files and without a live catalog connection, enables users to learn how to search the catalog individually at their own

> pace, at a time or place of their own choosing, and without the necessity of venturing into cyberspace (and possibly getting lost). (Dennis & Broughton, 2000, p. 31)

The BGSU tutorial is not linked directly to the OPAC, a measure designed to curb users' tendency to "bail out" once they feel they have learned enough to accomplish immediate short-term tasks. This is a good example of computer-assisted instruction (CAI), which mimics the questions and feedback users might receive from a live librarian in a face-to-face BI session. The tutorial puts questions to, suggests strategies for, and monitors the progress of the user.

Poorly designed stand-alone BI tutorials can have the feel of *Choose Your Own Adventure* books, where the "choices" are binary decisions—if this can be found in an encyclopedia, turn to page 25; if not, turn to page 38. Despite these possible flaws, CAI gives point-of-need service to remote users, who often visit the library Web site when live help is unavailable. Further, advocates of stand-alone BI tutorials point to several advantages over traditional face-to-face BI:

> Studies have found CAI to be more effective in teaching undergraduates specific skills for accessing library materials. While classroom instruction may transfer information to a number of students at the same time and provides some amount of personal contact, it does not allow for much variation in student ability or learning style, nor does it have a high motivation factor. Computer-assisted instruction, on the other hand, offers high flexibility in the amount of information conveyed and can address differences in student ability and learning style. . . . CAI allows students flexibility to complete the program at a convenient time and at their own pace[,] and students immediately receive feedback about their performance. (Holman, 2000, p. 54)

These perceived advantages are borne out by recent comparative studies, as well (e.g., Getty, Burd, Burns, & Piele, 2000; Holman, 2000; Tibbo, 1999).

One of the best-documented online BI programs is at Colorado State University (CSU), whose tutorial is entitled "How to Do Library Research." Students learn all of the skills that the ACRL suggests in its standards. The CSU librarians pared down their in-person BI class to its essentials; however, the resulting Web pages are still daunting. This accords with the observation that one problem with placing tutorials online "is the length of the instructional guide. Users seem to prefer brevity, and a useful rule of thumb is to limit electronic versions of help sheets intended to be read online to no more than three screens" (Wielhorski, 1994, p. 13). Naomi Lederer (2000) explains that CSU's tutorial "is the heart of undergraduate library instruction . . . with over 100 individual pages that link to one another, link to other sites on the library's Web pages, and link to pages outside of the university" (p. 131). The CSU designers settled on a simulacrum of the physical library as their metaphor for the tutorial:

> Orientation to the section is a "virtual" tour with maps (floor plans and images of service points. . . . The basic overview of the research strategy process is spelled out. . . . There is help for understanding how to interpret Library of Congress (LC) call numbers. . . . [Another section describes] the differences between types of periodicals to help students determine whether the articles they are using are from scholarly (academic) journals or some other type. . . . The use of printed abstracts is covered. Critical thinking about books and articles is highlighted as a basic part of doing research. And, most important in this electronic age, evaluating Web sites is included. (Lederer, 2000, p. 131)

The tutorial differentiates between essential and advanced skills in a way that in-person BI sessions sometimes do not. This is due to the perceived just-in-time-learning demands of remote users. Lederer suggests that "together, the 'How to Do Library Research' pages present a comprehensive introduction to library research, and are always available for timely integration into composition classroom exercises" (p. 138).

Jerilyn Veldof and Karen Beavers (2001) are critical of stand-alone tutorials because online patrons seldom approach information needs like librarians do: "The primary reason why a student would use [stand-alone BI tutorials] is to learn how to use the library—a purpose . . . that students do not normally have" (p. 15). Debbie Orr, Margaret Appleton, and Margie Wallin (2001) note similar findings:

> It has become clear that the "one-off" demonstration-style information skills classes delivered out of curriculum context do not necessarily coincide with the students' need for information, are sometimes not valued by the students, and do not necessarily prepare them for the challenges of research, problem solving, and continuous learning. (p. 457)

Veldof and Beavers argue that "unless incorporated into a course curriculum, grading, and instructor expectations, the majority [of] student testers made it clear that they would not likely use the tutorial" (p. 15).

Course-Integrated Modules

The drawbacks of stand-alone online tutorials are avoided in course-integrated information-literacy modules: librarians teach asynchronously to students who have immediate assignment-based needs. At Pace University, for example, the librarians use Blackboard, the same online-course management system as the rest of the campus. This software package (among many) allows faculty to organize, publish, and lead online classes without needing extensive technical computing skills. The Pace librarians

> decided that, instead of sending the students to separate library Web pages, we would integrate library instruction into the context of the overall course delivery system. Our goal here was twofold: first, that the students would already be familiar with the course interface and would not need additional instruction on how to use a separate tutorial; and second, we hoped that library instruction integrated into the course itself would be taken as seriously as the other course units. (Getty et al., 2000, p. 354)

Course-integrated BI is often customized for specific courses, based on librarian-instructor consultation. Linda Roccos addresses the labor involved: librarians

> can provide distance learning courses of their own, which can be linked to other college courses. It may take slightly more time initially than preparing individual library instruction classes, but the potential for usage is much greater. Each traditional class may take two to three hours preparation for a one-hour session and may reach 20-30 students. The online course may take many more hours, but it can reach potentially far more students and over a longer time span. (2001, Distance Library Courses section, ¶ 1)

Instead of generic information-literacy skills, course-integrated BI focuses on skills needed by students to accomplish specific assignments. For example, in a history-class module, students might be introduced to several, but not all, of the skills in the ACRL standards: locating and consulting reference material useful to their assignment, using primary sources both in the library and online, working with special collections, reading citations and call numbers, and finding reference assistance (University of California, Berkeley, 2002). These modules are interactive and ideally contain course-specific materials provided by instructors in consultation with librarians. The BI points students toward resources and techniques that help them to fulfill both the information-literacy objectives and the course assignment.

Some critics argue against teaching to classroom assignments for fear that students will not transfer skills to subsequent information seeking. Recent survey instruments (Cox, 2002; Harley, Dreger, & Knobloch, 2001; Holman, 2000) demonstrate that course-specific BI does not have a "one time only" effect. Indeed, students whose courses emphasized library skills as part of the curriculum tend to retain such skills better and longer than their counterparts whose courses did not.

Continuing Challenges

Common to all three models of online-patron bibliographic instruction is a concern to make information literacy relevant to patrons:

> Academic librarians might find it helpful to remember that how they deliver information services is just as important, on many levels, as what information is delivered; they can offer more than just information services; [and] the library can be a context for knowledge integration as well as a repository of knowledge. (Harley et al., 2001, p. 29)

Despite the progress of models such as those highlighted here, several challenges remain unmet by online BI.

Patrons' information-literacy skills are generally rated as sub-standard even after having attended information-literacy sessions, no matter the medium. New delivery media add complexity to a subject already perceived by students as arcane, as Manuel (2001) relates: "None of these [remote-user BI] students had ever taken a distance education or Web-based course before, and each proved to have underestimated the cognitive demands and difficulties of online learning" (p. 221). Students are often ill-prepared to shift between using a school or public library and an academic library.

The Online Computer Library Center's (OCLC)[1] *White Paper on the Information Habits of College Students: How Academic Librarians Can Influence Students' Web-Based Information Choices* (2002) demonstrates that students' attitudes, preferences, and learning styles are being matched poorly, if at all, by BI sessions in all media:

> For their study assignments, college students access the Web at home, the campus or public library, and in classrooms. Four-out-of-five students use the library for Web access, but only one-in-five prefer that access point. However, over 90% access the . . . library via their home computer, and the majority of students (78%) prefer that form of access. (OCLC, 2002, p. 5)

The OCLC study also indicates that online students would rather come to a physical library when they need assistance:

> If students need help when using the Web for study assignments, they prefer face-to-face interaction to online or even telephone contact. Four-out-of-five students are more likely to seek help in-person, compared to one-in-two who ask online or by telephone. Even though they prefer face-to-face interaction, seven-in-ten students say they would use online help to find exactly the information they need for their study assignments. When asked if they would use online help available from librarians for no charge, sixty-two percent say "definitely." (OCLC, 2002, p. 5)

Remote students still think of the library as a physical place, despite their preference for finding information using "easier" access methods:

> although 99% of respondents use email and 78% prefer to access the Web remotely, most college students do not exhibit a strong preference for electronic copies over paper copies. In fact, only one-third (34%) indicate a marked preference for electronic copies. (OCLC, 2002, p. 6)

Challenges also remain for creating remote-user BI materials. Producing quality programming requires extra training and time sometimes not afforded to librarians. The initial work load seems to be the largest factor holding many back:

> Production of course materials was an incredibly time-consuming activity, requiring about 350-400 hours of the instructors' time over the quarter. Hopes that existing instructional materials from [our own] or other libraries could be adapted for use . . . proved to be largely unfounded, and virtually all instructional materials had to be produced *de novo.* (Manuel, 2001, pp. 223-224)

The amount of labor and the expanded scope of librarian responsibility are cited in nearly every report about remote-user BI:

> Adding Internet technology does not lighten educators' traditional job responsibilities; rather, it seems to increase them. While time spent in guiding individual students and modeling behaviors, as well as in grading student work, was predictable from traditional teaching experiences, the broader support needs of students in an online environment were not correctly anticipated by this instructor. (Manuel, 2001, p. 225).

Helen Tibbo (1999) is optimistic that computer skills will soon cease to be an added obstacle:

> In addition to training clients how to locate, evaluate, and use information resources, many libraries provide basic computer literacy programs. . . . Hopefully the first decade of the twenty-first century will see less of a need for this type of instruction even as computers evolve and become more sophisticated. (pp. 341-342)

However, until this is the case, the technical, intellectual, and conceptual skills which both librarians and patrons bring to online-user BI remain major indicators of eventual success or failure.

The methods in this essay all assume a library-centric ideology, despite the demonstrated disconnection between librarians' perception of the importance of information literacy and students' perception of it:

> Often librarians teach to students (or faculty) as if they were teaching information science; helping users become better and more self-reliant information users does not mean making them into information specialists. . . . Computers, with their rapid response to our keystrokes, may be great research aids, but they can send a wrong message to library users: that library research *is* keyboarding, and that it is quick, clean, and moves in a straight line from the terminal to the term paper. (Sager, 1995, p. 54)

While an abrupt change in librarians' mental model seems unlikely, the library-as-place metaphor seems due for some revision: "As libraries move toward a user-centered focus, their perspective must change: it is not users who are remote from libraries, rather it is libraries that are remote from users" (Wielhorski, 1994, p. 6). A few librarians discount remote learning as a step-sister to "real" instruction:

> Where nothing else is feasible, home-based learning is valuable, but the fact remains that learning is essentially a social activity and so whenever possible, people will want to come together (preferably in small groups) to learn—and no amount of technological wizardry will alter that. (Brophy, 1997, ¶ 3)

Such attitudes will not, alas, decrease the number of remote students who use our libraries.

Conclusion

In 1995, Evan Farber asked "are we, then, preparing the way for ourselves to be replaced?" and answered, "to a large extent, yes, as machines can do better much of the kind of instruction we do now" (p. 33). The literature about remote-patron BI and the current models of good practice suggest that Farber is incorrect, perhaps not in his assertion that BI can be accomplished solely by machines (it can), but in his assumption that this is a desirable outcome.

Students who use academic libraries prefer human dialogue, and seem to learn better when interacting with people. Howard Harris predicted in 1996 that "the introduction and integration of virtual library services may take place continuously over the next fifteen to twenty years. Throughout that period of time, what constitutes a librarian, a virtual library, or a library patron will undergo substantial change" (p. 48). However much the concept of the library, the librarian, and the patron change, information-literacy skills will remain an essential component of students' intellectual toolkit, no matter how their learning takes place.

The field of remote-user BI is a growing one that will occupy an increasingly important place among the services academic libraries provide, especially as higher education expands beyond bricks and mortar. The trailblazers cited in this essay point the way for further study, innovation, and validation of new methods—all of which are needed for BI to remain an effective way for remote students to gain essential information-literacy skills.

Note

[1]OCLC was founded in 1967 as the Ohio Computer Library Consortuim, and was among the first organizations to explore the use of electronic cataloging and library services. In the late 1980s, OCLC expanded beyond Ohio and changed its name to the Online Computer Library Center. OCLC is now the authority in the field of computer-based library services and research. It is "dedicated to the public purposes of furthering access to the world's information and reducing information costs. More than 45,000 libraries in 84 countries and territories around the world use OCLC services to locate, acquire, catalog, lend and preserve library materials" (OCLC, 2004).

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