Introduction: The Importance of Information Literacy

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Information literacy is no longer just a library issue. It is *the* critical campuswide issue for the twenty-first century, of keen importance to all educational stakeholders, including administrators, faculty, librarians, media and information technologists, assessment coordinators, faculty development directors, service learning specialists, student affairs personnel, and career development professionals. Broadly defined, information literacy is a set of abilities that allow a person to recognize when information is needed and to effectively and efficiently act on that need.

Why is information literacy important? The increasingly complex world in which we live now contains an abundance of information choices—print, electronic, image, spatial, sound, visual, and numeric. The issue is no longer one of not having enough information; it is just the opposite—too much information, in various formats and not all of equal value. In a time of more than 17 million Internet sites, three billion Web pages, and more than a million items in a typical medium-sized academic library, the ability to act confidently (and not be paralyzed by information overload) is critical to academic success and personal self-directed learning.

Lorie Roth aptly describes the current information environment and the pitfalls facing college and university students: "With the explosion of information generated and stored, the unregulated sprawl of the Internet, the shift from a print- to an image-based culture, the

development of sound and video archives, and the ease of seemingly infinite reproduction of words and pictures through electronic media, the pitfalls for college students have multiplied geometrically. There is so much information, so much of it of doubtful quality, so accessible through so many different platforms" (Roth, 1999, p. 42).

Individuals who are knowledgeable about finding, evaluating, analyzing, integrating, managing, and conveying information to others efficiently and effectively are held in high esteem. These are the students, workers, and citizens who are most successful at solving problems, providing solutions, and producing new ideas and directions for the future. They are lifelong learners.

Today's students, then, can benefit throughout their lives from learning a process for becoming information literate—that is, acquiring the skills required to intelligently and systematically find, interpret, select, evaluate, organize, and use information for a specific purpose.

Within the college or university environment, it is also important for students to be able to build upon the foundation of information literacy knowledge by successfully transferring this learning from course to course, understanding the critical and empowering role of information in a free and democratic society, and demonstrating ethical behavior and academic integrity as consumers, as well as producers, of information.

Ernest Boyer recognized that facilitating that empowering role of information is an important goal of education. In 1994, he stated that "information is, in fact, our most precious resource. In such a world, education should empower everyone, not the few. But for information to become *knowledge*, and ultimately, one hopes, *wisdom*, it must be organized. And, in this new climate, the *public* interest challenge, beyond access and equity is, I believe, sorting and selection. The challenge of educators is to help students make sense of a world described by some as 'information overload' " (Boyer, 1997, p. 140).

It was also noted several years later by the Boyer Commission on Educating Undergraduates in the Research University that

"undergraduate education should be designed as a continuum that prepares students for continued learning and professional work through developing their talents to formulate questions and seek answers" (Boyer Commission on Educating Undergraduates in the Research University, 2001, p. 18). Information literacy is a key component for doing so.

What Is Information Literacy?

It is not uncommon to think of information literacy as the fusion or integration of library literacy, computer literacy, media literacy, technological literacy, critical thinking, ethics, and communication skills (Work Group on Information Competence, 1995).

The Information Competency Standards for Higher Education, produced by the Association of College and Research Libraries, notes that information literacy forms the basis for lifelong learning, is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content, become self-directed learners, and assume greater control over their own learning. An information-literate individual is able to

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into his or her knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

(http://www.ala.org/Content/NavigationMenu/ACRL/Standards_and_Guidelines/Information_Literacy_Competency_Standards_for_Higher_Education.htm).

Evolution of Information Literacy

Is information literacy a new concept? In actuality, we can trace the origins of information literacy back to hundreds of years ago. Some accounts state that it originated with early library instruction courses in the nineteenth century (Grassian and Kaplowitz, 2001, p. 14), while others trace it to the beginning of the twentieth century (Evans, 1914). In 1956, Patricia Knapp posited the notion that library instruction should be a central component of a student's college experiences, stating that "Competence in library use, like competence in reading, is clearly not a skill to be acquired once and for all at any one given level in any one given course. It is, rather, a complex of knowledge, skills, and attitudes which must be developed over a period of time through repeated and varied experiences in the use of library resources" (Knapp, 1956, p. 224).

Faculty-librarian partnerships have been a salient component of such information literacy programs for the past several decades. In the 1970s, such collaborations included partnerships to develop competence in the use of the library for research purposes (Farber, 1974); partnerships to integrate library instruction into discipline courses (Dittmar, 1977); and partnerships to develop a yearlong integrated group of core courses for first-year students, including a library research course, to assist in the retention of underrepresented students (Rockman, 1978).

We can also look to 1989, the year of the American Library Association's Presidential Committee on Information Literacy, chaired by Patricia Senn Breivik, as a turning point in the visibility and advancement of information literacy just at a time when online information resources were becoming prevalent on most college and university campuses. The committee issued a final report that

identified information literacy "as a survival skill in the information age," noting that "information literate people are those who have learned how to learn. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand." In addition, the report asserted that "people who are information literate—who know how to acquire knowledge and use it—are America's most valuable resource" (American Library Association, Presidential Committee on Information Literacy, 1989).

The following year, 1990, Breivik founded the National Forum on Information Literacy, a coalition of over ninety business, education, technology, media, and other organizations, to raise awareness of and share new developments in information literacy among K–12 and higher education, government offices, the business and workforce communities, and international constituencies. The forum meets several times a year in Washington, D.C., and pursues activities that examine the role of information in society. The forum supports, initiates, and monitors information literacy projects both in the United States and abroad; actively encourages the creation and adoption of information literacy guidelines; and works with teacher education programs to ensure that those new to the profession are able to incorporate information literacy into their teaching. All of these activities are committed to empowering individuals with the skills they need to function successfully in the Information Age (National Forum on Information Literacy, n.d.).

Several years later, in 1995, the California State University (CSU), the largest system of higher education in North America, with twenty-three campuses, over 400,000 students, and 44,000 faculty and staff members, created its Information Competence Initiative (http://www.calstate.edu/LS/infocomp.shtml) under the leadership of Susan Curzon of California State University, Northridge. The initiative was designed to help faculty and students think differently about how information is located, managed, evaluated, and used. Efforts resulted in the development of an information

literacy presence on each of the twenty-three CSU campuses, the development of course-integrated and Web-based interactive instructional tutorials on information literacy. and summer faculty development workshops to help professors rethink and revise their assignment and curricular offerings. In addition, the initiative facilitated outreach efforts to high schools and community colleges to assist students in their transition to the university and help them succeed academically in their classes, support for a campus online information competence graduation requirement, the creation of various information literacy courses at the undergraduate and graduate levels, the integration of information competence principles into the learning outcomes of academic disciplines, and the assessment of student information competence skills and abilities.

In 2000, the Association of College and Research Libraries issued a landmark document, *Information Literacy Competency Standards for Higher Education*, which included performance indicators and learning outcomes that could be used to assess student progress (Association of College and Research Libraries, 2000). This document has had widespread influence on colleges and universities across the nation, as well as internationally, with translations into Spanish and Greek. A year after its publication, it was endorsed by the American Association for Higher Education.

Information literacy is not a concept limited to the United States. The International Federation of Library Associations and Institutions has an organizational section devoted to information literacy, which brings together librarians from around the world. The topic is of keen interest to educators in Canada, Australia, New Zealand, the United Kingdom, Europe, Scandinavia, Latin America, Mexico, Asia, and Africa (Rader, 1996; Bruce, Candy, and Klaus, 2000). In 2002, the First International Conference on Information Technology and Information Literacy was held, further increasing the visibility of information literacy in higher education around the world (http://www.iteu.gla.ac.uk/elit/itilit2002/index.html).

Information Literacy, Computer Literacy, and Information Technology

Computer ownership does not guarantee information literacy; students can use information technology to manipulate data and create documents without demonstrating information literacy skills. One cannot discount the enormous impact that technology has had in transforming the educational landscape in the past several decades and in making information easier to access, but technology alone does not make one information literate.

Shapiro and Hughes (1996) recognize and point out the differences between information literacy and computer use, noting, "Information and computer literacy, in the conventional sense, are functionally valuable technical skills. But information literacy should in fact be conceived more broadly as a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself, its technical infrastructure, and its social, cultural and even philosophical context and impact—as essential to the mental framework of the educated information-age citizen as the trivium of basic liberal arts (grammar, logic and rhetoric) was to the educated person in medieval society."

The National Research Council also discussed information literacy and information technology in the 1999 document *Being Fluent with Information Technology*. The report states:

> Information literacy focuses on content and communication: it encompasses authoring, information finding and organization, research, and information analysis, assessment, and evaluation. Content can take many forms: text, images, video, computer simulations, and multimedia interactive works. Content can also serve many purposes: news, art, entertainment, education, research and

> scholarship, advertising, politics, commerce, and documents and records that structure activities of everyday business and personal life. Information literacy subsumes but goes far beyond the traditional textual literacy that has been considered part of a basic education (the ability to read, write, and critically analyze various forms of primarily textual literary works or personal and business documents). By contrast, FITness focuses on a set of intellectual capabilities, conceptual knowledge, and contemporary skills associated with information technology. . . . Both information literacy and FITness are essential for individuals to use information technology effectively. [National Research Council, 1999, pp. 48–50]

Several prominent individuals from the worlds of finance and commerce have also recognized the value of information literacy. Anthony Comper, president of the Bank of Montreal, told the 1999 graduating class at the University of Toronto that information literacy is essential to future success: "Whatever else you bring to the 21st century workplace, however great your technical skills and however attractive your attitude and however deep your commitment to excellence, the bottom line is that to be successful, you need to acquire a high level of information literacy. What we need in the knowledge industries are people who know how to absorb and analyze and integrate and create and effectively convey information—and who know how to use information to bring real value to everything they undertake." ("Information Literacy Key to Success . . . ," 1999).

Taizo Nishimura, former president, now retired, of the Toshiba Corporation adds, "Information literacy is the ability to solve problems, taking advantage of information technology and networks. Information literacy is not a new concept, rather a traditional one in terms of problem solving" (Nishimura, 1999).

Terry Crane, former vice president for education products at America Online, states, "Young people need a baseline of commu-

nication, analytical, and technical skills. We are no longer teaching about technology, but about information literacy—which is a process of turning information into meaning, understanding, and new ideas. Students need the thinking, reasoning, and civic abilities that enable them to succeed in—and ultimately lead—a contemporary democratic economy, workforce, and society" (Sanford, 2000).

There is also evidence that as various sectors of the corporate world embrace the principles of information literacy, information literacy concepts are being recognized as "new economy" skills (O'Sullivan, 2002). The move to a knowledge-based economy has revealed that many workers are poorly equipped to effectively use and manage information on a daily basis, lacking the ability to locate relevant information, critically analyze and assess its value and authority, and present it within legal and ethical parameters. Such situations can negatively affect the ability of businesses to compete and grow in a global economy, and of governments to prosper with increased revenues from businesses and corporations. It is for this reason that programs such as The Information Literacy Guidelines Business Plan, funded by the State of California's Technology, Trade, and Commerce Agency, were developed (Great Valley Center, 2002). The plan is intended to help all of the educational, community, and economic development organizations in the San Joaquin Valley of California develop a base of information-literate "knowledge workers," thus attracting employers to stimulate the economy.

Information Literacy and Higher Education

Why is information literacy important to higher education? Studies have shown that students are entering college and university environments without fundamental research and information competence skills (for example, the ability to formulate a research question, then efficiently and effectively find, evaluate, synthesize, and ethically use information pertaining to that question).

Students may have picked up the skills to send electronic mail, chat, and download music, but many have not learned how to effectively locate information; evaluate, synthesize, and integrate ideas; use information in original work or give proper credit for information used. Moreover, faculty want to see an improvement in the quality of student work, and students want to become more confident in their ability to complete assignments, carry out research projects, and become active, independent learners.

In addition, information literacy is required by accreditation organizations, expected by employers in the workplace for organizational success, and desired by society, which needs an informed citizenry that is capable of making well-reasoned and well-founded decisions.

The Western Association of Schools and Colleges, in its *Handbook of Accreditation* (2001, Standard 2, p. 20), notes that "baccalaureate programs engage students in an integrated course of study of sufficient breadth and depth to prepare them for work, citizenship, and a fulfilling life. These programs also ensure the development of core learning abilities and competencies including, but not limited to, college-level written and oral communication; college-level quantitative skills; information literacy; and the habit of critical analysis of data and argument."

The Middle States Commission on Higher Education has recognized the importance of information literacy by including it in "Characteristics of Excellence in Higher Education: Eligibility Requirements and Standards for Accreditation" (2002). Standard 11, "Educational Offerings," states, "Information literacy is an intellectual framework for identifying, finding, understanding, evaluating, and using information. Higher education has available a variety of new information resources and an evolving array of information technology and access structures, including computers, software applications, and databases, that supplement its print-based knowledge resources and present new complexities for teachers and learners. How to develop and utilize knowledge and skills and discipline-

specific investigative methods to identify, access, retrieve, and apply relevant content is a challenge for the future of learning and teaching in our universities, colleges, and schools." Standard 12, "General Education" asserts, "The institution's curricula are designed so that students acquire and demonstrate college-level proficiency in general education and essential skills, including oral and written communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy."

The New England Association of Schools and Colleges now recognizes information literacy as a student learning outcome in its accreditation standards. Standard 7.4 notes, "Professionally qualified and numerically adequate staff administer the institution's library, information resources, and services. The institution includes appropriate orientation and training for use of these resources, as well as instruction in basic information literacy" (New England Association of Schools and Colleges, 2001, p. 19).

The National Council for the Accreditation of Teacher Education, in its "Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education" (2001, p. 19), indicates, "teacher education candidates should be able to appropriately and effectively integrate technology and information literacy in instruction to support student learning."

The American Psychological Association's Board of Educational Affairs recognizes information literacy as a specific learning objective for undergraduate students (Murray, 2002) and notes in its learning goals, "students will demonstrate information competence and the ability to use computers and other technology for many purposes," including the demonstration of competent, ethical, and responsible use of information in academic work (American Psychological Association, 2000, p. 14).

The American Chemical Society (2002) states, "a student who intends to become a practicing chemist, or who will use chemistry in allied fields of science and medicine, should know how to use the chemical literature effectively and efficiently." Instruction can be

achieved in several ways—for example, through a course dedicated to the subject of chemical information retrieval, which can be enhanced with focused library assignments; through integrating this skill into other chemistry courses, such as laboratory courses; and through discussions held in seminar courses.

"Standards for the English Language Arts," formulated by the National Council of Teachers of English and the International Reading Association (2001), states, "Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge."

Just as accreditation bodies have recognized the value of information literacy, so have employers who have a vested interested in the competencies of college and university graduates. In *Information Literacy and Workplace Performance*, Tom Goad (2002) notes, "Information literacy—the ability to recognize the need for information, to locate, access, select, and apply it—was once an academic matter. Nowadays, the critical array of skills concerns anyone working in a knowledge-based environment."

This theme had resonated over a decade earlier in the list of critical skills developed by the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) (U.S Department of Labor, 1991). The commission challenged the American educational system, from preschools to postgraduate institutions, to focus on the skills and competencies that graduates need in order to be a successful part of a highly skilled workforce in a high-performance, information- and service-based economy.

The SCANS report, intended to help educators restructure curriculum and instruction, was intentionally titled "What Work

Requires of Schools." It specifically outlined the skills needed by competent individuals in a high-performance workplace: literacy; use of technology; critical thinking; problem solving; decision making; knowing how to learn; reasoning; and the ability to manage resources, work productively with others, acquire and evaluate information effectively, organize and maintain information, interpret and communicate information, and work with a variety of technologies.

Why should colleges and universities pay attention to the SCANS report and specifically to information skills and competencies? Although these competencies can be learned, they "must be taught and practiced, not merely absorbed as a result of unplanned academic experience" (Wingspread Group on Higher Education, 1993, p. 14). Several recent higher education reports and studies indicate that additional attention must be paid to information literacy skills, because today's college and university students still need assistance in developing and strengthening these important skills.

The May–June 2001 issue of *Change* magazine, published by the American Association for Higher Education, includes a study conducted by the National Center for Postsecondary Improvement entitled, "A Report to Stakeholders on the Conditions and Effectiveness of Postsecondary Education." This report notes that "less than half (48% of those students surveyed), feel confident in their ability to find information—essentially, in the skills needed to research a topic" (National Center for Postsecondary Improvement, 2001, p. 29).

These findings are supported by the Online Computer Library Center (2002) in the "OCLC White Paper on the Information Habits of College Students." This study reports that "more than 31% of all respondents use Internet search engines to find answers to their questions. However, people who use Internet search engines express frustration because they estimate that half of their searches are unsuccessful."

Leigh Watson Healy, vice president and chief analyst at Outsell, Inc., reported at the EDUCAUSE 2002 conference that two of the

top information problems are "having enough time and knowing what's available" (Healy, 2002).

It is clear that the digital environment influences how students search for information and poses complex challenges for them in becoming information literate. A particular challenge for today's students is understanding the relationships between types of information resources, how to evaluate the appropriateness and reliability of these resources, and how to make intelligent choices among them.

The Pew Internet and American Life Project (Lenhart, Simon, and Graziano, 2001) notes, "for many teens, the Internet has replaced the library as the primary tool for doing research." Another Pew study elaborated on this concept, reporting that "many students are likely to use information found on search engines and various web sites as research material. . . . A great challenge for today's colleges is how to teach students search techniques that will get them to the information they want, and how to evaluate it" (Jones, 2002).

California State University's information literacy assessment studies, conducted in 2000 and 2001, provide rich data about student search behavior patterns, based on audiotaped and videotaped focus group conversations, ethnographic field notes, participant observations, keystroke patterns recorded by screen capture software, questionnaires, open-ended essays, and artifacts used by students (for example, disks, notebooks). The studies also used anthropological and sociological methodologies. Evidence indicates that students are entering the California State University without core information literacy skills and abilities such as critical thinking, decision making, and self-directed learning. This multidimensional qualitative research study also finds that students tend to exhibit an overreliance on Web-based information resources and sources found through search engines, as opposed to other sources such as information found in library catalogues and subscription databases. In addition, students often search using keywords rather than controlled vocabulary terms. A keyword search retrieves information from anywhere in the record; a controlled vocabulary search uses subject terms (often from a the-

saurus), so the retrieval is likely to be more relevant. Thus, they often miss important sources of information. They often do not make distinctions between scholarly and popular works, and they tend to embrace the World Wide Web over the traditional library because of convenience, flexibility, and access to what is perceived to be large amounts of current information. As a result, students may run the risk of accepting whatever information is displayed from a search engine, placing greater value on current sources of information than on the more in-depth discussions that are often found in books (California State University Information Competence Assessment, 2002).

These experiences are consistent with those reported in other studies, which indicate that students "are leaving [the] university without the necessary transferable skills to cope in an information based society" (Ray and Day, 1998); do not display "a high level of information competence" and "at best . . . possess sporadic knowledge" (Caravello, Borah, Herschman, and Mitchell, 2001); and "think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test" (Maughan, 2002).

Yet there are some bright moments that demonstrate how students can improve their grades when engaged with information competence principles through participation in cohesive, library-sponsored hands-on workshops and courses.

The institutional research unit of Glendale Community College (http://www.glendale.edu/library/icimproves.htm), a two-year institution in Southern California, recently reported a positive relationship between student participation in a semester-long information competency course and grades in other courses. The results of the longitudinal study indicate that information competency instruction has had a significant impact on student success (Moore, Brewster, Dorroh, and Moreau, 2002).

Such formal information literacy instruction by librarians or faculty members is important to include in the curriculum for several reasons. Content mastered by graduation is soon outdated or forgotten by students. Learning must continue beyond the time

spent in earning a degree. To develop competence in an area of inquiry, students must have a deep foundation of factual knowledge; understand facts and ideas in the context of a conceptual framework; and organize knowledge in ways that facilitate retrieval and application (Donovan, Bransford, and Pellegrino, 1999, p. 12).

It is clear from the studies that students are not picking up information literacy skills on their own. Without a concerted instructional effort that gives students multiple opportunities to practice their information literacy skills, such skills will not be effectively developed. Just as an athlete needs sustained conditioning and practice before a big game and a musician needs to rehearse before a major performance, a student needs multiple experiences to practice and hone information literacy skills before graduating and pursuing advanced study or entering the workplace.

Information Literacy Curriculum

So, what does an information literacy curriculum look like? It is campuswide; problem-based, inquiry-based, and resource-based (that is, it uses a variety of information resources); makes effective use of instructional pedagogies and technologies; is learner-centered; and is integrated and articulated with a discipline's learning outcomes. It enhances and expands student learning through a coherent, systematic approach that facilitates the transfer of learning across the curriculum.

The Boyer Commission on Educating Undergraduates in the Research University called for a first-year experience to provide stimulation for "intellectual growth and a firm grounding in inquiry-based learning" (2001, p. 12). Information literacy fits well with this educational goal.

Ideally, a student is introduced to information literacy at the beginning of his or her freshman year in a required course such as "Introduction to University Life," "Expository Writing and Research," or "Technology and Information." It is even better if the

student learns about information literacy principles in a course, such as "Fundamentals of Information Literacy," that is linked to a freshman learning community, with library assignments aligned with assignments in other courses.

The student continues to encounter information literacy opportunities throughout the curriculum, both vertically (within the major) and horizontally (across the curriculum), in both lower- and upper-division general education, elective, prerequisite, pre-professional, and major courses, culminating in a senior capstone experience in which such information literacy skills can be demonstrated in the classroom, the laboratory, the field, the performing arts center, or elsewhere through creative or research activities.

Including information literacy in general education courses is a key strategy for closing the gap across curricular boundaries, because general education courses form the foundation of a common learning experience for all students. Such courses help students to make intellectual connections between disciplines, solve problems, and think deeply, independently, and critically outside of their major areas of study. Some institutions have successfully included information literacy experiences as an integrated component of a lower-division general education program (Sonntag and Ohr, 1996; Faust, 2001). Benefits to students in such a model include those reported by a sophomore business major after completing the Fundamentals of Information Literacy class as one of her lower-division general education requirements: "I was lost before I took this class" ("Newsletter of the California State University Libraries," 2002, p. 4).

For transfer and graduate students, information literacy principles can be integrated into transition courses, as well as into core research classes in the discipline.

At Minneapolis Community and Technical College, students seeking the Associate of Arts transfer degree are required to complete a two-unit information literacy course, "Information Literacy and Research Skills," taught by library faculty, which provides foundational information literacy knowledge and skills. After completing the

course, students are better prepared for upper-division work (Eland, 2002). Graduate students can also benefit from gaining information literacy knowledge to help them successfully complete their research and writing requirements and better use their expertise to forge research connections within their academic disciplines.

Well-designed assignments are central to student learning, because they provide opportunities for active engagement with subject content, challenging students to think critically, reflect on their processes for finding and using information, and take the necessary steps to take charge of their own learning.

Library and discipline faculty can work together to create assignments that demonstrate how well students have learned, applied, and communicated information literacy principles (for example, examination of case studies; analysis of open-ended problems; creation of class presentations, poster sessions, written reports, research logs, Web sites, or PowerPoint presentations; development of reflective essays or journal entries; or presentation of examples of how published research can help to provide solutions in clinical settings).

In *Tools for Teaching,* Barbara Gross Davis suggests that assignments for first-year students be divided into sequential steps, with specific due dates and checkpoints for each piece—identifying a topic; stating the paper's title, purpose, and major points; gathering sources; developing an outline; writing the first draft; revising the paper; and submitting the final paper. Such activities help students to manage their time and work through the process of writing a paper. In addition, these steps provide opportunities for instructional intervention and reflect important components of information literacy. Collaborative partnerships between librarians and discipline faculty are essential to successfully develop these types of assignments.

Sustained partnerships between librarians and faculty development directors are also important in providing guidance and support to both full-time and part-time faculty members so that they have a consistent and critical understanding of the principles and pedagogy of information literacy.

Leora Baron, director of the Academy of the Art of Teaching at Florida International University in Miami, writes, "Learning to find your way through the information maze pays dividends for faculty and students alike. Faculty members quickly discover that becoming information literate has its rewards in increasing their ability to provide students with new and refined tools for academic success, and in expanding their own ability to refine and expand research activities" (Baron, 2001). Leadership provided by faculty development centers (workshops, seminars, and summer institutes on such topics as defining and assessing information literacy, preventing student plagiarism, integrating information literacy principles into course management and learning software packages such as WebCT and Blackboard, and effectively incorporating information literacy tutorials into course requirements) is critical for helping professors understand how to use and evaluate the outcomes of resource-, problem-, or inquiry-based instruction in support of campus information literacy goals.

Outreach Activities

Another important activity in advancing the information literacy agenda is for faculty and librarians to reach out to the elementary and secondary educational communities to ensure that students are introduced to information literacy principles prior to the start of their higher education academic careers. That is the intent of the Intersegmental Committee of the Academic Senates of the California Community Colleges, the California State University, and the University of California (2002). The committee's document, *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*, produced by a faculty task force, notes the following:

- In order to be prepared for college and university courses, students need greater exposure to, and

> instruction in, academic literacy than they receive in English classes alone. This calls for greater coordination of literacy education among subject matter areas within high schools. [p. 3]
>
> - Students' success in college has as much to do with their ability to find information as to recall it. [p. 6]
> - While many entering students are familiar with some technological elements (notably e-mail and Web browsing), few demonstrate the critical ability to evaluate online resources. [p. 6]

Opportunities for university personnel to partner with elementary and secondary schools in the area of information literacy to help strengthen students' skills prior to entering colleges or universities are plentiful and just take time, imagination, resources, and commitment.

For example, the UCLA K–16 Collaborative was established in 1996 to reach out to the educational community surrounding the University of California at Los Angeles. As part of this key initiative, the UCLA College Library established its Information Literacy Instructional Pipeline Partnership project (Mitchell and Brasley, 2001). The project, developed by school and university library practitioners, resulted in a successful in-service development program for classroom teachers on the fundamentals of information literacy, the development of integrative lesson plans, and the creation of class activities and discipline-based curricular modules. All activities were intended to strengthen the information literacy skills of both the secondary students and their teachers.

In 1997, Rutgers University librarians, the chair of the university's education department, and high school teachers worked together in a yearlong partnership program to help students in an urban secondary school setting become more information literate.

The goals were to provide training in technology and information literacy skills through the university library to selected high school teachers, who would incorporate them into the high school curriculum and teach them to students, since students rarely receive intensive training in information literacy from a local school site (Calderhead, 1999, p. 336).

That same year, another collaborative partnership was formed among three campuses of the California State University (Dominguez Hills, Northridge, and San Marcos) and their surrounding local schools. Librarians at these institutions created a forum series for area high school teachers to help them better prepare secondary students to successfully complete the requirements demanded of a university education (http://library.csusm.edu/departments/ilp/ilp_projects/HiSc/ICHS.html). University librarians held sessions with local high school librarians to introduce them to a model information competence program, to share core information competencies that could be incorporated into the local secondary school curriculum, and to provide hands-on training sessions in finding, using, and evaluating electronic resources.

Other examples include librarians from the University of Colorado at Boulder who developed an outreach program to a secondary school in the foothills of the Rocky Mountains to provide active-learning, hands-on information literacy workshops for college-bound high school students (Gresham and Van Tassel, 1999), and personnel from Wayne State University (Nichols, 1999) and the University of Nebraska–Lincoln (Pearson and McNeil, 2002) who worked closely with their area high schools in a similar vein.

Why should university librarians reach out to the local educational communities to integrate information literacy competencies into curriculum and classroom instruction? Recent studies have pointed out that high school students lack information-seeking skills (Neuman, 1993; Nahl and Harada, 1996), while other studies have shown that quality library programs can positively affect student achievement (Hartzell, 2002). Research results from library

impact studies in Alaska, Colorado, Iowa, New Mexico, Oregon, and Pennsylvania show that the school library makes a difference in student performance (Lance, 2002); it is in the best interest of university personnel to partner with neighboring local schools to ensure that students have the requisite information literacy skills, prior to beginning college or university studies, to be successful in their higher education academic and work careers.

Conclusion

This introduction has discussed the importance of integrating information literacy into the higher education curriculum through a campuswide approach, including various partnership models. Through collaborative alliances between library personnel and faculty, technologists, administrators, and other higher education professionals, students can develop a process for personal empowerment by becoming and remaining information literate throughout their lives.

This chapter has also emphasized that information literacy is more than computer literacy or the ability to use technology; instead, it is the ability to find, evaluate, analyze, integrate, communicate, and use information to solve problems, create new ideas, make informed decisions, and turn data into meaning. It is the responsibility of the entire college or university to help our students to become information literate, an essential element for future success.

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