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# Strengthening Connections Between Information Literacy, General Education, and Assessment Efforts

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## ABSTRACT

ACADEMIC LIBRARIANS have a long and rich tradition of collaborating with discipline-based faculty members to advance the mission and goals of the library. Included in this tradition is the area of information literacy, a foundation skill for academic success and a key component of independent, lifelong learning. With the rise of the general education reform movement on many campuses resurfacing in the last decade, libraries have been able to move beyond course-integrated library instruction into a formal planning role for general education programmatic offerings. This article shows the value of 1. strategic alliances, developed over time, to establish information literacy as a foundation for student learning; 2. strong partnerships within a multicampus higher education system to promote and advance information literacy efforts; and 3. assessment as a key component of outcomes-based information literacy activities.

## BACKGROUND

Library instruction within the college and university setting has long been recognized as an important aspect of higher education (Evans, 1914). Over the years, academic librarians have consistently discussed the important role they can play by partnering with discipline-based classroom faculty to integrate library instruction programs into the university curriculum (Breivik and Gee, 1989; Rader, 1975).

This partnership, an evolutionary process of forging strategic alliances to advance library instruction goals, has included such pioneering efforts over the past several decades as:

- Working with first-year students through a two-term humanities course which places emphasis on competence in the use of the library for research purposes (Farber, 1974);
- Funding pilot projects, such as those sponsored by the Council on Library Resources, to enhance library services by integrating library instruction into established courses offered by academic departments (Dittmar, 1977);
- Creating a separate credit-bearing library instruction course (taught by librarians, working closely with various discipline-based faculty members) for first-year students as an integral part of their undergraduate core learning experiences with the goals of integrating coursework and improving retention of underrepresented students (Rockman, 1978);
- Including library skills in a discipline-based English composition course (Ball State, 1979).

The rise of the library instruction movement in the 1980s saw librarians heavily involved in course-integrated library instruction activities. The goal of these activities was to move beyond the traditional lecture model to one of an information-based or resource-centered teaching model (Pastine & Wilson, 1992). As such, academic libraries sought to parallel developments occurring elsewhere in higher education that placed greater emphasis upon integrated learning than on teaching specific library research and retrieval skills. As libraries mounted databases and online public access catalogs (OPACs), the opportunity to educate patrons about the effective use of these electronic systems provided a new means to enhance and integrate library instruction into the campus curriculum as an important tool (Rockman, 1989).

Some progressive voices have also suggested that librarians integrate library skills into the general education curriculum (Pastine, 1995). With the reform of university general education programs in the 1990s coinciding with the rise of technology (Lanham, 1997), reports of general education "gateway" courses linking library instruction and technology training appeared in the library literature (Varner, Schwartz, & George, 1996). Such courses helped students to use electronic information resources (Fenske, 1995), especially as complex choices and multiple database interfaces emerged.

The 1990s were an unprecedented time of change for libraries as it became clear that for students to function in a dynamic information environment they needed information literacy skills and strategies that could be applied to any information need (McCartin, 2001).

The reform movement of the 1990s saw some universities develop first-year experiences and seminars for undergraduates with courses focused on communication and composition skills (reading, writing, and critical thinking) as one method to deliver information literacy instruction (Higgins &

Cedar Face, 1998). Such efforts supported the tenets of the Carnegie Foundation's report, *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*, with its emphasis on inquiry, problem-solving, and linking communication skills to course work in a holistic fashion (Boyer Commission on Educating Undergraduates, 1998).

Other paths included the establishment of a lower-division, general education, course-integrated information literacy program (Sonntag & Ohr, 1996), professional development workshops targeted to discipline-based faculty members to integrate information literacy principles across the curriculum (Rockman, 2000), and a Web-based information literacy assessment tool (Rosen & Castro, 2002).

At the beginning of the twenty-first century, reports of activities such as reaching out to distant learners by including information literacy within the general education program (Wright, 2000), and increased focus on faculty partnerships (Raspa & Ward, 2000) were reported in the literature, bringing a renewed emphasis to these important topics.

All of these efforts recognized that for "on ground" and "online" students to acquire necessary information literacy skills, discipline-based faculty must be collaborative partners in the learning process across the curriculum, courses must be intellectually linked to each other whenever possible, information literacy skills must be reinforced and developed over time, and students must have built-in opportunities for success from freshman to senior levels.

## RESTRUCTURED GENERAL EDUCATION PROGRAMS

With internal and external public pressures for students to graduate with skills commensurate with the academic rigor of a comprehensive program of study, universities in the last decade have sought to restructure their curricular offerings to bring them more in line with current societal needs, to attract and retain students, and to help students progress toward graduation with critical reading, writing, thinking, and speaking well developed. Such restructuring would integrate the cocurriculum with the undergraduate experience; emphasize information literacy as an active learning process; inspire intellectual desire in students; promote the importance of continuous lifelong learning; and document to accreditation agencies, professional associations, legislative bodies, and other entities that undergraduate students are graduating with skills, knowledge, and abilities viewed as valuable assets in the workplace, in graduate school, and in society at large.

The goals of many restructured general education programs reaffirmed learning at the center of the educational enterprise, with a renewed focus on quality and coherence in curricular offerings (Ratcliff, 1997). In addition, as the enabler for continuous learning in a technologically rich and globally diverse society, information literacy has been viewed by some universities as the foundation piece of this restructuring effort. As noted by

Patricia Breivik in a 2000 keynote address to the International Lifelong Learning Conference, "Within today's information society, the most important learning outcome for all students is their being able to function as independent lifelong learners. The essential enabler to reaching that goal is information literacy" (p. 1).

Jacobson and Mark (2000) note that, while some institutions choose to include information literacy as part of the lower-division general education curriculum, others have made it a central component of a first-year experience program. At James Madison University, a competency-based general education curriculum strives to make every student accountable for learning specific objectives, such as formulating and conducting effective search strategies and evaluating information policies in terms of accuracy, authority, bias, and relevance (Cameron & Feind, 2001). In addition, students are required to pass an Information Seeking Skills Test (ISST) before the end of the freshman year.

At California State University, Hayward, a large urban university with a majority of upper-division transfer students, information literacy is part of both the first-year experience and the general education program on the campus. This institution recognizes the value of weaving information literacy into the lower division general education program via a one-unit credit course targeted to all freshmen, "Fundamentals of Information Literacy," and as part of the upper-division information literacy general education experience for junior-level transfer students.

At San Jose State University, another campus in the California State University system, information literacy is targeted to lower-division students through their English composition classes (English 1B) with instruction also occurring in the upper division (Reynolds, 1989, p. 83). In Spring 2002, the library began testing a new model for English 1B (Reynolds, 2002) using an adapted version of the Texas Information Literacy Tutorial (TILT) to increase the effectiveness of the information competence instruction and engage students more fully in the learning process.

### *Support for Changing Curricula*

Support for a changing university curriculum that includes information literacy has also come from a variety of external stakeholders, including the business community. Anthony Comper, president of the Bank of Montreal, told the 1999 graduating class at the University of Toronto that information literacy is essential to success in the next millennium:

whatever else you bring to the 21<sup>st</sup> 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 infor-

mation—and who know how to use information to bring real value to everything they undertake.

Terry Crane, vice president for education products at America Online, writes in the September 2000 issue of *Converge*, “Young people need a baseline of communication, analytical and technical skills. We are no longer teaching about technology, but about information literacy—which is the 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” (Future of Education section, para. 3).

Taizo Nishimuro, president of the Toshiba Corporation adds, “In short, 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” (p. 13).

As various sectors of the business community have embraced the principles of information literacy, there is also evidence that information literacy concepts are being recognized by governments as “new economy” skills (O’Sullivan, 2002, p. 7). Support for this position includes the fact that the move to a knowledge-based economy has revealed that many workers are poorly prepared and equipped to effectively deal with using and managing information on a daily basis, lacking the abilities to locate relevant information, critically analyze and assess its value and authority, and present it within legal and ethical parameters. Goad (2002) adds renewed emphasis to the importance of workplace literacy by noting—in the dustjacket of his book—that “information is the new currency” of the contemporary society.

So, ideally, curricular restructuring helps students at various places in their academic studies by seamlessly weaving information competence horizontally and vertically throughout the curriculum, with ample reinforcement occurring in both lower-division and upper-division courses (whether in major requirements, support courses, general education offerings, or electives). As such, students are able to develop critical analysis and communication skills, recognize and appreciate the variety of information formats available in today’s society, and critically evaluate and ethically use the desired information.

### *Library Approaches*

Libraries have accepted the challenge of advancing the information literacy agenda on their campuses. While some have championed information literacy as the key competency for the twenty-first century (Bundy, 1998), others have recognized that local cultures and climates may affect desired outcomes of such pronouncements. There is no one solution for all. Campuses have chosen to pursue various models, such as separate programs, seminars, and courses for first-year students which include an infor-

mation literacy component; stand-alone credit and/or noncredit information literacy courses open to all students regardless of class standing or major; information literacy courses integrated within, and linked to, a general education program; information literacy instructional enrichment to an existing course commonly taken by all students (such as a core writing or rhetoric class); or capstone experiences in which students can demonstrate independent learning based upon previous experiences which demonstrate and reflect continuous intellectual growth and development as part of a senior project, undergraduate thesis, performance, or internship experience.

Whatever the chosen path, it is essential to collaborate with discipline-based campus faculty leaders to advance information competence goals. Faculty, with responsibility for the curriculum, have strong voices on campus curriculum committees and in academic senates which can lend needed support to the inclusion of information literacy principles into general education offerings, prerequisites, major courses, support courses, and/or electives.

### A MULTICAMPUS APPROACH

Recognizing the importance of contributing to an information literate society, the Council of Library Directors (COLD) of the California State University (CSU), the largest and most diverse system of higher education in the country, serving over 388,000 students, identified information competence as a key component of its 1994 collective strategic plan, *Transforming CSU Libraries for the 21st Century: A Strategic Plan of the CSU Council of Library Directors*. A year after completing the strategic plan, the twenty-three-campus CSU system launched an Information Competence Initiative in 1995, partly as a reaction to the lack of skills of the entering students but also to strengthen the academic success of students at various university campuses (Curzon, 2000). With support from the CSU Commission on Learning Resources and Instructional Technology (CLRIT), charged with developing and recommending policy guidelines to the chancellor to facilitate the effective uses of learning resources and instructional technology throughout the CSU, an Information Competence Work Group was created to recommend basic competence levels, and to recommend processes for assessment of student information competence (Curzon, 1995).

Then and now the work group reflects a broad and diverse membership—librarians (who have faculty status), discipline-based faculty members representing the Statewide Academic Senate, assessment coordinators, and senior-level administrators based on the campuses and in the CSU chancellor's office. Central to the program has been a series of grant opportunities for individual campuses to mount local programs and projects, or for campuses to work together in multicampus partnerships. Such projects have included partnerships with general education faculty to develop academic

orientation courses; the development of Web-based tutorials, electronic workbooks, and other instructional materials to teach principles and fundamentals of information literacy; the creation of summer workshops for discipline-based faculty members to learn more about information competence principles and to help them rethink their syllabi, assignments, and learning outcomes; outreach activities to high schools and community colleges through teacher-librarian collaboration; support on one campus for an online information competence graduation requirement; establishment of first-year experience programs; assessment activities; and the integration of information competence into the learning outcomes of academic departments using the *Information Competency Standards for Higher Education* produced by the Association of College and Research Libraries (ACRL, 2000). Faculty-librarian partnering has been a key objective underlying the work group's activities.

In addition, the CSU system has supported faculty professional development opportunities such as summer fellowships and system-wide conferences to further advance the goals of information competence on the campuses. Successes have been achieved locally, between campuses, and across the system (Clay, Harlan, & Swanson, 2000; Curzon, 2000; Dunn, 2002; Rockman, 2000; Roth, 1999).

In 2002, two of the campuses received national recognition by the Association of College and Research Libraries (ACRL). The Fullerton campus was chosen as a "Best Practices" library, and the ACRL Instruction Section bestowed its "Innovation in Instruction" award to the Fresno campus library for the creative "InfoRadio" project. Both of these campus projects received funding from the CSU Information Competence Initiative.

Exclusive of the grants, several campuses have also developed successful local information literacy activities. These have focused on information literacy programs to assist first-generation college students (Tyckoson, 2000), and the establishment of a foundation one-unit information literacy course as part of the general education program which thematically links core courses together in a yearlong freshmen-learning community (Faust, 2001). At the core of the experience is an integrated rigorous educational experience for all entry-level first-year students with a strong emphasis on composition, communication, critical thinking, and information literacy. As noted by Tsui (2001), "students deserve challenging coursework from the start of their freshmen year and throughout each of the college years, rather than having it received at the end of their undergraduate experience" (p. 20). Information literacy has a clear and strong contribution to make toward meeting this goal.

## ASSESSMENT STRATEGIES

Within the last several years, academic libraries have responded to a changing academic environment by becoming more involved with issues

related to assessment, especially outcomes-based assessment. Ideally, libraries want to be able to show that the role of the library has a strong impact on campus mission and goals by strengthening the quality of a student's educational experience, empowering students with a renewed confidence in learning, contributing to student motivation and educational persistence, and providing a strong foundation for the retention and transferability of learning to any new experience. Much can be learned from the higher education assessment movement as libraries move into this arena (Pausch & Popp, 1997). Although some may view the role of the library difficult to quantify (Hernon & Dugan, 2002, p. 65), its contributions can best be defined and shaped by its connections to institutional goals and desired educational outcomes (Lindauer, 1998).

Such outcomes-based assessment can be conducted independently as a single library unit, or as a central component of a larger campus-based assessment project such as the general education program. Either way, it is important to collect appropriate evidence to show the library's impact on campus by including the development of information literacy skills in course learning objectives in order to guide improvements, make informed decisions about instructional or curricular adjustments, and document change over a period of time. Improving student learning is the goal.

Although some have used quantitative summative assessment techniques (pre- and posttests, questionnaires, surveys, etc.) to collect appropriate evidence, it is equally important for students to be able to demonstrate mastery of information competence principles through other means such as academic portfolios (both print and electronic), performance-based assignments and activities, and senior-level capstone experiences and demonstration projects.

Embedded assessment approaches—examining student work within a course or discipline—provide another technique that can be useful for improving or advancing information competence goals on the campus. Such assessment can reveal if there are areas of student performance needing improvement, if students have retained and effectively applied knowledge and skills from course to course, and if instructional strategies and learning objectives are well aligned.

### *Methods*

Not every campus can follow the examples of Appalachian State University, which cancels classes to conduct formal assessments of student learning (Mitchell & Viles, 2001), or James Madison University, which has formal assessment days to test entering students, sophomores, and juniors (Sundre & Cameron, 1996), building upon the competence-based general education program which includes information-seeking objectives. Based on a decade of experience, the Carrier Library at James Madison University has determined that assessment efforts produce the most useful informa-

tion and results if skills are measured through performance-based demonstrations, if both the instruction and the assessment programs are based on clearly stated objectives, and if students have opportunities to practice skills before they are assessed (Palomba & Banta, 1999, p. 261).

Most campuses tend to follow a less systematic method of assessment, relying on traditional methods of pre- and posttests (Kaplowitz, 1986), undergraduate surveys (Caravello, Borah, Herschman, & Mitchell, 2001 and 2001a; Greer, Weston, & Alm, 1991; Kunkel, Weaver, & Cook, 1996), or longitudinal surveys to measure the skills of students in selected academic departments (Maughan, 2002). Although these measures (e.g., multiple choice, true/false) can be used to establish benchmarks of knowledge or to provide a snapshot of performance at a certain point in a student's academic career, they are not necessarily linked to performance objectives, and do not demonstrate how well a student has actually learned to navigate through a search strategy process to find, evaluate, use, and apply information to meet a specific need. As noted by Maki (2002), "tests may measure how well students have learned information, but they may not demonstrate how well students can solve problems using that information" (p. 10).

In order to reach beyond the campus environment, Ochs (1991) reports a technique not commonly employed—sending surveys to graduates of a library program to determine skills they retained, and to the students' employers to determine how well the employees met job requirements. This "postcampus" assessment technique can be useful for gaining valuable feedback about the usefulness and applicability of course content, instructional strategies, and the campus learning environment. In a similar fashion, Smalley (2000) followed students on the job in selected occupational programs to see how they employed information literacy skills in the "real world" of work and to determine how well their campus-based academic preparation met the needs of actual on-the-job experiences.

The California State University system, under the guidance of its Information Competence Assessment Task Force, embarked on a different method of assessment—a multidimensional, multiyear qualitative and quantitative approach—utilizing the expertise of the Social and Behavioral Research Institute, affiliated with California State University, San Marcos (Dunn, 2002).

Such an approach is complex. As noted by Wright (1997), "judgments about the quality of an individual's performance are increasingly made on the basis of a wide variety of evidence, not merely test scores or other numeric data; and the evidence is evaluated narratively and multi-dimensionally for strengths and weaknesses not merely in command of factual information or concepts, but in terms of skill levels and qualities such as creativity, risk taking, persistence, meticulousness, ethical or social consciousness, empathy, cultural sensitivity, and the like" (p. 573).

The first phase of the CSU assessment study was conducted in spring 2000 and focused on the need to determine a baseline of information com-

petence skills. A random sample of 3309 students from twenty-one campuses was selected for a telephone survey which lasted approximately twenty-five minutes. The centerpiece of the survey was a series of scenario questions that corresponded to the CSU information competencies.

This problem-based approach was designed to engage students in a verbal demonstration and explanation of how they would solve common questions such as informing the local city council about the state of homelessness in the community, or locating and evaluating information after receiving a medical diagnosis requiring surgery. Interviewers were trained to record both breadth (the number of different types of responses) and depth (the number of discrete ideas presented) of responses which were deemed as predictors of information competence. Data from a series of "research process" companion questions about the students' academic status, comfort level with writing papers, self-rated library skills, computer use, and reading comprehension were also collected. After analysis, results showed that freshmen had underperformed the older students due to lack of experience in an academic setting. As students used library resources more and acquired better research-process skills, their responses improved (Dunn, 2002, p. 30).

A year later, in spring 2001, phase two of the CSU information competence assessment project began to shed light on students' information-seeking behaviors, and their abilities to evaluate, analyze, and use information. This aspect of the assessment project utilized qualitative methods to identify what students actually do when they search for information. As described by Dunn (2002), a series of questions framed the research:

- How do students approach and complete information tasks with a set time period using computer and library resources?
- How are strategies and resources students use related to the products of their work?
- What pedagogical issues might emerge from an analysis of observed information-seeking strategies?
- What similarities and differences exist among faculty, librarians, and students in their conceptualization of information-seeking strategies?

In order to provide answers to these questions, a random sample of seventy-six lower- and upper-division students was engaged in open-ended activities on one of four regionally based CSU campuses on four separate Saturdays. The students were joined by twenty librarians and ten discipline-based faculty members. Using ethnographic research techniques, focus groups of students, librarians, and faculty were conducted and both video and audiotaped; special computer screen capture software was installed on library workstations to record students' computer keystrokes as they searched through library online catalogs and Web sites to complete open-ended assignments; ethnographers recorded field notes of selected students as they worked.

Dunn (2002) notes that the data is rich and will take some time to fully analyze. Nonetheless, based on recorded focus groups, observation, field notes, and screen capture keystroke patterns, preliminary results indicate that students tend to exhibit an overreliance on Web-based resources rather than using library catalogs and databases; do not understand the differences between keyword and controlled vocabularies; do not make distinctions between scholarly and popular works; for the most part, do not seem to be systematic and confident searchers; often guess rather than demonstrate discrete research skills; and tend to embrace the virtual library (the Web) over the traditional library for its convenience, flexibility, timeliness, and access to large amounts of up-to-date information. As a result, they run the risk of overvaluing current sources of information over in-depth discussions often found in books. One of the researchers noted that, although technology promises to make information more accessible, it can also limit (or telescope) the information that students may actually receive, especially if students place primary or sole emphasis on the World Wide Web.

These experiences are consistent with other reports in the literature that indicate that students do not display "a high level of information competence" (Caravello et al., 2001, p. 199) and "at best. . . possess sporadic knowledge" (p. 200), and "that students think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test" (Maughan, 2002, p. 71).

Additional research projects using both qualitative and quantitative assessment techniques are needed so that libraries can learn more about the information-seeking behaviors of their students and their patterns for finding, evaluating, and using information. Such results can be used to "make the case" for including information literacy prominently in the general education core curriculum, courses in the major, and support courses to strengthen "connections" between course content with the ultimate goal to facilitate learning, and assist students to develop into confident, self-directed, and independent lifelong learners.

## CONCLUSION

As learning organizations, libraries have been successful over the years in transforming themselves according to the changing nature of teaching, learning, and scholarship. As information choices have become more complex and diverse, libraries have recognized the need to infuse information literacy activities throughout the curriculum, both horizontally and vertically. The general education reform movement on many campuses has provided academic libraries with opportunities and possibilities to weave information literacy into both lower- and upper-division courses, redesign services, reshape librarian roles and responsibilities, and revisit with discipline-based faculty members about course descriptions and student assignments to include information literacy principles.

Utilizing the ACRL *Information Literacy Competency Standards for Higher Education*, many libraries have begun to reach out to faculty colleagues to educate them about information literacy principles, help them to reshape assignments into problem-based learning activities in which students can more prominently demonstrate information literacy skills, and discuss with them the importance of providing a common baseline of information literacy experiences for all students—first-year, lower-division, transfer, upper-division, senior, and graduate students—that is reinforced through major courses, and assessed on a regular and systematic basis. As noted by Lindauer (2002), “probably the most direct contribution the library makes to institutional goals is its role in developing clear student learning objectives for information literacy skills; assessing the progress and achievement of these objectives; and showing how the outcomes are used to improve student learning” (p. 19).

Reconceptualizing the process around achievement-based learning outcomes, with strong foundation skills of information literacy serving as the “connection” between courses, can provide useful information to curriculum planners and educational policy makers. Assessment that is realistic and integral to the educational mission of the institution has the greatest potential to yield meaningful results for gradual improvement in learning with the chief beneficiaries being our students.

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