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21st Century Learning and Information Literacy

BY PATRICIA SENN BREIVIK

The faces of immigrant children who had come through Ellis Island with their parents in search of better futures stare out at me from a set of black and white photographs near my desk. The children, frozen in time, are lined up for blocks, waiting for the doors of a public library to open. Access to information was their pathway to a future of hope and promise. Many years have passed since then, but the need to guide new generations of children toward a promising future is just as much of a challenge today as it was then.

Patricia Senn Breivik is dean of the San José State University Library, where a collaboration with the San José Public Library produced an innovative university/city library that opened in 2003. She is chair of the National Forum on Information Literacy, a member of the American Association for Higher Education board, and past president of the Association of College & Research Libraries.

The new challenge faced by educators today is created by the very environment in which today's children live and learn. It is a world with an overabundance—indeed, a tidal wave—of information that bombards them from the time they turn on the television in the morning to the moment they turn off the computer before they go to sleep.

In between they gather information from messages on cell phones, books, magazines, DVDs, and a multitude of other sources. Young people today send and receive e-mails, engage in chat rooms, and find most of the information they use in their schoolwork on the Internet.

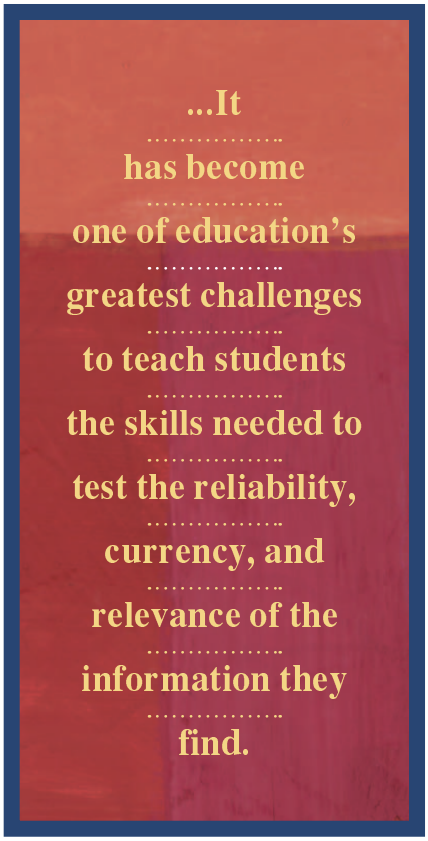
Without a doubt, these young people are far more awash in information than their parents were. However, neither all of this information, nor their ease with the computers and Internet that bring much of it to them, are translating into better-educated and informed college graduates or more competent and efficient workers. What went wrong? Why haven't these technological enthusiasts evolved into an extraordinary American workforce?

The New Literacy

As far back as 1982, futurist John Naisbitt presciently wrote, "We are drowning in information but starved for knowledge" (p. 24). What is growing ever more obvious is that today's undergraduates are generally far less prepared to do research than were students of earlier generations, despite their familiarity with powerful new information-gathering tools.

They use computers to play games and send e-mails, and in the same spirit they are satisfied with whatever "information" a quick search produces. Research shows that students' major attraction to search engines like Google is that they save time. A few minutes on the Internet produces all the information the students believe they need for the next day's assignment.

But how reliable is that information?



According to Peter R. Young, chief of the cataloging distribution service at the Library of Congress, only 17 percent of resources are indexed by any single popular search engine, and 83 percent of the sites that are indexed contain commercial content, compared to the 6 percent that are educational or scientific. Moreover, in a world in which information becomes obsolete so quickly, even that 6 percent may well be outdated.

There are even more dangers besetting the unwary Internet user. Anyone can put anything on the Internet, and many are quite good at packaging their Web sites to appear official and reliable while meaning to mislead.

From 1997-1999, Sandra Kerka (see Resources) has estimated, Internet fraud complaints increased 600 percent. She notes that "the transparency of the interface, the ease of access, and the aesthetic attractions of the Web can lull even normally skeptical people into letting their guard down, and less critical people are even more at risk."

Kerka goes on to identify the new skills needed to evade "the same old scams practiced in a new playing field." As she says,

> The time-tested skills of critical consumer literacy still apply in the Information Age. However, they need to be recast and broadened for the new context. In the virtual world of the Web, multimedia affect the message: images and graphic design can be manipulated to achieve developers' aims, and the associative logic of hypertext may illustrate how ideas connect but they can also lead users to false connections and disguise hidden agendas. (p. 1)

Education has always had the responsibility to help students acquire research skills, a responsibility that grew both harder and more urgent even prior to the widespread use of computers, with the information explosion.

With the seductiveness of the Internet added to the problem, it has become one of education's greatest challenges to teach students the skills needed to test the reliability, currency, and relevance of the information they find.

They must be taught critical thinking skills that will help them determine when and where to find information and then how to identify, access, evaluate, and effectively use that information. In

other words, to be prepared for the 21st century, today's students need to be "information literate."

What Is Information Literacy?

The most frequently used definition of information literacy comes from the first national report on the concept that was released by the American Library Association (ALA) in 1989.

People who are information literate are good at "knowing when they have a need for information, identifying information needed to address a given problem or issue, finding needed information, evaluating the information, organizing the information, [and] using the information effectively to address the problem or issue at hand" (p. 7).

Much has been written about the relationship between information literacy and other literacies such as computer literacy, media literacy, visual literacy, etc. However, today information literacy is best envisioned as a broader concept that encompasses all of the other literacies (see Chart 1).

In this broader perspective, information literacy is a kind of critical thinking ability; often the terms are used interchangeably. But a person who is information literate specifically uses critical thinking to negotiate our information-overloaded existence.

He or she asks, what information do I need to address this problem? Where can I get it? How do I know if this information is reliable? Adequate?

On the other hand, one can practice critical thinking abilities without being information literate. For example, I might think through a problem using my critical thinking skills but accepting whatever prepackaged information is provided, I never question if there is more up-to-date or authoritative information that I should be considering.

Information Literacy in the Work World

Nowhere is the need for information literacy skills greater than in today's work environment, where efforts to "manage" knowledge are increasingly necessary to keep a strategic advantage within a global market. The list of business leaders calling for information literate workers keeps growing.

Peter Drucker, the eminent management scholar, was an early proponent of this crucial literacy. In a 1992 *Wall Street Journal* article, he warned,

> Few executives yet know how to ask: "What information do I need to do my job? When do I need it? In what form? And from whom should I be getting it?" Fewer still ask: "What new tasks can I tackle now that I have all this data? Which old tasks should I abandon? Which tasks should I do differently?"...A "database," no matter how copious, is not information. It is information's ore. For raw material to become information, it must be organized for a task, directed toward specific performance, applied to a decision. Raw material cannot do that itself. (p. 32)

Angela Abell, director of TFPL (formerly known as Task Force Pro Libra, Ltd.), a United Kingdom organization advising businesses on knowledge, information, records, and content management, describes the importance of information literacy skills within a knowledge management organization and the lack of it in most.

> The continuing concern with information overload, and the inability of most people to deal with it, are just one indication of the low level of understanding of information management within organizations....Information literacy skills are needed throughout the organization and need to be part of the daily skill set. It is likely that, just as computer skills were spread throughout the workforce through primary, secondary and higher education, we will eventually see an information literate society. But that is a long term view and organizations need to create the capability now. To achieve this, information literacy skills must be actively and visibly valued by the organization and people must be given the time, space and encouragement to develop them. (p. 2)

The costs of information illiteracy are high. Don Cohen, a Ford Motor Company executive, describes that cost in terms of time: "We typically can only find half of the information we need to do our jobs and spend up to 30 percent of our time looking for the other half," (p. 21). Alex Bennet likewise suggests, in describing the U.S. Department of the Navy's information literacy efforts, that an average worker "spends an estimated 150 hours per year looking for information," (p. 1). The time and productivity loss Cohen and Bennet describe could be greatly reduced by information-literate workers.

Moreover, nowhere is this need greater than in the small and medium sized enterprises that are the backbone of our economy.

According to University of Michigan associate professor Victor Rosenberg, "The need for increased information literacy is magnified for the employees of small businesses because small or medium sized businesses typically do not have the resources to compartmentalize the information gathering and use functions, nor do they have the resources to construct the infrastructure necessary to access and use the information."

Education's Role

Today most of the responsibility for developing information literacy skills is being placed squarely on the shoulders of higher education—both by calls for reform from the business sector and by default, as feeder schools fail to develop them in their students.

Even before widespread use of the Internet, Ernest L. Boyer's 1987 *College: The Undergraduate Experience in America* saw the need for information-literate college graduates by recommending "that every undergraduate student be introduced carefully to the full range of resources for learning on the campus. Students should be given bibliographic instruction and be encouraged to spend at least as much time in the library—using its wide range of resources—as they spend in classes." (p. 165)

But by and large, higher education reform reports since then have failed to explicitly articulate the need for information-literacy skills. For example, in asking higher education to strengthen its "commitment to continuous learning that is a central outcome of college study," the 2002 *Greater Expectations* National Panel Report of the Association of American Colleges and Universities does not specify that students need to develop information literacy, even though students cannot be prepared for continuous learning without it.

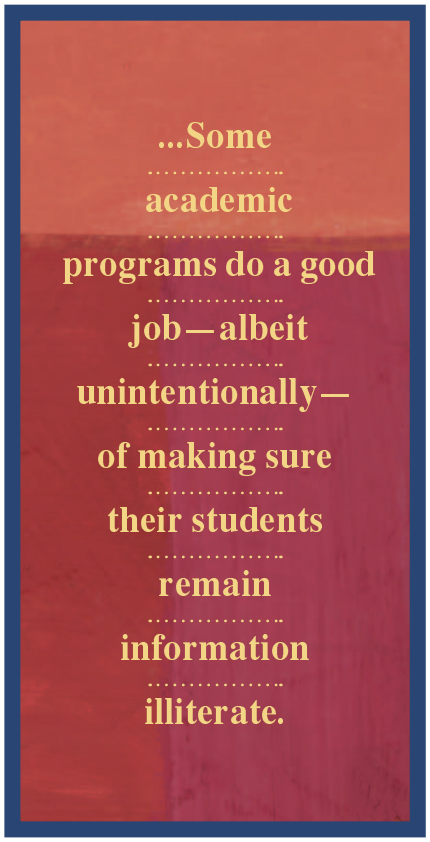
Another more recent example is seen in an adaptation of *The Future of Higher Education: Rhetoric, Reality, and the*

Risks of the Market by the late Frank Newman, Laura Couturier, and Jamie Scurry, published in the *Chronicle of Higher Education* (Oct. 15, 2004 [B6-B7]). In their view, the core intellectual skills that students need to be prepared for the 21st century include "critical thinking, the ability to write clearly, and other skills." Again, the need for information literacy is only implied, with the reference to "critical thinking...and other skills."

Not all higher education leaders have been silent, though. The American Association of School Librarians (AASL) and the Association of College & Research Libraries (ACRL) have developed national standards for information literacy skills at the school and college levels. In 2000, the American Association of Higher Education (AAHE) endorsed the ACRL college standards, one of only two times that AAHE has endorsed a policy position.

As David Breneman, then an AAHE board member and currently dean of the Curry School of Education at the University of Virginia, explained in the AAHE *Bulletin*, "With societal well-being so dependent on how its citizens find, review, and use information, institutions must help students become information literate, in the fullest sense of the term, as set forth so well in the ACRL standards."

Meanwhile, the Middle States Commission on Higher Education (MSCHE) and the Western Association of Schools and Colleges (WASC) have led the regional accrediting agencies in taking significant steps to promote this core skill as an essential undergraduate learning outcome.



Despite the interest of some accreditors and evidence of the need for information literacy skills in the workplace, however, few campuses have systematically addressed this need. Indeed, some academic programs do a good job—albeit unintentionally—of making sure their students remain information illiterate.

For example, recently a group of librarians from the business library of a prestigious university visited me at the new university/city library at San José State University. They were hoping to get ideas about making their library more inviting in order to increase student use. In our discussion, I pointed out that the single most effective way to increase library use is for faculty to create assignments that require thoughtful use of library resources and services.

As it turned out, there was no reason at all for students to use the business library, because the entire business curriculum is based on self-contained case studies. Having a degree from that university may well help its graduates gain good positions, but their value in the workforce will be significantly reduced when no one is there to prepackage information for them as each new project emerges.

It is time for both technology and information-literacy skills to be accepted as a core competency to be acquired systematically through all levels of formal learning. The effort to develop them should begin in the K-12 system. Instead, students emerging from the schools today are often far less prepared to do research than their predecessors.

In many states, for example, budget cuts beginning in the early 1990s have led to major cutbacks in school libraries, despite a growing number of studies documenting that school library media programs correlate with stronger reading skills and overall better academic performance. Moreover, pressures for students to pass writing tests in many schools have caused a significant shift from high school writing assignments that focus on research papers to narrative writing.

The lack of assessment tools to gauge acceptable performance levels is another cause of inadequate attention in elementary and high school to the development of students' research skills. High schools are regularly assessed on students' writing and math test scores, which are increasingly tied to funding. There is no similar motivation to develop students' information literacy skills.

The need for a reliable assessment tool that can be used at varying levels of education can be met with a new Information and Communications Technology (ICT) skills test developed by the Education Testing Services (ETS). In this test, ICT

skills clearly incorporate information literacy skills, as shown in Table 1.

With widespread implementation of this test, we will be able to document what academic librarians and many classroom faculty already know, that most students are not prepared to do college-level research. Armed with the ICT test results, we will be able to evaluate and improve strategies for preparing students for life and work in an information society.

But all of these efforts will not accomplish anything if classroom faculty are not committed to developing the information-literacy skills of their students. Not many faculty seem to have that commitment. Some operate on the comfortable assumption that students acquire these skills before coming to their classes.

Many who know better nevertheless fear losing classroom time if they address this issue. Others don't know how to go about the task, although there is a good deal of information on how to provide more satisfactory information-literacy learning experiences for students that, in turn, will enable them to produce better class papers and projects—for instance in the Middle States Commission on Higher Education's *Developing Research & Communication Skills: Guidelines for Information Literacy in the Curriculum*.

Still other faculty prefer to think of information literacy as a library responsibility rather than a faculty one. But while good partnering is required between classroom and library faculty, when it comes to helping students master information literacy skills, the work has to center in the classroom.

This does not require developing new courses. As the Middle States document says, "Instead of creating new courses based on an entirely new concept, the current classes faculty teach can become starting points for creating a more structured information literacy initiative, one in which information literacy strategies are incorporated within courses in the major fields of study."

Efforts to develop students' information literacy skills in college need to take place at the institutional, program, and classroom levels. At the institutional level, there needs to be agreement on the definition of, and a commitment to, information literacy as a core competency for all graduates. Faculty members then need to incorporate these skills into the general education curriculum.

Next, each program needs to determine which research skills are required in its discipline, in which courses the skills should be introduced and reinforced, and where students should be expected

TABLE 1. COMPONENTS OF ICT PROFICIENCY

Process	Definition
Define	Using ICT tools to identify and appropriately represent an information need
Access	Knowing about and knowing how to collect and/or retrieve information
Manage	Organizing information into existing classification schemes
Integrate	Interpreting, summarizing, comparing and contrasting information using similar or different forms of representation
Evaluate	Reflecting to make judgments about the quality, relevance, usefulness, or efficiency of information
Create	Generating new information and knowledge by adapting, applying, designing, inventing, or representing information
Communicate	Conveying information and knowledge to various individuals and/or groups

**Categories from ETS's National Higher Education ICT Initiative*

to demonstrate mastery of them by way of a culminating experience. After this framework is established, classroom and library faculty can collaborate to determine the kind of assignments that can best facilitate students' mastering of the required skills.

Internationally, information literacy is being recognized today as an essential skill for the 21st century. In September 2003, the first international conference of information literacy experts from 23 countries was convened in Prague. The sponsoring organizations were UNESCO, the National Commission on Libraries and Information Science, and the National Forum on Information Literacy.

The Prague Declaration: Towards an Information Literate Society, issued at the end of the conference, identifies information literacy as "a prerequisite for participating effectively in the Information Society, and...part of the basic human right of lifelong learning."

UNESCO is presently planning a follow-up conference for September 2005 in Alexandria, Egypt. There, it is anticipated, teams of policymakers from around the world will craft policies and plans for developing information-literate citizens in ways tailored to the specific needs of their nations.

Like our colleagues in other countries, we educators in North America must empower our students to evaluate and effectively use the information they access through technology. Surely it is appropriate, indeed necessary, that the leadership for this crucial task come from higher education, since our institutions have long served as our nation's knowledge centers and knowledge producers.

Yet to be successful in preparing today's students for lifelong learning in the 21st century, there must be an unprecedented cooperative effort between higher education and the schools to incorporate information literacy skills into the basic curriculum—starting in kindergarten. Only then will we achieve the ultimate goal of graduating students who possess the full range of abilities that will be absolutely necessary for future professional flexibility and successful citizenship.

...While good partnering is required between classroom and library faculty, when it comes to helping students master information-literacy skills, the work has to center in the classroom.

***Author's Note**: This article was based on research done for a book being written by the author and Vanderbilt President E. Gordon Gee. The book will be published by Greenwood Press in 2006 under the auspices of the American Council on Education.*

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