Introduction

During the last decade technology has had a major impact on society in the United States and worldwide. Technology has initiated major changes in most areas of society. In economics e-commerce started new enterprises; e-business developed rapidly utilizing the Web to encourage shopping online and promoting all types of information endeavors. In the work environment computers and the Web have changed people’s performance. Technology and information skills are needed in any work situation. Companies and businesses have integrated information technology departments into their organizational structures. Collaboration and cooperation are important factors in helping organizations share and utilize knowledge and experience among their employees, suppliers and customers. Organizational values are changing, reflecting more reliance on people. Employees need to learn how work effectively in a changing electronic information environment. Workers must possess a myriad of information skills such as the ability to
- locate information efficiently
- evaluate information for a specific purpose or need
- organize information to address problems or issues
- apply information skillfully to solve problems

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Preparing Library Users for Productive Use of Information. The United States Experience

In the 21st century, information has become a major economic commodity and citizens need to be educated for productive information use from pre-school through postsecondary education. Libraries and librarians play an important role in the education of people for effective and efficient information use by teaching them information skills at all levels of education. Information literacy is defined and national standards for information skills teaching are presented. The standards and their application are discussed. Librarians’ new role as instructors and partners in education in the United States is outlined in terms of preparing library users for productive information use.

Die Einführung von Bibliotheksnutzern in die produktive Nutzung von Information. Erfahrungen aus den USA


L’introduction d’usagers de bibliothèques à l’utilisation productive de l’information: expériences aux États-Unis

Au XXIe siècle, l’information est devenue, aussi du point de vue économique, une matière première importante. Le citoyen doit être instruit, de l’école primaire à l’université, dans l’utilisation productive de l’information. Les bibliothèques et les bibliothécaires jouent un rôle déterminant dans ce processus pédagogique par le fait qu’ils contribuent sur tous les échelons de ce processus de formation, à répandre ces facultés. „Information literacy” est définie et les standards nationaux pour sa diffusion sont présentés et discutés. Le rôle nouveau du bibliothécaire en tant qu’enseignant et partenaire dans le processus de formation aux États-Unis est esquissé sous l’angle de la préparation des usagers de bibliothèques à l’utilisation productive de l’information.
– use information to communicate effectively
– use information responsibly to ensure productivity in the workplace.

Communication has been transformed through the Internet, e-mail and cellular telephones. Communication is now expected to be immediate, and worldwide people are expected to have appropriate information and technical skills to communicate efficiently and effectively.

Technology’s effect on education has been somewhat slow. The Internet and computers have begun to change teaching. Most states have initiated or are in the final stages of educational reform to ensure better learning outcomes for students in elementary and secondary education utilizing more technology. Meanwhile, higher education, which changed very little during the last several centuries, is experiencing changes related to e-learning, the emergence of e-universities and new initiatives and new possibilities in distance education. University administrators are beginning to feel pressure from legislators, accrediting agencies and other funding groups to reform and improve major components of higher education such as tenure, teaching, learning, research, student outcome measurements and faculty development.

At the beginning of the 21st century, people throughout the world are ensconced in an information and technology explosion. There is more data available than ever before and people are being overwhelmed by the enormous amount of available information. At the same time everyone expects to obtain needed information immediately and effortlessly. People need training to use the available data and information meaningfully and productively. Not only do individuals have to be literate, e.g., know how to read and write with understanding, but they have to be information literate, e.g., possess cultural, visual, computer, technology, research and information management literacy, and ultimately, critical thinking capability.

The U.S. Higher Education Environment

Enormous changes are occurring in higher education due to new information and technological developments. These changes are affecting every segment of society and all levels of education. Faculty in higher education have to acquire new technology and electronic information skills in order to effectively prepare and teach students the knowledge base in various disciplines. New learning communities are evolving based on the necessity that learning must be continuous on all levels, at all ages and must include resource-based learning. Schools and universities must teach their constituents to integrate learning opportunities into everything they do in order to be successful in a constantly changing work environment, in organizational work and in society. Educators must look closely at the business world where strategic advantages are based on learning and teaching their organizations to take advantage of evolving technology and the Internet environment. Students need to achieve high levels of literacy during every phase of their education including critical thinking skills. Given the complex technology environment and increasing global interactions, students need to attain excellent communication and information skills to function productively in the workforce.

Higher education in the United States is undergoing major changes. Legislators, funding agencies and consumers of higher education are demanding appropriate learning outcomes and graduates prepared to function successfully within the global economy. New models for universities are slowly beginning to emerge addressing financial needs and competition. Some models are for-profit institutions such as the University of Phoenix, based in Arizona, with a major stock portfolio on Wall Street and a somewhat competitive and controversial presence in many states of the United States. Other institutions are trying to become virtual universities, offering distance education programs using the Internet throughout the United States and the world. The virtual university model offers students educational opportunities to learn across distance and independent of time schedules, something many people desire¹.

Libraries and the Digital Environment

The effect of technology on libraries has been especially traumatic during the past decade. Many people have begun to consider libraries less important than in the past because they believe that the Internet is the world’s library. Likewise, books and other printed information are now often considered less valuable and less important than electronic information. Yet libraries have emerged as one of the most important components of the information age in their successful dealings with new technological advances. Libraries have become agile, learning-oriented information centers. As academic librarians prepare for a growing sophisticated technology environment, they are facing many challenges as well as many opportunities. Academic librarians can play a major role in the educational changes taking place in teaching, learning and research in higher education by providing the appropriate information environment and the most efficient and effective user access. They provide successful information services to help and guide their users in their information work. They provide practical and effective instruction in the use of information for teaching, learning and research by integrating such instruction throughout the curriculum. They build partnerships on campus for faculty development, distance education, information technology, student support, and assessment of learning outcomes. They can make the library the center for teaching, learning and research by providing the most inviting and accessible information environment. Above all, they must ensure that all students learn appropriate information skills so that when they graduate they are information fluent and can become productive members of the information society. To accomplish this, academic librarians must form partnerships with the teaching faculty to integrate information skills instruction into the undergraduate and graduate curricula.

Information Literacy in the United States

Many of the information literacy developments in the United States are based on national collaborations. National work groups, professional organizations, and task forces have worked together for several decades to define, develop and refine the concept of information literacy. In 1989 the American Library Association (ALA) Presidential Committee on Information Literacy defined information literacy as „being able to recognize when information is needed and to have the ability to locate, evaluate and use the information needed“.

The following components define information literacy in terms of an individual’s ability:
- to determine the extent of the information needed
- to assess the needed information effectively and efficiently
- to evaluate information and its resources critically
- to incorporate selected information into one’s knowledge base and value system
- to use information effectively to accomplish a specific purpose
- to understand the economics, legal and social issues surrounding the use of information
- to access and use information ethically and legally.

Education curricula should address literacy in relationship to electronic information such as hardware, software, computers and multimedia resources.

Information Literacy Competency Standards for Higher Education

In 2000 the Association of College and Research Libraries (ACRL) issued their document „Information Literacy Competency Standards for Higher Education“. This document has also been endorsed by the American Association of Higher Education (AAHE). ACRL is working with other professional associations to procure endorsements to integrate the need for information skills into accreditation requirements. The document describes five standards, twenty-two performance indicators and eighty-seven outcome measurements. Using the Information Literacy Competency Standards for Higher Education, prepared by ACRL in 2000, librarians and faculty can collaborate to integrate the teaching of information skills into the undergraduate and graduate curricula. Faculty and librarians can plan teaching modules for the classroom and online to teach these skills. Then using the criteria for outcome measurements provided in the ACRL document they can measure whether or not the students have learned appropriate information skills.

The Need for Information Skills Instruction

One of the most important prerequisites for life-long learning is the possession of appropriate information skills. Academic and school librarians in the United States have been concerned with teaching students appropriate library and information skills throughout the 20th century. Annual reviews of the literature related to user instruction and information literacy during the last thirty years have indicated that interest and activities in this area have been steadily increasing from 29 publications in 1973 to 300 in recent years. Most of the activities documented have been in academic libraries (sixty two percent) and twenty percent have been in school libraries. Fewer instructional activities were documented in public and special libraries.

However, during the last twenty years librarians became increasingly concerned with setting appropriate standards for teaching such skills. In 1998 the American Association of School Librarians and the Association for Educational Communications and Technology published guidelines for school library media programs. This publication provides a vision to empower students and teachers in schools through the use of resources and services in the school media centers so that they become effective users of information.

In 1998, the American Association of School Librarians together with the Association for Educational Communications and Technology published two works addressing information literacy for students in K-12. One publication discussed information literacy standards to be used as a conceptual framework to educate information literate students. It provides a philosophy, mission and goals for school library media programs related to information literacy. Included are nine information literacy standards:
- The student who is information literate
  - accesses information efficiently and effectively
  - evaluates information critically and competently
  - uses information accurately and creatively.
- The student who is an independent learner is information literate and
  - pursues information related to personal interests
  - appreciates literature and other creative expressions of information
  - strives for excellence in information seeking and knowledge generation.
- The student who contributes positively to the learning community and to society is information literate and
  - recognizes the importance of information to a democratic society
  - practices ethical behavior in regard to information and information technology
  - participates effectively in groups to pursue and generate information.

Another publication deals with building partnerships for learning between library media specialists and teachers based on the nine information literacy standards outlined above which are designed to support library media specialists’ efforts in
- learning and teaching
- information access
- program administration.

This publication guides librarians and teachers to build collaborative partnerships to connect to the learning community in the new century and to prepare students for life long learning. It is designed for presenting the nine standards to school library media center stakeholders, teachers, principals, parents, boards and administrators. It became more and more apparent that teaching students necessary information skills would only be successful if done as part of the regular higher education curriculum and in cooperation with teaching faculty representing the spectrum of all subject areas. A progress report was issued in 1998 by the Association of College and Research Libraries (ACRL), which updates the final report of the American Library Association Presidential Committee on Information Literacy.

This report documents the progress that was made both nationally and in specific states since the first report was issued in 1989. It also gives five new recommendations:
- Work more closely with accrediting agencies
- include information literacy in teacher education and performance expectations
- include information literacy in librarian education and performance expectations
- find ways to illustrate to business leaders the benefits of creating an information literate workforce
- have more research and demonstration projects related to information literacy.

Regarding teaching methods, students need to be involved in more resource-based learning and should assume responsibility for locating and assessing the materials upon which they should base their learning. In the United States, the American Association for Higher Education (AAHE) has been working with academic librarians and ACRL to establish the TLT Group, the Teaching, Learning and Technology, affiliate of the American Association of Higher Education (AAHE), for dialogue and programming related to teaching information skills.

Resource-based learning ultimately enables students to assume responsibility for their own learning and prepares them for the information-based society. Developing students to become independent learners is quickly becoming a major goal for higher education.

In 1989 The National Forum on Information Literacy (NFIL) was formed. Under the able leadership of Patricia Breivik (San Jose University, CA), the Forum is broadly based and has more than eighty-five organizational members who represent educational, business, labor and social organizations. The members are working together to promote international and national awareness of the need for information literacy and to encourage activities leading to the acquisition of information skills. Through its member organizations, the Forum examines the role of information in people’s lives, work, education and social and integrates information literacy into their programs.

The Forum supports, initiates, and monitors information literacy projects both in the United States and abroad. It encourages the creation and adoption of information literacy guidelines by such regulatory bodies as State Departments of Education, Commissions on Higher Education, and Academic Governing Boards. Forum members work with teacher education programs to insure that new teachers are able to incorporate information literacy into their teaching.

In 2000 the Association of College and Research Libraries issued the Information Literacy Competency Standards for Higher Education. This publication was approved by the Association of Higher Education in 2001. Many academic librarians in the United States are using these standards to build partnerships with their faculty for teaching and learning. The standards are very helpful because they indicate how to assess the progress and outcomes of information skills learning.

The Institute of Information Literacy (NILI) was established in 1997 under the auspices of the Association of College and Research Libraries (ACRL). Its mission is to play a leadership role in assisting individuals and institutions in integrating information literacy throughout the educational enterprise. Its programs include an immersion program for intensive information literacy training and education, a best practices program to highlight effective information literacy programs, a community partnership program between academic, school and public libraries and provision of web resources. Many examples of good information literacy programs in academic institutions can be found on this ACRL web site.

In 1971 LOEX (a clearinghouse for Library Instruction) was founded by librarians at Eastern Michigan University in Ypsilanti, Michigan. To date there have been thirty-three annual national LOEX conferences and several LOEX-of-the-West conferences, addressing many aspects of information literacy and library user instruction. Many regional and state conferences on user instruction and information literacy have been held as well. More than five thousand publications related to user instruction and information literacy have been published in English since 1973, most of them in the United States. Likewise there have been many articles and books published on this topic in other languages around the world.

The journal Research Strategies was started in 1987 in Ann Arbor, Michigan, with the sole purpose to publish information literacy articles related to research and academic libraries and institutions.

2 Information Power (Anm. 7).
4 <http://www.tltgroup.org/>.
6 <http://www.infolit.org/>.
7 <http://www.ala.org/ACRL/Template.cfm?Section=ACRLs_Institute_for_Information_Literacy>.
On the state level in higher education Colorado, Oregon and Wisconsin have adopted the information literacy standards. Several statewide systems such as the California State University System, the State University of New York, Wisconsin and University of Massachusetts are developing system-wide initiatives. Various individual colleges and universities are implementing the standards within their curricula such as Earlham College, Florida International University, Kings College, University of Louisville, University of Texas, University of Washington and others. Many information literacy initiatives are listed on the ACRL website.

Teaching Information Skills

In the United States some professional organizations related to education, law, nursing and medicine are already beginning to address life-long education for their professionals and include information literacy as an important factor.

Teaching information skills includes much preparation including such activities as developing teaching modules for undergraduates, subject majors, graduate and professional programs. It also involves customizing teaching to appropriate student levels and students’ existing knowledge bases. To help academic librarians become excellent instructors of information skills and to create productive partnerships with teaching faculty, ACRL has created the Institute for Information Literacy.

Representatives from the National Forum on Information Literacy, UNESCO and the National Commission on Library and Information Science (NCLIS) collaborated to hold a first International Conference on Information Literacy in 2002 in Prague, Czech Republic. More than twenty countries representing all continents presented papers on all aspects of information literacy within all levels of education and the workforce.

Various accrediting agencies have recognized the importance of information literacy in the curricula of colleges and universities and the important role, librarians should assume in the teaching-learning environment by including appropriate criteria for outcome measurements regarding information literacy in the accreditation requirements. Most noteworthy for their work in the area of information literacy in higher education is the Commission on Higher Education, Middle States Association of College and Schools. Working with the Association of College and Research Libraries and the National Forum on Information Literacy, the Commission has surveyed 830 institutions nationwide to explore the status of initiatives regarding information literacy. They found that educational institutions in the middle states are leading the nation in applying information literacy strategies on campuses. Several of these institutions have developed formal assessment strategies for measuring information literacy outcomes.

The Commission on Higher Education, Middle States Association of Colleges and Schools, developed the following standard on information literacy in 1994: 

“Each institution should foster optimal use of its learning resources through strategies designed to help students develop information literacy – the ability to locate, evaluate, and use information in order to become independent learners. It should encourage the use of a wide range of non-classroom resources for teaching and learning. It is essential to have an active and continuing program of library orientation and instruction in accessing information, developed collaboratively and supported actively by faculty, librarians, academic deans, and other information providers.”

The Commission on Higher Education of the Middle States became the first accrediting agency to join the National Forum on Information Literacy and promoted a broad definition of information literacy in terms of curriculum and pedagogy within an ever expanding electronic information environment. The commission held two symposia in 1995, which resulted in the following conclusion:

1. Institutions should concentrate on developing effective processes to achieve information literacy and share with other institutions the results, both good and bad, of those efforts.
2. Information literacy does not cease when the degree is achieved, but must be viewed as a lifelong learning commitment.

In 1995 the Commission on Learning Resources and Instructional Technology of the California State Universities issued a report entitled “Information Competence in the CSU” which recommends policy guidelines for the effective use of learning resources and instructional technology. Information competency is one major area identified for which recommendations are provided. Among many factors considered are cooperative ventures between the universities, community colleges, primary and secondary schools to help all students become information literate. Also recommended was a close collaboration between faculty and librarians. The report provides a number of useful suggestions to establish effective information competence program within California State Universities:

- Undertake a systematic assessment of student information competence to develop benchmarks
- develop model list of information competence skills for students entering the university and graduating from the university. Establish agreement with K-14 on these skills
- develop pilot information competence programs or courses on several campuses
- develop a „teaching the teachers” program so that faculty development in information competence can occur
- develop computer software that enables the teaching of information competence
- develop faculty workshops and checklists for K-16 to assist faculty with the teaching of information competence
- work with the California Superintendent of Schools to ensure that information competence is on the agenda for K-12

17 <http://www.ala.org/ala/acrl/acrlissues/acrlinfolit/professactivity/initiatives/acrlinfinitiatives.htm>
18 <http://www.ala.org/ACRLTemplate.cfm?Section=ACRL&template=/ContentManagement/ContentDisplay.cfm&ContentID=78203>
21 Ibid., p. 16.
work with the community colleges and support their ongoing information competence initiative
- collaborate with textbook publishers to help with the integration of the concepts of information competence into textbooks
- pilot a distance-learning effort with information competence

The California State Universities System established a system-wide position for information literacy advocacy. These examples from higher education document concerns related to educating students to become effective in the information age by helping them gain information and critical thinking skills. Nation-wide academic librarians are realizing the importance of training students in the use of information and that such training must become integrated into the higher education curriculum. This is the time for academic librarians to become actively involved in curriculum development on their campuses and countless examples of such endeavors can be found in the literature. This is also the time for academic librarians to work with faculty in rethinking their teaching styles from lecture mode to interactive, resource-based and collaborative modes of instruction. In many academic institutions centers for teaching excellence are being created to help faculty rethink their teaching styles in terms of the electronic environment and student learning needs. Often these centers are rightfully located in the library providing opportunities for librarians to form partnerships with teaching faculty for curriculum development and new teaching initiatives. The environment now offers academic librarians opportunities as never before to demonstrate their expertise in information handling and user training and to become involved in the teaching/learning environment on the campuses.

Expected outcomes of teaching students information skills:
- Become life-long learners
- acquire critical thinking skills
- become effective and efficient users of all types of information
- use information responsibly
- be effective in doing research
- become productive members of the workforce.

Achieving Productive Information Use in the Global Environment

Surveys of the literature and interaction with international colleagues indicate that concerns with preparing students for success in the information age are definitely shared worldwide among librarians and educators. The emergence and rapid growth of the Internet have created much interest and need on the part of students to gain access to electronic information and to become information literate. The need to find, organize, assess and apply information to problem solving is an international concern. Given the ease and speed with which information can now be shared, it is advisable that librarians and educators should cooperate and share their expertise and experience not only locally and nationally but also internationally. To prepare both librarians and teachers for educating students in the information age the following factors should be considered:
- Information changes continually
- learning and teaching must be interactive and recognize diversity in learning styles
- teaching and training must be a process of facilitating and sharing rather than dispensing
- information work is becoming more and more competitive
- librarians and teachers must market themselves aggressively as information experts
- information is a commodity and must be handled like a valuable product
- teachers and trainers must be continuous learners
- effective teaching utilizes learning outcomes and behavioral goals
- good teaching is based on student need
- information skills must be integrated into the curriculum and taught incrementally
- teachers and librarians must work with accrediting and education agencies and curriculum planners to ensure that information skills become a required component of the curriculum.

Summary

This summarizes the changing philosophy predominating academic and research libraries in the future. Academic and research libraries will continue to be central to universities if they offer up-to-date information environments and efficient access to any kind of information, address user needs and take leadership role in terms of training the university community in efficient and effective information handling.

This is not the time for academic librarians to be timid or to wait patiently for new developments. On the contrary, it is the time for them to become aggressive and dynamic participants in the campus community’s teaching, learning and research agendas. They must share their enormous information expertise with their campus community and build productive partnerships with other campus groups. There are numerous examples in the nation where academic librarians have become leaders on their campus in a variety of ways. On some campuses librarians have become Campus Information Officer for libraries and information technology, on other campuses they have become Associate Provosts for Libraries and Information Technology, or for Libraries and Assessment, or for Libraries and Faculty Development. There are no limits for academic librarians and academic libraries as they enter the 21st century, there are however endless opportunities.

Many challenges will have to be addressed in workforce development and policy making through national and international collaboration to ensure that information literacy becomes part of policy-making in education and other

governmental initiative. New skills are needed in the digital work environment throughout a person's lifetime and life long learning is now a reality for everyone.

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