THE IMPACT OF ELECTRONIC INFORMATION ON LIBRARY AND DOCUMENTATION CENTER ORGANIZATION AND SERVICES

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I am very pleased to be here with you. I thank you very much for your invitation to this conference and Barcelona. I want to give you a different perspective than the one you heard this morning. It will be more academic and corporate. In the U. S. academic libraries are more autonomous that libraries here and do not have many government mandates. Many projects are funded by private foundations and some are funded by government so there is more freedom to experiment and innovate.

I will discuss important trends that will affect library and documentation center organization, activities and operations. These trends include; electronic publishing, technology, entrepreneurship, knowledge, learning, collaboration, content and collections, services and organization.

Electronic Publishing

More and more material is becoming available online. New material is being published, in some cases,only in electronic format. Print will be with us for a long time. If I am reading poetry or literature I want to hold a book. Our students who are studying science and technology want everything online. They do not want paper.

There will be selective digitization of older materials. It is difficult to know which materials and how much should be digitized. Now it appears that each institution is doing what it thinks is best. We hope that we include everything that should be included. There are major problems of access to and preservation of older materials. When some publishers put current journals online they are telling libraries, “archives are **your** problem, not mine.” Readily available archives of journal publications are essential. Today’s work and the work of the past need to be available for future generations.

Our students, at Georgia Tech, do everything online. They must have computers when they come to our Institute. The dormitories where they live are wired for the Internet. The wiring is a welcome Olympic legacy. When the Olympics chose our campus for housing the athletes we rebuilt older dormitories and constructed some new ones. All were wired for Internet access.

Students ask why they need textbooks in print when they can access books online. This morning we saw examples of texts and teaching materials online. Our students want instructional materials of all types to be available online.

Having all materials online poses problems, particularly with regard to scientific publishing. Publication in science gives verification and authority to an author and the work. Who will perform the editorial screening? Will we continue to have peer reviewed journals? How will this review be done? Should authors publisher with no peer review? What rights will authors have in distributing their own material in the

classroom and for distance learning? These are important questions. We had an example on our campus of a faculty member who signed away all his rights to use his own publication. When Continuing Education wanted to use an article for a course we found that we had to pay royalties to the publisher. The author could not use his own work. Change is needed. Faculty members need to be educated in how to retain their rights while giving the publisher the right to publish. The Internet is a vanity press. Anyone can publish anything. How will we know what is accurate? How will we maintain integrity of material? Technology is a great tool and it creates problems.

Technology

Technology trends are driven by young people – teenagers. You may remember when we had two video tape systems – Betamax and VHS. Young people established VHS as the standard. Young people determined the standards for CDs through their purchases of music CDs. They will continue to set standards through the marketplace because they are early adopters of new technologies.

There will be greater numbers of computers in offices, homes and schools. They will not appear in all locations on the same day. How many have video tape recorders? Many. You did not get them all on the same day or in the same year. Some people had to wait. The same is true of computers. As people learn how to use computers in school and in their work and prices come down more people will buy a computer for the home.

All forms of information, entertainment, and shopping opportunities will be delivered to the desktop via the Internet. Sometimes it is difficult to tell the difference between information and entertainment. We need to educate our children to recognize the difference. We will have more choices and more complexity.

More information produces technical problems of sustainability and scalability. How can we sustain what we have? How will material be kept up to date? How will we migrate our information from one system to another? There are problems of scalability. As databases grow larger they are more difficult to search. How large can a database grow before it becomes impossible to search? We do not have answers now. New tools are needed to deal with these issues.

Wireless

Wireless access is an important trend. Wireless access will available through a device like a wristwatch or a palm device. In a few years I may have a wristwatch that can be used for voice, Email and Internet access. Young people will drive this development. About ten years ago George Gilder commented that telephone used wires and television went through the air. He predicted that the opposite would occur and it has. Telephones are wireless and television is by cable. The television cable also provides high speed Internet access and telephone service.

If we want to use something bigger than a wristwatch we can have palm devices for voice, data, email, Internet and perhaps television. A wristwatch will not work well for people with fat fingers.

Imbedded Chips

Another interesting development is the imbedding of chips into appliances and medical devices. I expect to have a chip in my refrigerator that will tell me when something is wrong. Chips will be in other household appliances to do all sorts of things. Chips in medical devices can regulate heart pumps and dosages of substances, such as

insulin. We do not know how far we can go with these developments nor do we know all the consequences. There often are unanticipated consequences with new technologies.

Entrepreneurship

Entrepreneurship is another phenomenon that is increasing worldwide. Barcelona is becoming a center for technology and young companies. Here, there is a history of entrepreneurial activity and a growing base of venture capital. It is a vibrant city of young people. One quarter of the population is under 25 years of age. Young people, more and more, want to work for themselves rather than large companies or government. Barcelona's high tech industries, textiles, electronics and chemicals, will provide more opportunities for new companies and jobs for young people. There is a great opportunity because entrepreneurs need information and intelligence. Information professionals know how to provide information. Entrepreneurs do not know how to find information by themselves. Sometimes they do not realize that they need information or that information exists that will be useful to them in developing their products, services or businesses.

Definitions

While we use words interchangeably it is useful to keep in mind a few definitions. Data are facts and unprocessed observations. Information represents facts that have been processed, filtered and organized. Knowledge is internal, evaluated and integrated with our internal information and knowledge structures. It is in our heads. We may share our knowledge and information with others and create new knowledge for ourselves. We need to remember that we have 6 billion people in our world. Each person is unique chemically and each person has a unique brain. No two people are exactly alike.

Knowing how is as important as knowing what and why. Know-how relates to skills that can be shared or taught. Training for skills is easier than educating for analytical or critical thought. Ideally, when students go to university they would learn the skills of analysis and critical thinking.

Learning is gaining information, understanding or mastery through experience, communication or study. As time goes on students, young and old, will assume more responsibility for their own learning. In our universities emphasis is changing from teaching to learning. We worry less about how well we teach and worry more about how well students are learning. Teaching and learning are not the same. It is one thing for students to sit and listen to a lecture and another thing for students to engage in group projects and activities. Often students learn as much from each other as they do from the faculty.

Knowledge Management

In the U. S. many business people and consultants are talking about knowledge and knowledge management. They love to quote Peter Drucker who said, "Now that knowledge is taking the place of capital as the driving force in organizations worldwide, it is all too easy to confuse data with knowledge and information with information technology". In the U. S. the large consulting firms have built lucrative practices in knowledge management. I believe that knowledge management is not a technological problem; it is a human problem. As long as people believe that having knowledge is more important than sharing it they will not share their knowledge. I also believe that you cannot manage people. You can only guide or direct them.

Librarians are knowledge managers. Librarians know sources of information, who knows what and who is willing to share. We know how to organize information. We have unique knowledge, skills and expertise. We have a great opportunity to make a difference.

We need continuous learning. Each of use probably learns something new every day. We need to be conscientious about learning to keep up to date. We have to work with others to learn. We have found that students learn more when they work in groups because they share their knowledge, information and know-how. In our library we have built many group study areas that are wired for computer use. By 6 or 7 o'clock in the evening these areas are full. Our students have asked for more study facilities and longer hours.

How do we change our operations to accommodate new ways of learning, research and study? How do we, in information and library services, facilitate communication, study, learning and knowledge sharing? We do it, in part, through collaboration with our colleagues, clients, users and managers. We must collaborate. We cannot do the job alone. Collaboration with our clients, customers, and users is most important. We need to know how they think, what their jobs and projects require, and the information resources needed to do the job. In designing systems we need to partner with users. We need to know what they like and do not like so that the system works for them.

We need to help create communities of learners to facilitate learning from each other. In our libraries, our professional associations and our offices we need to encourage the learning process. Learning communities can be formed in person or online. A person can be part of one or several learning communities. The idea is share what we know and work together to achieve a common goal.

We need to collaborate with staff members who are more involved in the work of library. Information technology staff members are major partners in what we do. We need to work with them and they with us. We rely on technology staff for installation and maintenance of the network and, in some cases, our servers, computers and peripherals.

Upper administrators and managers are essential partners. They need to understand the importance of what we do and commit support and money to our programs. Gaining support of upper management may be easier in universities than in public libraries. Universities are more technology intensive and use technology more than public institutions. The politics of universities, while difficult, are easier than the politics of municipal or national governments where there are many constituencies and stakeholders who are not library users and do not know or understand what we do.

Collaboration creates new values and new understandings and can lead to shared goals and shared commitments. It brings distinctive competencies and expertise to problem solving and decision-making. We can accomplish more by working with other people. Collaboration enables and creates a safe environment for change. It helps to share the risks as well as the benefits. The scientist working alone for years in a laboratory is a myth. Most scientists rely on previous work and colleagues in the field to invent and create. Scientists and others rely on existing content as the basis for further discovery and development.

Content

Selection of content is another important element in providing responsive and high quality services. Selection is a traditional and essential part of our jobs. Content and collections support business needs and strategies and learning. Formats need to be appropriate to users' needs and installed technology.

Collections will continue to be in paper, film, photographs, and online. Digital collections will be local and remote. We will access different online collections from different remote sources. Local collections of local importance and items in high demand need to be digitized for both preservation purposes and ease of use. At my library we will be digitizing works in the history of technology so that they can be easily accessed and preserved. After they are digitized we will store the paper in environmentally controlled conditions to reduce deterioration. We must bring the past to students electronically because they will not seek out materials in paper. Students must have online access to history.

Context is as important as content. Context involves what, why, and how information or data will be used. Librarians know the importance of context. Two people can ask for the same information and may use it differently in different contexts.

Competencies

Competencies are changing and are more complex. We need to keep our competencies up to date and inline with the competencies needed by our parent organizations. The Special Libraries Association in the U. S. published a study on competencies that is excellent. The address is www.sla.org. Librarians' competencies include understanding the work of users and clients, expert knowledge of content and information sources, and ability to filter and evaluate information. Our knowledge of sources and ability to assess sources are unique skills. We know how to use appropriate technology to acquire, retrieve, evaluate, organize, and disseminate information. Another unique and traditional strength of our profession is the ability to describe and organize information content to promote easy retrieval. We will be using more metadata to better describe the intellectual content of a book, journal or database. Librarians have other important and relevant skills; online and paper searching skills, research know how, ability to communicate interactively and ability to adapt to customer or user needs. These competencies are based on the Special Libraries Association study.

Our services will change but will continue to be responsive to customer needs. In the past, our users wanted large collections for research and browsing. Today, younger people want material online and available at the desktop. Our services need to be more flexible today than they were in the past because users expectations have changed. Users want more customized and individual services.

Our users and funders must see our services as valuable and as making a difference in the business of the company, university or community. In the U. S. librarians are seen as delivering value. Software and Internet companies are hiring librarians for their corporate libraries and to describe and organize information on the Web. There is an increasing shortage of librarians in the U. S. Salaries are going up. There is still some frustration because we cannot quantify our value or the difference we make. For the future we will have to rely on qualitative information and success stories to demonstrate our value.

Evaluation

We need to evaluate Web sites for our users. They often do not know how to assess the reliability, accuracy or timeliness of information. We need to do that work for them because finding the right information is difficult. Online services represent a great change for many users. Older people do not want to read online; they want paper. They learned by reading print on paper. They did not have audio-visual instructional materials. They want to pick up the volumes and browse in paper. Younger people want everything online. There is a generational problem which will require libraries to maintain print collections while expanding the availability to more online materials. Young people know how to use computers and the Internet. They have grown up with these things. Some older people fear online publications because they are not as facile with computers and the Internet as younger people. They also fear that something may be lost in the transition from paper to online. They fear that they may not find what they need or want online. We need to spend more time training older people to use online systems We need to be very patient and sensitive in this training and respect the way they were educated and do their work.

Training

Training is the key to many activities in our libraries today. We need to be flexible in how we train so that we can accommodate a variety of needs. Training is essential. We can train in the classroom or train one-on-one. We need to recognize that lack of know-how creates uncertainty and insecurity. If we can train people and give them know-how these people will be more secure and confident in using online systems. One of the most important things we can do is to give our users names and telephone numbers of staff members whom they can contact for help. Having the name of someone can make a big difference.

Staff training is as important as user training. We cannot do enough. Staff members need skills and know-how. Training can help deliver efficient services, greater staff and user productivity and effective use of technology. Staff development is essential for learning, growth and change. There is a dilemma; how do we send staff for training and development and keep the operations going when most libraries do not have sufficient staff? Development, training and know-how give staff confidence and the ability to change. If people understand and know they will have the self-confidence to change. Staff training needs to go beyond the basics. Staff members need to understand customer service and enhanced description of intellectual content. The people who work in our libraries and documentation centers need to understand how systems work. Their understanding need not be at the level of an information technologist but enough to be able to fix some simple problems. Understanding of how technology works will help them to do a better job and provide more effective service.

As managers we need to educate our staff members about how our organizations, how they work and how they use information for business, community or university. They need to know where technology is headed, where our organizations are headed, and where information and library services fit within the activities of our organizations.

Organization

Libraries and documentation centers need to be responsive, flexible, adaptive and agile. In times of rapid change we must be flexible and adapt to changing needs. Agility means doing things that need to be done at the time. While we value planning sometimes

it is necessary to do things on an ad hoc basis. We have to keep in mind that we are at our jobs to serve people by providing information, learning materials, access to human and online sources of information and knowledge. In providing our services we contribute to problem solving, decision-making and learning.

Organization is another facet of our operations that is important for success. It should nurture teamwork, collaboration, efficiency and competency in all we do. In the U. S. library and documentation center organizations are becoming flatter with less hierarchy and bureaucracy. Reduction of bureaucracy is a good thing because bureaucracy is the enemy of innovation, creativity, and change. Bureaucracy is rule driven, not people driven. There is more teamwork and a greater need for leadership, vision, and direction. Bureaucracy also is the enemy of leadership and vision. Bureaucrats do not like change because it erodes their perceived power. We need vision to excite people and stimulate their interest in our work.

Finally, we need to remove the obstacles to outstanding performance. Our roles as managers are to create an environment where people can do their best work. We need to provide opportunities for experience, learning and training. They give confidence and knowledge to create a desired and exciting future for our users and our staff members.

Muchas gracias.