

Information Literacy and the Library as a Learning Resource Centre

Thomas Christiansson, the opening speaker of the international conference Creating Knowledge II, held at Malmö University on the 23rd and 24th of April 2001, introduced Malmö as being, both literally and figuratively, a city of bridges. As Director of Academic Services, Christiansson pointed out that one of the roles of the Malmö University is to bridge various areas of study, and that one such bridge is the awareness of information literacy as a creative tool in developing new strategies in education. The aim of the conference was to highlight current trends in information literacy and to examine their effects, as seen through the eyes of librarians, IT-technicians, students and faculty as well as architects and designers, on libraries as learning environments.

Creating Learning Opportunities; using the relational model of Information Literacy

The first talk was given by Christine Bruce, Associate Director of the School of Information Systems at Queensland University in Australia. The topic of her lecture was the creation of learning opportunities through the use of the relational model of information literacy as an alternative to the behavioral model that currently dominates information literacy education and research. She defined information literacy as "the sum of the different ways it is experienced" and added that information literacy education can be defined as "helping learners to change or broaden their repertoire of experiences". Her background as both a librarian and teacher of library information science has provided her with a unique insight into the needs of users and learners. In the light of her experiences, she presented questions like "What are the strengths

of a relational model for information literacy?" and "What do the different ways of experiencing information literacy look like?" and "How can we design a curriculum based on the relational model?" She sought to provide a base for answering questions like these by, firstly, defining the relational model as a picture or map of the different ways in which information literacy is experienced among people as distinguished from an empirical investigation using the phenomenographic approach, and, secondly, by demonstrating what she referred to as "the seven faces of information literacy".

If the relational model is grounded in student-focused learning theory and based on people's real-life experiences with information, then a relational perspective would involve experiencing information literacy in a range of ways and being information literate about having access to different ways of experiencing information in different ways. To fully comprehend the relational model, one must understand the various features of IL, which, according to Christine Bruce, are about placing an emphasis on the capacity to engage in broad professional responsibilities rather than specific skills, to create social cooperation and interdependence among colleagues rather than placing an emphasis on individual capabilities, to develop a need for a partnership of information intermediaries, to focus on personal heuristics rather than prescribed patterns, and, finally, to emphasize the intellectual manipulation of information rather than technical IT skills.

A current trend in higher education is to view competence as experiencing practice in particular ways; this goes beyond mastering knowledge or skills that have a short shelf-life. A

relational mode of IL reveals the close relationship between information literacy and learning. It attempts to tie together academic competence with reflective competence. Learning outcomes are related to different ways of experiencing the information and use process. The relational model is clearly correlated with the learning process, the corporate process as opposed to institutions of learning, and the community versus the everyday-life use of information.

The seven faces of information literacy include the IT experience (IT designates information awareness; it helps users stay informed or communicate, is a social rather than individual experience, and depends on expertise within the group), the info-source experience (which is about finding information and shedding light on problems by using bibliographic, human and organizational sources as well as emphasizing personal skills and the assistance of intermediaries), the info-process experience (which is linked to problem-solving and decision-making and which requires personal heuristics), the info-control experience (which is about recognizing relevant information, managing that information, making connections between information, projects and people, and recognizing the interconnectedness of information and parts of projects), the knowledge construction experience (which puts an emphasis on learning, developing a personal perspective with knowledge gained, and being dependent on critical thinking), the knowledge extension experience (which involves connecting personal knowledge with experience and creative insight or intuition, including developing new knowledge or approaches to tasks as well as novel solutions), and the wisdom experience (which deals with values and ethics combined with knowledge, information used for the benefit

of others, and the recognition of personal qualities). To illustrate these "faces", she gave examples of faculty-librarian partnerships in Australian higher education, where librarians work together with faculty to bring the information needs of students into focus when putting together learning plans and setting up IL frameworks, and curriculum partnerships where librarians are involved in product development, including web-sites and IL modules.

To design a curriculum based on the relational model is to design services and learning to suit the learner-students rather than expecting them to fit into a traditional mould. Which means that applied information literacy education should continue to find ways of helping students learn content through the process of effective information use. Information literacy is not about teaching a set of skills but rather a process that should improve both learning and the culture of communities. This requires a curriculum that provides opportunities for reflection and the documentation of learning; it is about effective information practices. A curriculum that requires involvement in learning activities and that requires ongoing interaction with the information environment. One can say that powerful ways of acting come from powerful ways of seeing. For information literacy education, this means building relevant experiences and reflecting on how those experiences can be incorporated into the curriculum. Other valuable features are that students will be able to discern different ways of thinking about effective information use that apply to new problems and to conceive information subjective and transformational in character. It is also important to appreciate the socially distributed nature of information literacy (groups are stronger than individuals). What the students will gain from such a curriculum is the ability to use ITC's for information retrieval and

communication, to find information independently, to control information, to build a knowledge base, and to work with knowledge to gain new insights.

What happens when we understand? - Cognitive aspects of learning with ICT

The final lecture of the first conference day was held by Peter Gärdenfors, Professor of Cognitive Science at Lund University, and he focused on three words -- information, knowledge and understanding. He demonstrated how certain parts of a picture contain more information than others and how information becomes knowledge if you can use it. This raised the question: What is knowledge? According to Professor Gärdenfors, knowledge is something that can be interpreted and put into context, something one can judge the validity and value of, and, finally, something that can be put to use. Since there is no available theory to define what understanding really is, he used an analogy: understanding is seeing a pattern. "Seeing" as in "I see", meaning "I understand". The cognitive aspects of learning with ICT are, as Peter Gärdenfors said, fundamentally about understanding the demands and limitations of human cognition. There are various methods used for increasing our understanding of cognitive processes. They include observations of "authentic cognitive processes in practical action" as observed in traditional psychological experiments or can be a method directed by "simulating cognition in robots or programs". A practical application of cognitive science is the construction of "interfaces to information technology products". This means that IT products should meet, as much as possible, the demands of human cognition. Two good examples are pocket calculators and word processors, both of which enhance human capacities. The constructors of technical appliances often neglect the demands

and limitations of human cognition and thus design products that are not really user-friendly. Using cognitive science in order to create "products that better support our ways of thinking and remembering" will be of great use to educators in the learning environments of the future. The idea is to move away from the drill-and-exercise programs in which students are passive learners into an environment in which the pedagogical emphasis will be placed on providing opportunities for students to interact with programs such as simulation programs. This leads to an environment in which the students participate more actively in the learning process. Another important aspect is the development of educational computer programs. Those who design such programs must possess a knowledge of how human learning and memory works as well as how people communicate. This requires ongoing collaboration with cognitive scientists. Professor Gärdenfors concluded his lecture by presenting a number of ideas on how to improve understanding in education, for example the use of visualization, simulation, user models, tutoring systems and role play. It became clear that "in many areas, it is not technology that sets the limits, but rather our lack of understanding of how human cognition works."

Workshops

The first day of the second Creating Knowledge II ended with four workshops which concentrated on the following areas: creating learning opportunities through the use of the relational model of information literacy, multimedia learning programs in information literacy education, web-based tools to support library teachers in developing courses at the library, and practical aspects of planning a new learning centre. The workshops provided ample

opportunity for the participants to interact, pose questions, and bridge their varied experiences.

Learning 2000 - the new city campus learning centre project at Leeds Metropolitan University

The second and final day of the conference focused on various aspects of the "built" environment of Swedish as well as international learning centres. Carolynn Rankin of the School of Information Management at Leeds Metropolitan University demonstrated how the New City Campus Learning Centre Project had become a successful part of the University. The Learning Resource Centre is housed in a building specifically designed for that purpose. It is an environmentally friendly building in which space is used in a flexible manner. A key aspect of the Centre is its aim to minimize staff intervention and provide a wide range of information technology. Another goal has been to design each floor according to a similar floor plan in order to minimize the feeling of walking in a labyrinth. The study area, for example, is situated in the exact same spot on each floor. Noise control was an important design criterion, and therefore photocopying and printing are done in specific, sound-proof spaces. The building houses a café/bar--social area--bookshop, an ATM machine and an information gateway through one can find information about available courses. These and other services are connected by a mall leading in and through the building. The Learning Resource Centre provides access to other parts of the University through a walkway.

During the planning of the Learning Resource Centre the Design Project Group had to take into account the "wish list" put together by the representatives from various faculties known as the Strategic Development Group. For example, a fifth floor was added in order to satisfy faculty

needs -- a direct result of involving the people who are going to work in the building. Other design features were a "flood" power and network trunking system to allow for the future development of services and make it easier to install new technologies. Another example was the provision of easy access for disabled students, including those with hearing and sight disabilities. Special features such as staff development "try out" labs and post-graduate research labs were also incorporated into the building. However, not everything on the "wish list" was approved.

The Learning Resource Centre provides 24-hour access to IT facilities during peak study weeks. This has led to the development of special security precautions. Each student, for example, is issued a special Student Card which must be shown to gain access to the building. Students who wish to study at night do not have access to the IT Support Staff. The Learning Resource Centre has recently introduced a Telephone Enquiry Service during the peak hours of noon to three p.m. Carolynn Rankin concluded her presentation by giving an overview of the IT Facilities that are available at the Learning Resource Centre. They include 200 PC's in 12 teaching labs, 60 PC's available for 24-hour access, 164 PC's on open access, 143 PC's for advanced/specialist applications, and 36 laptop points. The audio visual facilities include 45 self-access video playback stations, 2 presentation studios and 15 editing stations in a video edit suite. Carolynn Rankin showed a short video presentation of students using some of these facilities, and the new city campus Learning Resource Centre at Leeds Metropolitan University is without a doubt a huge success. Architectural representatives from the firm of Diener & Diener showed drawings and computer generated images of The Hurricane: A New

Building for Teacher Education and the University Library in Malmö. The building will be divided into six units, with connecting courtyards designed to provide a feeling of transparency. An indoor walkway will bridge the different units.

KTH Learning Lab Space Design Project

Associate Professor Mats Hanson of the Royal Institute of Technology (KTH) in Stockholm demonstrated the KTH Learning Lab Space Design Project. The KTH learning lab is part of the Wallenberg Global Learning Network at Stanford University in California. He showed how learning is related to physical space and to the demands put on space, such as performance -- space for lectures and presentations -- and social interaction. His definition of space design is "designing physical, local learning environments of the future that will support many types of learning". One of these types of learning environments has been in use at KTH and is a kind of a "virtual classroom", where students in Stockholm have been able to interact with students in a lab at Stanford University by communicating with computers using web-cams and a phone link. In such a learning environment it is important that the two labs are synchronized in terms of sound, that the voice transmission is in "real time", and that the speed and clarity of transmitted images correspond to that of the sound. Another important aspect has been to develop trust and a feeling of team-building among the students in cases where solving problems and demonstrating solutions transcend the borders between the local and the non-local in learning situations.

This has led to new demands on space by various learning modes, such as performance, where you require space for lectures and presentations; or team work, which requires space for structured interaction, i.e. project work and experiments. Other requirements that need

to be met are the provision of informal space for social interaction and space where it is quiet and where students can either study in silence or simply meditate. This optimal use of the physical space has led to the development of a wireless technology to assist students and teachers in communicating while moving freely from "space" to "space".

New types of learning environments and activities that have been designed to meet the needs of a more diverse student body are virtual learning spaces, 3D environments, and distributed interactive learning spaces (DILS). DILS is an "experiment concerning the development of physical and virtual learning spaces" and is part of the project New Meeting Places For Learning (part of the Swedish Learning Lab research program) a joint venture between KTH, UU, KI and Stanford. The DILS experiment has as its objective, among other things, the creation of hypothetical learning goals as well as new pedagogical, technical and spatial support systems needed to achieve these goals. The outcome will be evaluated to see if it can fit into the new framework for learning. The pedagogical support system contains various pedagogical mechanisms of which the most important are didactic mechanisms (i.e. problem-based and project-driven learning), team-oriented mechanisms (i.e. team management and trust building), and project-oriented mechanisms (i.e. project planning, project organization and project review). The technological support systems include wireless access to high-performance infrastructure, support for ad hoc networking, access to services, terminals, laptops and PDAs. Professor Hanson's presentation made it clear that the Royal Institute of Technology (KTH) in Stockholm is in the forefront of the development

of new learning environments as well as projects to test and evaluate the functionality of these "spaces". It is clear that learning labs or learning centres are becoming increasingly important in higher education.

Creating a Learning Resources Centre at Stockholm University.

The IT Coordinator of the Stockholm University Library, Gunilla Lilie Bauer, showed how an already existing building (built in 1983) is being turned into a learning gallery. She described the integration of the physical learning resource centre with a virtual LRC and the transformation of an already existing space into one that can accommodate an educational learning lab and the development of e-learning. The visions and goals of the learning resource centre are to provide customer-based services and support for students and teachers in learning situations. The services of the physical LRC include the help desk, where librarians, ICT educators and technicians are ready to assist with any problem or answer any question on the availability of networks, computers, software and other educational tools. The idea is for the virtual learning resource centre to mirror many of these services through, for example, a student portal. The educational learning lab is there to give support to teachers who want to develop e-learning courses, evaluation tools, and educational projects.

Creative environments for e-learning

The final lecture of the day dealt with "creative environments for e-learning" and was delivered by Lone Malmborg, lecturer in Arts, Culture and Communication here at Malmö University. Her lecture emphasized the importance of integrating activity, technology and space -- of designing a collaborative environment for creative, inspirational and learning activities. This incorporates ideas such as the development of

multi-user environments and learning through shared materials, of multi-modal and mobile interfaces, of focusing on the identity between mind, body and the world, and understanding that the digital should not presuppose a reference to "another reality". She also demonstrated how "blue tooth" units combined with a positioning system can be used to create a mobile learning environment.

"Creative Environments for E-learning" at Malmö University is part of the Öresund Contract for E-learning and is a three-year project that began this spring. Participants include Lund University, the Copenhagen Business School, and the Danish Technological Institute. The project is also part of the Öresund Digital Bridge, which is a platform for cooperation among universities and IT media industries in the Öresund region. There is a growing need among universities, companies and other organizations to provide ongoing training and education in various areas of specialization. This need can be met by providing learning activities in virtual or technology-augmented environments. "Creative Environments for E-Learning" is about changing our understanding of what learning is and about how and in what kind of environment it should take place.

The situated learning process, which stresses informal learning by analyzing the continuous changes that take place in communities, accentuates the learning process as opposed to the content-oriented approach. As Lone Malmborg pointed out, "learning is creative activity supported by a highly-intertwined interaction between all our senses and the mind." Front-end digital technologies will make it possible, in the near future, to support learning situations in which limitations in time and space won't exist. One such promising technology is the so called "blue tooth."

Research into these new environments of learning have focused on both physical space and cutting-edge technologies. The emphasis has been on collaborative environments of learning as opposed to the individually conducted, PC-based learning. These environments require access to creative spaces such as studios and laboratories as well as the necessary technologies to integrate physical and virtual modeling. This interplay between space, media technologies, learning and creativity will be studied as will the design of necessary collaborative learning environments. To be able to develop a technology-augmented creative environment for learning, different user groups will participate in various scenarios incorporating different front-end digital technologies. Researchers will also look at existing communities of practice in an anthropologically-oriented design approach when integrating concepts of e-learning and technologies into real learning/work environments. This approach will be of assistance when defining what it is that constitutes learning.

When looking into the use of space and technology in collaborative environments, there is one kind of technology that especially warrants further study and development, and that is shared augmented work-tables. Such tables or boards enable people to work jointly, switching between physical and virtual mock-ups and prototypes. Other interesting technological alternatives are simulators with 3D representation. Research will examine space as a resource for the realization of pedagogic ideas and social interaction as well as look into multi-site technology for human interaction, shared materials and remote access.

Another feature worth studying is the use of stages and playgrounds as creative e-learning spaces. Here the focus will on "inspiration from

the artistic use of virtual set design, digital choreography, and other kinds of digital enhancement of the stage in interplay with physical set pieces and props, typically to support learning by finding ways of organizing narrative in space". One of the main areas of study will be to design and evaluate interactive creative environments that stimulate as many senses as possible.

Lone Malmberg demonstrated clearly how a positive collaborative venture such as the Öresund Digital Bridge can contribute to the development of "creative environments for e-learning."

Workshops and final.

Those who missed the workshops during day one were given an opportunity to participate in some of them on the afternoon of the second day. The conference ended with a brief summary of the proceedings and an invitation to attend the next Creating Knowledge Conference, which will be entitled "The Information Gap".

Erik Lyons, journalist.