

# Academic Libraries and Learning Support in the Electronic Environment

Learning and teaching techniques are changing in the new electronic environment. Students are asked to gather information from different sources, most of them in electronic formats. Libraries have to adapt their buildings and services to meet their users needs continuously. Amongst the means librarians have included to support learning are electronic based information and learning resources, a better provision of IT technologies, working environments for different types of learning, digital reference services, information literacy skills and the possibility of accessing all these facilities, resources and services at any time. The conclusion indicates that librarians should continuously improve electronic information and learning resources, as well as discovering new ways to approach students.

**Keywords:** academic libraries, learning, information and communication technologies, information resources.

## Bibliotecas universitarias y apoyo al aprendizaje en el entorno electrónico

Las técnicas de docencia y aprendizaje están cambiando en el nuevo entorno electrónico. Los nuevos sistemas de enseñanza piden a los estudiantes que reúnan información de diferentes fuentes, la mayoría en formato electrónico. Las bibliotecas deben adaptar sus edificios y servicios continuamente para satisfacer las necesidades de información de sus usuarios. Entre los medios que los bibliotecarios han incluido para apoyar el aprendizaje se encuentran la introducción de información y recursos de aprendizaje en formato electrónico, una mejor provisión de nuevas tecnologías de la información, la inclusión

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**de diversos ambientes de trabajo para distintos tipos de aprendizaje, servicios de referencia en formato digital, habilidades de alfabetización informacional, y la posibilidad de acceder a todas estas instalaciones, recursos y servicios en cualquier momento. La conclusión indica que los bibliotecarios deben mejorar continuamente la información electrónica y los recursos de aprendizaje, así como descubrir nuevas formas de comunicación con los estudiantes.**

**Palabras clave:** bibliotecas universitarias, aprendizaje, tecnologías de la comunicación e información, recursos de información.

## 1. Introduction

Information and communication technologies have changed the way we live, but also the way we perceive the world. In the same sense, they have changed the way we learn. Today a great deal of information is available, but this does not necessarily mean that it improves knowledge. Knowledge can be defined as “information that makes a difference in the way other information is perceived” (Price, 1997). Therefore, the most important thing is the way the information is perceived and related to other information.

As Price (1997) points out, new technologies change the way we learn for a number of reasons. First of all, the learner has to look for information in different sources. It has some implications, such as learners will be expected to take more responsibility for information gathering through exploring information resources. Furthermore, the role of the teacher will change, as Brophy (2001) points out, to the “guide on the side”. It is to say that lecturers’ role consists of helping the learner to make meaning of the information. Secondly, units of information shift from books to bits of information. The way of searching and locating information changes from the “store-and-distribute paradigm” to a “distribute-and-store paradigm”. In the past, users went to the library to look for books and find the information. It was stored in the library and distributed to the users. Today, information is on the Internet mainly. Users have it on the Internet, and when they find what they are looking for, they store it on their computers. Therefore, information is first distributed and then stored. Another implication for learning is that the learner becomes more and more responsible for figuring out the context of the information. Learners have to analyze the information and include their own view to get new knowledge out of it (Price, 1997).

The new learner has to use all kinds of information, as Lyman (1997) points out. Critical thinking cannot focus only on printed scholarly publishing but must enable students to analyze also the other information they receive from television, information technologies, advertising and so on.

The new approach to learning is an active one. It demands from the learner an active attitude so as to get the information in any format and from many authors, compare,

contrast and participate with other people from the class in workgroup. On the other hand, new ways of learning as problem-solving strategies could help them to bring learning nearer to the real life.

The learner profile, therefore, has changed. Students need different skills to succeed and one of the most important is information literacy, but also they must adopt a wide variety of learning styles like group work and become independent learners, capable of self-management (Ward, 2003).

Information and communication technologies have also influenced the way of working. People need to develop new skills more and more. It is what has been called lifelong learning, that could be defined as “a deliberate progression throughout the life of an individual, where the initial acquisition of knowledge and skills is reviewed and upgraded continuously, to meet challenges set by an ever changing society” (Brophy, Craven and Fisher, 1998, p. 5). Frequently, people need to update their learning, for different reasons, because they need some new knowledge to improve their performance, or because they need to be promoted. This means that many of them will undertake new university courses, undergraduate or postgraduate. The new information technologies have proved very useful for them. In this way, these students are able to follow the same courses as the other students and with similar results because the way of learning is more independent.

Therefore, information and communication technologies have changed the way of learning. Today learners need a big amount of information to analyze it and extract new knowledge from it. Learning depends now more on the learner than on the lecturer. Therefore, academic libraries' support for learning should be different.

## 2. Libraries' support for learning

Wilkinson (1997) indicates that the definition of academic libraries has changed as well as the information. University libraries are to preserve knowledge and promote discovery, giving the users a wide variety of resources and services through the gateway library.

Price (1997) points out that the “gateway library” can improve the access to information and can play an important role in creating a better environment for learning through the new technologies.

However, as Wilkinson (1997) declares, technology has its dangers, such as the great amount of information available with too little organization. Users do not need all the information, but the right information for their learning. The Internet has a wide information offer, which should be filtrated before arriving to the users.

Libraries can provide the missing link between technology and learning by understanding both. As Price (1997) points out, librarians should develop interfaces, both human and technological, that help learners to select information and interact with it meaningfully in order to develop knowledge. They must set the filters for the big amount of information

which is available today. They should also keep users informed of the latest research tools.

Therefore, busy users do not have to access to all the sources, but by using the library's tools will go directly to those resources that are interesting for them. Libraries, then, should play an essential role as intermediate between information and users and also think about how to integrate old teaching methods with the new ones. A new libraries' role is the electronic teaching. The library should create new partnerships among librarians, faculty and students. Furthermore, it should pursuit an effort to master technology subject to constant change (Wilkinson, 1997).

Learning, today, does not only occur in the classrooms, but also and in a great deal, in the library. Lectures are only a part of students' learning, while the other part is developed when searching for information, working in groups and studying individually. Therefore, one could say that libraries are real enablers of learning.

In the last years, library's buildings and services have changed to adapt themselves to these new functions. Learning has been set as one of the most important objectives of the library. Some of the university libraries have changed their names to Learning Centres to make their commitment with learning clearer, which sometimes is also followed or preceded by the building of new premises. Convergence with the IT and learning services is frequent and facilitates a better learning and IT support for the students. For example, Sheffield Hallam University's library converged in 1996 with the Learning and Teaching Institute, Media production units (including the TV, photographic and graphics units and audiovisual provision), IT services and Sheffield Hallam University Press.

Ennis (2000) details the functions of a Learning Resource Service. First of all, the learning centre has the function of providing and interpreting information, knowledge and resources to support student learning. Secondly, it should proportionate the facilities (computers and information and learning resources) and a suitable atmosphere to enable students to learn at their own pace, either individually or in groups at times convenient to themselves. The users will need skills to use the resources effectively, and the learning centre should provide information skill programmes. Ward (2003) adds to these functions the staff support to resolve individual problems and to help students to use the resources effectively.

Some academic libraries have incorporated all or part of these functions, which have helped greatly to support learning in their universities.

### **3 Services to support learning**

Students have several needs that should be covered by the library. As Ward (2003) points out, students need information and learning resources, access to IT resources, a study environment that accommodates all modes of learning, skills to use the resources effectively, staff support and the possibility of accessing all these facilities, resources and services at any time.

### 3.1. Information and learning resources

Students need paper-based and web-based information for their learning, as well as other types of information resources like videos and multimedia material. An important role of the library is to support learning; therefore it should maintain an updated and sufficient collection of information resources. As Ward (2003) points out, students always need more copies of books available from the reading lists. Today some new collections of electronic books have begun to appear in the market. One of the developments that libraries could implement is the access to some product of electronic books that could help to solve the problem of shortage of paper copies. The current problem with electronic books' products is very much the selection. Librarians cannot select the e-books they access in a product, which could have all the books from a specific publisher or on a specific subject. One of the solutions could be to select the products according the current collection the library has. Another solution, more long-term, could be to improve the partnerships with publishers, giving them ideas about what kind of materials would be useful for academic libraries (Joint Information System Committee [JISC], 2003).

Electronic journals and databases have improved the students' access to relevant literature sources greatly. As Ward (2003) indicates, libraries have developed a variety of tools to facilitate users the access to these resources. For example, Leeds Metropolitan University has developed "Learning Centre Online" to provide access, help and support to information resources. One of the sections of this system contains subject guides which describe and provide links to relevant databases. New systems are substituting the old databases of databases or electronic journals. TDNet (<http://tdnet.bodley.ox.ac.uk/>) or MetaLib (Stubbings and Hamblin, 2004) are some of the new programmes that help to manage all the electronic resources available in a library. Basically, they consist of a database which contains all the electronic journals, databases, e-books, etc. Users can search it by subject or name, and the system returns all the electronic products available with information on this subject. Stubbings and Hamblin (2004) explain that MetaLib allows to cross-search more than one databases at the same time, as well as the library catalogue. If the library has the full text of the article required, MetaLib allows the user to link to the full text of the article. The authors explain the University of Loughborough's experience implementing MetaLib programme, pointing out that during the academic year 2002/2003, the increase of the databases' use was of 609%.

Regarding learning programmes, there has been a group of university libraries, mainly the ones whose service has merged with the Learning Support Service, which offer Learning packages available electronically on the library homepage, as it happens in Sheffield Hallam University (Bulpitt, 1998; Ward, 2003).

The importance of developing a good electronic collection is not only because today one cannot ignore the big importance of electronic resources, but also because all universities have a great number of distance learners that require these resources, since they are not able to visit the library as frequently as normal students.

### 3.2. Access to IT resources

Information and Communications technology is definitely included in higher education. Students have to access electronic resources almost on a daily basis and e-mail and Internet searching are part of every student's life. IT resources (PCs, access to Internet, Printers, etc.) are especially required for learning activities. A survey developed by Sheffield Hallam University's Learning Centre showed that in their visits to the Learning Centre, the respondents had used e-mail in a 78%, 72% had used Internet and 51% Office software, including World, Excel and Power Point. Therefore, an adequate provision of PCs and a network provision are needed to cover all the students' requirements. Increasing the IT provision is usually a problem, because the maintenance and replacement costs can be very high (Ward, 2003).

MacDonald (2000) includes amongst the libraries' buildings qualities the suitability for information technologies. He advises to wire-up a certain proportion of the reader places (1:8 could be adequate). Wireless technology is already here, and users could access and connect laptop anywhere in the library building. In a survey done by Beton (1999), the author discovered that Adsetts Centre (Sheffield Hallam University) and Aldham Roberts Learning Centre (Liverpool John Moores University) have equipped every reader space with provision for PC access, although the other Learning Centres studied needed to improve the networking structure.

### 3.3. Working environment

In the new electronic environment, students need different spaces and facilities to develop a wide range of learning activities. They need spaces for group work, individual study, computer-based work and silent study. The most problematic ones for the library are the group work and computer space. Noise levels could be very high in these areas and the open environment that exists sometimes in Learning Centres could be a problem. It could be solved using group work rooms located far from the study areas (Leeds Metropolitan University). Other possible solution is to establish silent study areas, where neither mobile phones nor study group is allowed and sometimes people from the staff control the noise levels (Ward, 2003).

Learning Centres have been ultimately providing what is considered as a "social learning environment". In some occasions, the whole learning centre environment is considered by students as a place of socializing as well as of learning which causes some problems. Students do not distinguish between group areas and social space, or are not aware that they cannot bring food and drink to resources and equipments. On the other hand, computer facilities, firstly thought for learning, are frequently used to socialize, like by e-mail, chat, etc. At the beginning non-academic e-mails and chat were banned in the Adsetts Centre, but later on they were allowed, because there are international and home students who communicate in this way with their families. In the same way, in the University of Lincoln Learning Centre

food and drink were not allowed, but then there was a change of policy and not only was permitted, but they installed water fountains, vending machines with hot and cold drinks and snacks, and even from mid-day to mid-afternoon there is a service for sandwiches. The main reason for this decision was that the Learning Centre is far from the City Centre and students have not got access to shops. Their experience is good although they realized that the students' number was small (Hines, 2003).

At Glasgow Caledonian University there is a Learning Café, called Real@Caledonian. Howden (2004) explains that the Learning Café was thought of as a social learning space, to support group learning. It has 190 seats with 80 computers. The whole setting of the Learning Café encourages common learning. It is supported by the technology, but not dominated by it. On the other hand, it is open to all citizens of Glasgow because it is part of the Lifelong Learning network for the city. It is an interesting idea, because the Learning Café is not located in the library, but in another floor, which facilitates that people can use library materials, but without disturbing other people that need silence.

A variety of initiatives have been developed in libraries to incorporate different types of learning. Group work and the need for social environments are two problems that libraries have to face, and make compatible with silent study areas. There have been some solutions, although each library has to find the appropriate one for its users.

### 3.4. Information literacy skills

As it was said, libraries today have a learning and teaching commitment, due to the great amount of information in electronic format available. Users do not need all the sources but those that are relevant to them. Libraries have the role of intermediaries between learners and information, facilitating them the active learning.

As Bundy (2004) remarks, information literacy<sup>1</sup> is an issue for librarians, but it is not a library issue. It belongs to the whole university community. This author points out that there are a number of reasons. First of all, information literacy is about learning how to learn in the 21st century. The second reason is the lifelong learning agenda. The last reason is the rapid obsolescence of content in professional first degree programs, which make it more important to have knowledge of how to find, evaluate and apply new information.

Libraries in many universities have developed information literacy courses for students, in partnerships with academics. Parker (2003) describes an example in the Open University Library (OU Library). In this university, two courses of information literacy are offered. One

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<sup>1</sup> Information literacy is defined by the American Library Association (1989) as having the ability to recognise when information is needed, then to be able to locate and evaluate the appropriate information and use it effectively.

of them is for first level students and the other one is for older students that have not had the opportunity to follow it. The OU Library has a unit called the Information Literacy Unit. The people involved are librarians with different roles (subject librarians, collection librarians, information managers, etc.) and computer systems personnel. Along with academic staff this unit is developing the two websites that are used by students to complete these courses. SAFARI (Skills in Accessing, Finding and Retrieving Information) is the website created for older students and MOSAIC (Making Sense of Information in the Connected Age) is for first level students. On both of the websites there is learning material and students can take advantage of all of the library's electronic resources. Students have the electronic resources and learning materials on a single site and they are supported by a team of study advisors. These advisors are mainly library staff. Parker (2003) indicates that the experience has been positive not only as a good partnership with academics, but in terms of training in educational issues and information literacy for library staff.

Hiscock and Marriot (2003) describe an information literacy course that is developed in the University of South Australia by librarians. This course is compulsory for students undertaking Bachelor of Arts degrees. There is a partnership with academics, who participate along with library staff in the course. The course incorporates a portal, which is a one-stop shop for the skills required such as referencing, evaluating and searching techniques for the library catalogue and the most important databases and search engines, lectures, an electronic reader, an electronic journal for weekly reflections on the course and the teaching of other communication techniques.

Sheffield Hallam University Learning Centre has developed an interactive package consisting of five modules: the Catalogue, Literature searching, Information Databases, the Internet and the Finished product, which includes issues, like plagiarism, bibliographies and copyright. The advantage is that as it is online, students can work at their own pace and whenever it suits them. Ward (2003) points out that the feedback was positive and it was reported that student work had shown an increased level of information skills.

It is essential that libraries develop information literacy courses for the students to make advantage of the whole range of electronic resources. A wide range of experiences has been developed in universities, some of them online only and others with traditional lectures. Assessed courses are more likely to be followed, because students usually spend time in those courses that are going to be marked. In any case, there is the need for a partnership with academics, who should understand the importance for students to learn information literacy as part of their curriculum.

### 3.5. Staff support

In an electronic environment students' support become more important, because users have to manage a great amount of information. If users are information literate, the task is

easier, but at the moment this is not the case. Koh (2003) describes the influence of post-modern culture in student and how it affects the way students face library services. The three main characteristics of students looking for resources are consumerism, superficiality and knowledge fragmentation. Consumerism in students' search means that they choose the information which cost the least and it is the most convenient to obtain. Students do not try to know how to construct the best search strategy for each database. They usually have very restrictive search terms or trust natural language too much. Finally, knowledge fragmentation means that for postmodernists there is not universal truth. They rely completely for example on the Internet. To sum up, students do not evaluate the results.

Reference services in libraries are adapting both to the new technologies and the new student profile. As Koh (2003) indicates, librarians should change the ways they develop relationships with students in an online environment. Coaching in the students search strategies could help them to improve them, without using too much time.

Digital reference services could bring libraries' help to all the users, especially to those who cannot or choose not to go to the library. Ward (2003) distinguishes different ways of electronic reference services: e-mail link to a given address, an electronic form, frequently asked questions, are some of the asynchronous ones. Chat services have been developed in quite a few university libraries, in a synchronous way of reference service. Desai (2003) indicates that there are ninety Real-Time Digital Reference Services (Iowa State University's website).

Virtual reference through chat services have some advantages, such as that users can remain anonymous, students can access reference services without losing their place in the PC cluster and the environment is familiar for the students, because all of them use this kind of programmes (Desai, 2003; Jane and MacMillan, 2003). Also, Desai (2003) enumerates some other advantages, like that it is easy to have preformatted answers, and search past conversations. Amongst the disadvantages are staffing levels, staff training and staff workload (Koh, 2003). Although it is meant to be an instantaneous service, students would not see the answer until the librarian has finished typing. It is frequent that they log off before having an answer (Desai 2003; Jane and MacMillan, 2003). Librarians must be very quick in their answers, trying to keep conversation going while they are looking for the information. Therefore, it requires specific training and practice from the librarians (Desai, 2003).

Digital reference services, therefore, could take advantage of new technologies and help the library to adapt itself to the new students' profile. Librarians should explore ways to improve communication with their users effectively.

### **3.6. Accessing information at any time**

Through the electronic environment, students can always access the information. However, students frequently ask for longer opening hours. SHU Learning Centre's annual survey indicates that students want longer opening hours not only to access IT facilities, but

mainly to access information resources. The Learning Centre is now open 24 hours during the teaching weeks. After a trial, it proved successful for students. They access the building to edit assignments, look for bibliography, print resources, and use e-mail and Internet. A security specialist company was employed. Only 1.9 percent of the users were part-time and 0.4 per cent was in distance learner courses (Ward, 2003).

Although 24-hour opening is positive for students, some problems arise such as funding problems, the lack of staff support in night hours, and security issues. Today many of the information resources are available through the Internet and many students have Internet at home. It should be estimated whether the effort is worthwhile in each library.

#### **4. Conclusion**

Learning and teaching techniques have changed in the electronic environment, due to the new information technologies, but also due to the different ways students have to learn today. Academic libraries have to adapt themselves continuously to the learning changes, to meet their user's needs.

Amongst the means librarians have included to support learning are electronic based information and learning resources, a better provision of IT technologies, working environments for different types of learning, digital reference services and longer opening hours.

All these resources have caused a change in the library environment, allowing a different atmosphere, which could improve learning or sometimes disturb users who want to learn. Some solutions have been found, such as locate group work spaces in places far from silent study areas. A great effort has been done for making all the electronic resources accessible through the Internet. Information literacy courses as well as virtual reference services allow students to take advantage of all these resources. Especially useful is the virtual reference using chat services, although it is at an early stage.

Learning is not only located in classrooms any more, but also in libraries. Librarians should play an important role in the new learning environment, improving libraries' online services and building partnerships with academics, so as to offer students the information literacy training which is now required for university and lifelong learning.■

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## references

- Beton, H. (1999). *An investigation of Management issues arising from the transition from Academic Libraries to Learning Centres*. M.A.: University of Sheffield.
- Brophy, P.; Craven, J. and Fisher, S. M. (1998). *The Development of the UK Academic Library Services in the Context of Lifelong Learning: Final Report*. London: Library Information Technology Centre.
- Brophy, P. (2001). *The library in the twenty-first century: new services for the information age*. London: Library Association Publishing.
- Bulpitt, G. (1998). Case study: Sheffield Hallam University. In T. Hanson and J. Day (Eds.), *Managing the electronic library: a practical guide for information professionals* (pp. 227-243). London: Bowker-Saur.
- Bundy, A. (2004). *Beyond information: the academic library as an educational change agent*, [Electronic version]. Available: <http://www.library.unisa.edu.au/about/papers/beyond-information.pdf> [2004, September].
- Desai, C. (2003). Instant messaging reference: how does it compare? *The Electronic Library*, 21(1), 21-30.
- Ennis, K. (Ed.). (2000). *Guidelines for learning resource services in further and higher education: performance and resourcing*. London: Library Association Colleges of Further and Higher Education Group.
- Hines, H. (Ed.). (2003). Building new environment: the physical space. In E. Oyston (Ed.), *Centred on learning: academic case studies on Learning Centre Development* (pp. 153-180). Hants: Ashgate.
- Hiscock, J. and Marriott, P. (2003). A happy partnership – using an information portal to integrate information literacy skills into an undergraduate foundation course, [Electronic version] *Australian Academic & Research Libraries*, 34(1). Available: <http://www.alia.org.au/publishing/aarl/34.1/hiscock.marriott.html> [2003, November].
- Howden, J. (2004). Real@Caledonian: the Learning Café. *Serials*, 17(1), 15-18.
- Jane, C. and MacMillan, D. (2003). Online in real time? Deciding whether to offer a real-time virtual reference service. *The Electronic Library*, 21(3), 240-246.
- Joint Information System Committee (JISC). (2003). *Promoting the uptake of e-books in higher and further education*, [Electronic version]. Available: [http://www.jisc.ac.uk/uploaded\\_documents/PromotingeBooksReportB.pdf](http://www.jisc.ac.uk/uploaded_documents/PromotingeBooksReportB.pdf) [2004, September].
- Koh, C. (2003). Reconsidering services for the postmodern student, [Electronic version]. *Australian Academic & Research Libraries*, 34(3). Available: <http://www.alia.org.au/publishing/aarl/34.3/full.text/koh.html> [2004, September].
- Lyman, P. (1997). The Gateway Library: Teaching and Research in the Global Reference Room. In D. Dowler (Ed.), *Gateways to knowledge: The Role of Academic Libraries in Teaching, Learning and Research* (pp. 135-147). Massachusetts: MIT Press.
- McDonald, A. (2000). Planning academic library buildings for a new age. *Advances in librarianship*, 24, 51-79.
- Parker, J. (2003). Putting the pieces together: information literacy at The Open University. *Library Management*, 24(4/5), 223-228.
- Price, K. (1997). Information processing and the making of meaning. In L. Dowler (Ed.) *Gateways of knowledge: the role of academic libraries in teaching, learning and research* (pp. 169-179). Cambridge: MIT Press.

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- Stubbings, R. and Hamblin, Y. (2004). How to make your resources earn their keep. *Serials*, 17(1), 25-34.
- Ward, A. (Ed.). (2003). The student experience. In E. Oyston (Ed.), *Centred on learning: academic case studies on Learning Centre Development* (pp. 97-126). Hants: Ashgate.
- Wilkinson, J. (1997). Homesteading on the electronic frontier: technology, libraries and learning. In L. Dowler (Ed.), *Gateways of knowledge: the role of academic libraries in teaching, learning and research* (pp. 181-196). Cambridge: MIT Press.