‘In-formation’ of Better Learning Environments - the Educational Role of the University Library

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ABSTRACT

This paper gives an overview of the close connection between learning - which is seen as a constructivist, active, self-directed and social process - and the university library. It discusses the role of the university library in the electronic learning environment, and considers the physical library as a place of learning which is not out of date. It also considers information literacy as the key to the library's educational role regarding its contents. Organisational issues hold together the three points mentioned above, the learning library as the prerequisite of the learning-empowering and learning-facilitating library.

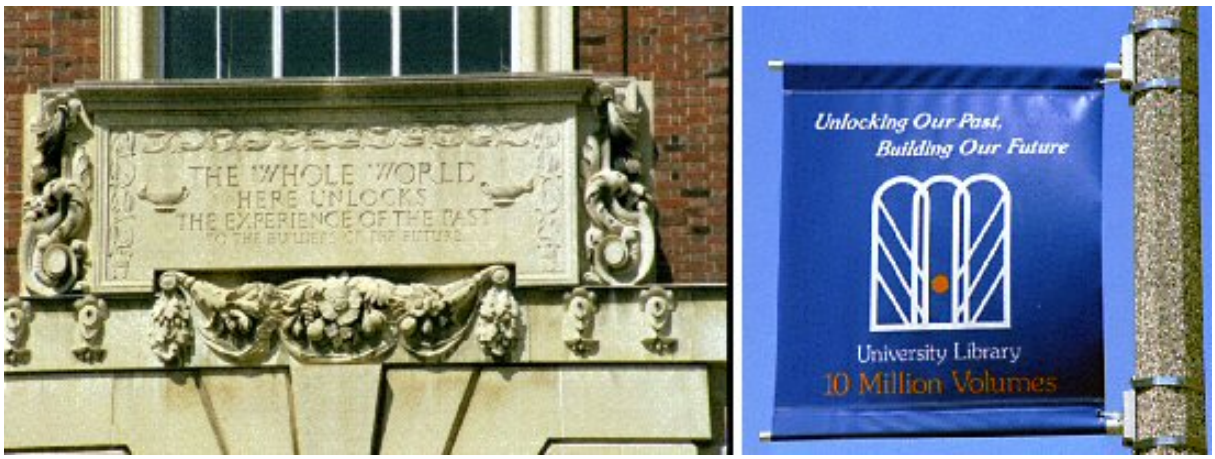
INTRODUCTION

The educational role of the library is a crucial one for the future, not only because of the etymological roots of ‘in-formation’ in instruction and education. Furthermore this role cannot be seen only in regard to e-learning. Libraries and librarians, with their core competencies, especially in providing advice and curation, are important partners in the creation of better learning environments.

To begin with, a library in itself is educational. Learning for the present and the future is only possible when using knowledge and experiences from the past. Without the awareness of the past, planning for the future is like trying to plant cut flowers. [1] The records from the past and its heritage can be found in memory institutions like archives, libraries and museums. So the use of libraries is a natural part of education.

This traditional role of libraries is still emphasized by academic libraries, e.g. in some traditional advertisements at the library of the University of Illinois at Urbana-Champaign - one from 1926, the other from today.

Picture 1:



To see the library in close connection to education and learning is also a very old view, as the following citation proves (Dury, 1650, p.17-18): "...Librarie-keepers ... ought to become Agents for the advancement of universal Learning ... his work then is to bee a Factor and Trader for helps to Learning ... " About 250 years later William Poole emphasized the importance of how to use books as important part of education, when he wrote: "the study ... of the scientific methods of using books should have an assured place in the University Curriculum. ... [it] will aid them [the graduates] in their studies through life." (Poole, 1894, p.3)

Like a previous paper by Virkus and Metsar, this paper also gives an overview of the close connection between learning and the university library today and in the future (Virkus & Metsar, 2004). While it speaks of the role of the university library as a service institution it also considers the role of the university itself, and here especially about the

future of learning in general. Learning has changed and will change. But e-learning is only one part of it. Libraries' services have to change in response to changes in universities' mission and programs.

LEARNING AND LEARNERS IN THE UNIVERSITY LIBRARY TODAY

Remember a situation in which you really have learned something. For the author of this paper an example would be preparing this presentation for the LIBER Conference 2005 in Groningen. Shneiderman describes the circle of learning as collecting, relating, creating and donating. Gathering and reading documents, then extracting information from required resources are followed by relating them to one another or to one's own experiences. Good learning processes include the connection and communication of learners, which occur best when working in collaborative teams. In an optimal situation, at the end of contemporary learning there is a product to be created - such as this paper - which should be relevant not only for the learner but also for a community outside the specific learning situation, in this case for you as a reader of this paper. The process of learning begins by dealing with information, so informing is part of every learning process and learning requires competence to find and use information (Shneiderman, 2002).

From a constructivist view, the best learning is active and self directed, including one's individual background and one's own interpretation. It is context-specific and situative as well as a social process that can create communities. Learning includes perceiving and interpreting as well as understanding and acting. In the future the transformation of subject knowledge will probably be less important than the promotion of awareness and intelligence as well as competencies and creativity. Self-observation, learning to learn, supporting the search for the “right” questions, reflecting and improving one’s own competencies, research skills and knowledge and coping with the information jungle are all necessary.

The growing importance of the promotion of competencies and soft skills also influences the learning environments in universities. These can be characterised as "information ecologies" (O'Day & Nardi, 2003). In universities, as in every ecosystem, change, diversity and locality are key characteristics of teaching and learning.

Learning will become more problem- and project-oriented, including multiple contexts and perspectives. Cooperation in groups and over-the-shoulder-learning (Twidale & Ruhleder, 2004) as well as "informal" learning (Tully, 2004) will be normal. The difference between education and research will continue to diminish.

Educational institutions, and thus also libraries, have to cope with the postmodern attitudes of their keystone species, the students. Knowledge becomes fragmented. Our customers show consumer behavior and flippancy on the one side (Harley, Dreger & Knobloch, 2001), are interactive, social, and always connected. Some attend universities part-time, and many may also have families. The papers in Oblinger and Oblinger give a good overview of the challenges of educating students today and also consider the library environment. Cultural values shift from linearity to multidimensionality, from stability to continuous change, from individualism to collaboration (Oblinger & Oblinger, 2005).

The current state of using electronic subject-specific information sources was described in the report of the project "Stefi - Studieren mit elektronischen Fachinformationen (Studying with electronic subject-specific information)", which was funded by the German government (Klatt et al., 2001). Results of the Stefi-Project show that the use of electronic, subject-specific information sources is not yet sustainably implemented in study courses. Compared to their use of electronic information media, the information literacy of students is relatively low. Searching for information is too often limited to ‘browsing’ with the help of free search engines. Students have to acquire knowledge of how to use electronic information autodidactically, a situation which is also true for quite a few lecturers. The majority of lecturers feel that they need further education in using digital information and they think that it should become a subject of introductory and higher classes for students.

The view described above of learning and its environment serves as a basis for the following arguments in respect to the services libraries can offer to support learning.

SERVING ENVIRONMENTS FOR LEARNING THROUGH THE LIBRARY

"Today, instruction ought to be arranged in such a way that it makes it possible for the individual to change according one's own decision. But this is possible on one condition only, that teaching is a possibility offered permanently." (Foucault, 1999, p.20, own translation) This quotation shows the way to future development in education. This paper discusses four points, which are to be considered when viewing the services of libraries within the learning environment of today and tomorrow:

1. Learning and the library in the electronic environment.
2. The physical library as a place of learning which is not out of date.
3. The educational role of the library regarding contents where information literacy is the key.
4. The organisational issues, which hold the previous, three points together.

(E-)learning and digital libraries

The last few years have shown a great movement towards e-learning but, as the Australian Neil McLean states, it is still in the "cottage industry phase" (McLean, 2004). On university level there is a need for a single-step approach for students to gain access to all relevant information and materials that they need for their specific lectures or courses. Ideally, students need to find what they want at one place on the Net: the hours and location of their courses, class notes, textbooks, exercises, link collections, (electronic) reserves, real e-learning material etc. Learning management systems (LMS) exist here as solutions, that grow in parallel to other electronic repositories in the university. The output of computer-supported learning consists of numerous documents, text, audio or video files, which may exist in different repositories or digital libraries. These digital libraries also contain learning objects as structured electronic resources containing contents of high quality, clear learning goals and a dedicated audience. Thus, learning objects are composites which carry - together with the object itself - the context, in which the object can be used, and which is described in its metadata. To offer such systems is a question of information management and therefore a possibility for the university library to do what the library also did in the past. The competencies of library staff are helpful here to manage them (Lynch, 2002).

It is important to make the library visible in this environment through integrating library services and LMS (McLean & Sander, 2003; McLean & Lynch, 2004). In every LMS or virtual learning environment there exist modules like chat and bulletin boards to encourage exchange between students. It is also important to facilitate the creation of information products by the patrons themselves, e.g. by creating services for digital consulting (intellectual property) and services for digital production. What is needed are places for learner expression, e.g. electronic portfolios, a form of learning diaries, whose importance were emphasized by Roes (Roes, 2001). Wikis and weblogs, as so-called ‘social software’, may be additional instruments and through their use in education e-portfolios may be realized. Libraries have a chance to use these new tools as communication instruments between their patrons or between the library and its users.

Many enhancements of traditional services through the library can be used to support e-learning. In the management of e-resources, metadata are a core responsibility of libraries. Virtual and real reference can support individual learning. Reserves are types of early learning management systems, which now in their electronic form have to be integrated in LMS. Until now e.g. the university library of the Hamburg University of Technology (TUHH) has only offered electronic lists of books in the ‘real’ reserves, sometimes with additional collections of links. Exploring services for mobile devices, representing services and instruments in a graphical and visually supported way or simply the lending of USB sticks, iPods, handhelds, laptops etc. are further activities to engage patrons where they really live and learn. Digitization and copyright clearance services for electronic reserves are especially important for faculty. An increased number of services for particular target groups (faculty, students, specific departments, etc.) are necessary. For example the TUHH library offers special web pages as subject-specific gateways into library resources, e.g. for the Northern Institute of Technology or the Hamburg School of Logistics which are two innovative public private partnerships with the TUHH.

Libraries have to offer multiple means of access for many different kinds of people. Users have to cope with a growing diversity and complexity of information resources, normally in the form of databases. Libraries undertake many different strategies to support their users in this effort: incorporating their data and holdings in Google, combining databases in federated search systems and portals as well as trying to increase reflection and awareness with information literacy activities when dealing with the information jungle (see part 3.3.).

The library as a physical learning place

Let us observe what happens in the physical library. User activities like information seeking, teaching and learning, recreation, connection and contemplation are only a few of the most important ‘happenings’ within a university library. The library is a place of interaction and experiencing instead of a warehouse as it was viewed in the past. It should be a place of life, a learning laboratory. [2]

There can never be enough study space in a library. Even in engineering libraries there is a need for a lot of workplaces (Picture 2). The Grainger Engineering Library Information Center at the University of Illinois in Urbana-Champaign for example has more than 700 places at tables, more than 450 in carrels, more than 100 so-called ‘informal’ seats such as armchairs and sofas, and more than 150 at computer workstations, but fewer than 40 catalogue and research workplaces. So, current attempts in Germany to reduce the key figure for workplaces when planning

library spaces in the future, especially in engineering, should be questioned. Educating and learning is a social event, and therefore does not only happen at home!

Picture 2: Reading room at the Grainger Engineering Library at Urbana-Champaign

In library planning in the USA, there is a trend away from individual study carrels to table-and-chair ensembles. The traditional library reading room has been revived as a place for working privately in the presence of others - a place to see and to be seen (Demas, 2005). Reading rooms in many libraries in the States quite often look similar to normal living rooms, also containing possibilities for 'non-library' uses like meeting and socialising, eating and drinking, having fun, etc. Computer stations are to be distributed in clusters throughout the building and not grouped in one place any more.

More personalized services, such as individual consultation for term paper help, need more space near the traditional reference desk. When planning and arranging library classrooms with computers it is necessary to do it in a way that enables the interaction between the students and which avoids the instructor hiding himself behind a 'teaching bunker' of information technology.

But it is also necessary - as seen before in the case of LMS - to bring the library and librarians to people where they work and when they need information. 'Satellite sites' with space for individual consultation perhaps can also be arranged directly in departments or other commons space outside the library, so that the library as consultation agency is available campus-wide.

The libraries' educational role in respect of content: information literacy activities

1. Information literacy and its definition

Even at the beginning of the last century the Nobel laureate in chemistry - and one of the predecessors of many later efforts to improve the communication of scholarly information - Wilhelm Ostwald wrote: "It is not enough to found libraries. It is necessary, by means of lectures and bibliographic lists, to instruct those eager for knowledge in the best methods of utilizing their treasures. And this is by no means so easy as it sounds!" (Ostwald , 1911).[3]

In information management as well as in e-learning, there is a need for an increased awareness of intellectual property, since questions about copyright, patents, plagiarism etc. are frequently directed to library personnel. This is also a part of information literacy (IL), and is an important part of the library's educational role.

In business and industry there is not only a need for subject-specific knowledge but also for information literate people who can work in teams. Competencies in self-directed learning and informing, as well as in information selection and their use as outcomes of academic education, are absolutely essential for modern enterprises. IL is really "a prerequisite for the information society" as Sheila Webber stated in a talk at the Annual Meeting of the Deutsche Gesellschaft für Informationswissenschaft und Informationspraxis (DGI) 2005. According to Loyd IL is a meta-competence, which enables one to learn new skills and knowledge (Loyd, 2003). Webber and Johnston offer the following holistic definition: IL is "the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society." (Webber & Johnston, 2003). Hans Roes described IL as the "core competence" of the "knowledge economy" (Roes, 2001).

There exist numerous definitions of IL and also discussions about using better terms like electronic literacy, information fluency, information skills etc. IL includes the ability to find and use information needed for work, study and research. In regard to a specific information system, it means the ability to use this system efficiently. The knowledge of information sources, the creativity to design an information process, as well as the ability to cope with information overload (selection of relevant information, structuring and retrieving information) is also often called information literacy. Taking Christine Bruce's view on IL as the "sum of the different ways it is experienced" (Bruce, 1999) the Swedish Ola Pilerot described IL education as "helping learners change/broaden their repertoire of experiences" (Pilerot, 2003, p.5).

From a constructivistic concept of learning, it is important not only to convey knowledge or abilities but to convey the different points of views of observers. Self observation and reflection on one's own learning process is necessary. IL activities of libraries should help one to become aware and to develop one's own style of how to deal with information. How do I actually inform myself? This paper proposes the following definition of IL: In addition to efficient retrieval and navigation strategies, information literacy is the creativity to organize and shape one's own information process in a conscious and demand-oriented way (Hapke, 2005). Didactic tasks are supporting, consulting, orientating, changing of attitudes, improving critical thinking as well as cooperating via the learning environment. But the teaching library - see the title of Lux and Sühl-Strohmenger who give a very good account of IL activities in German libraries (Lux & Sühl-Strohmenger, 2004) - may perhaps be not the right term for the future. Nobody wants to be taught, especially not by the library. Teaching today means learning empowering

Christine Pawley views IL also as "a matter of making enlightened and informed consumer choices" (Pawley, 2003). Today consumers of information are increasingly not passive but become active, they change between roles as reader and writer, consumer and producer of information, a fact that was already observed in 1934 by the German philosopher Walter Benjamin when he wrote: "For since writing gains in breadth what it loses in depth, the

conventional distinction between author and public is disappearing in a socially desirable way... Literary competence is no longer founded in specialized training but is now based on polytechnical education, and thus becomes public property. It is, in a word, the literarization of the conditions of living that masters the otherwise insoluble antinomies...” (Benjamin, 2001)

2. Some remarks on actual issues in information literacy

How will IL change with the changing electronic environment? For example: What are the implications of federated search tools for IL training, a question which was treated by a masters thesis in the University of Sheffield (McCaskie, 2004). An increased use of databases was observed but there were also concerns about the quality of results produced from these searches. So it is important to include federated search tools in IL training and tutorials to make patrons aware of differences between meta-search interfaces and the native search interface.

Studies about the outcome of IL activities are needed, e.g. studies which observe and prove that a person who has taken an information literacy course has developed into a more competent person. The problem here is how to measure this. One example for this is Limberg (Limberg, 1999).

It is also interesting to look at the topic of IL and its different specification in universities and business enterprises (Ingold, 2005b). Until now IL activities in universities have been too greatly library dominated and a view from outside can balance this. In the enterprise the search for information is less important than information use and production and less important than coping with information overload. With this view, you also come close to individual knowledge management issues. Often conscious delegation to the information professional is also part of IL. In turn to have this business view on IL can help the library to better promote and tailor their services to their clients.

It is useful also to reflect on critical voices on IL which give new insight and ideas. This was done by Ingold discussing the librarians’ view of IL (Ingold, 2005a). In Germany, at least, we are too uncritical of our own activities. Is IL too much dominated by the library? Perhaps consultation is better than education as a library's role in IL. It is well not to forget to improve the information systems themselves before educating their users how to use them. What about IL and the growing importance of visual literacy (Marcum, 2004)? There are no easy answers or solutions in all of the issues mentioned above.

3. Information literacy and learning

For Mandy Lupton IL is a learning experience, and "the value of generic, standalone, parallel and foundation courses for IL education is dubious" (Lupton, 2004). IL is an intrinsic part of learning as a response to a context and not a characteristic of the learner. Experiencing IL is bound up in the topic, course and discipline. Real life only contains “micromoments” (Bruce, 2002) of searching information and of the use of information systems. There does not exist "the" context, "the" user or "the" system, but of real impact are “usings” (Dervin, 1996), the real use of a specific system through a specific user in a specific context. Just-in-time models are necessary for IL instruction. The first information source for a student is another student - at first they ask each other for help. This over-the-shoulder-learning is very important for a learner, especially for becoming familiar with a computer application. The possibility to do this over-the-shoulder-learning should be used also in electronic reference services: pushing web pages, surfing and exploring information sources jointly with the customer.

To address the "teachable moment" (Block, 2003) of our customers as well as the full complexity of IL, we need a wide and diverse range of activities to promote IL and reference: one-off sessions in-class or outside of class, online tutorials, just-in-time-support as virtual reference, face-to-face meetings, newsletters via email, bookmarks, leaflets etc. Our customers are very different as learning types. IL has to be embedded in the learning context and it is more than measurable abilities and knowledge which can be tested. Acquisition of information skills does not happen casually. Learning objects to develop information skills also have to be included in the full range of study skills and in the technical infrastructure like the virtual learning environment (Stubley, 2005).

4. IL activities of the TUHH library

Engineering students normally use the library in their first two study years to consult the textbook collection or use it to study for examinations. One-off sessions integrated in lectures serve as a beginning to introduce students to library-based databases and services. For a number of years, in the TUHH there has been an agreement between the Academic Deanery in Chemical Engineering and the Subject Librarian for Chemical Engineering that the librarian gets the possibility for a one-off session in specific key lectures. With these activities it is possible to reach at least 80 to 90% of the process engineering students by the time they have graduated. In the 4th term of study the lecture "Biochemical and biological foundations for engineers" begins with a module about research methods where library services are presented. A faculty member introduces the librarian by emphasizing the importance of information skills. This is the best that can happen for the library.

Nevertheless this presentation is not really in a good learning context because after it the students do not have to do any information research. However, the students acquire an important learning goal: in the library there is a person

who can give subject specific consultation and help when searching for information. A better case is a course where the students have to prepare a presentation about designing a biotechnical process. In the "Process Design Course", offered every spring for three weeks, teams of students have the task of designing a whole chemical industrial process plant by considering materials, processes, security, environmental and economical issues. The librarian is part of the opening event and gives a presentation called "The world of engineering information - 10 points for survival". These points are:

1. Be conscious of your information behaviour.
2. Use tutorials, subject gateways and literature guides to inform yourself about how to search for information.
3. Use your local research library and consult a librarian or information specialist.
4. Use encyclopaedias and other reference works for preliminary orientation.
5. Play with search terms when exploring database features (Boolean logic, wildcard symbols, neighbourhood operators, search fields, ...)
6. Search for journal articles in subject-specific databases.
7. Don’t forget to search for patents and data.
8. Evaluate your search results with respect to relevance as well as quality of the document you’ve found and think about processing your information.
9. Keep yourself up-to-date by browsing through journal contents, subscribing to mailing lists and reading weblogs.
10. Reflect on information ethics (intellectual property, copyright and plagiarism) and policy (ownership, privacy) as well as economics (commercial and open access).

A further result of this local faculty-librarian collaboration was the inclusion of an appendix with the title "The world of biotechnology information - 8 points for reflecting on your information behavior" in a biotechnology textbook (Buchholz, Kasche & Bornscheuer, 2005).[4]

Raising awareness is the most important issue in such events, but this is essentially not limited to students only, as the following example indicates. In a survey on the information behaviour of scientists or scholars done in Germany by Arthur D. Little a great uncertainty about the results when searching information was stated (Little, 2001). Here it is necessary to make clear that on the one hand uncertainty is part of every information process itself (Kuhlthau, 2004). When searching you always have to find a balance between finding too much or too little. On the other hand situations of uncertainty are common in electronic information systems, e.g. when you think of the quality of information on the web, its ownership, and the restriction of access (Kuhlen, 1999).

A further project of the TUHH library was to complement in-class activities with an online tutorial. With the bilingual online tutorial DISCUS (Developing Information Skills & Competence for University Students), which can be used independently of time and space, the TUHH library offers a playful and explorative way of transferring information skills (Bieler, Hapke & Marahrens, 2005). The user of digital libraries is viewed as an ‘information player’ (Nicholas & Dobrowolski, 2001) who plays with databases and search terms to improve research results. For learning, play is an important concept, which should be explored (Fister, 2005).

DISCUS also gives a subject-specific orientation and includes interactive and task-oriented elements, laying special emphasis on the visualization of the tutorial's interface. The high-quality visual presentation of the user interface creates an enjoyable ambience for learning and supports perception and orientation. It creates positive emotions and increases learning activities. Didactically, DISCUS presents the content in a manifold way, offering changes of perspectives, appealing to different learning types, and enabling the student to have fun. The (red) thread as leading metaphor is visible on every screen and also in the library.

Picture 3: The thread in the TUHH library

An advertising bookmark for DISCUS says: "Grab the thread to information! The Online Tutorial DISCUS ...'cause Quicksearch is not enough!". The tutorial includes a "survival guide" for using databases, a knowledge base "DISCUS compact" as a systematically ordered, linear text (also downloadable as a PDF), and case studies for searching for information in biotechnology like citric acid, Keratin, alcohol, biological degradation and whey. In process engineering, the topic "Use of rapeseed oil in the car" gives the background for exercises to search for information.

But which students do take the time to use the tutorial? This will only be done by those students who, in most cases, would have asked a librarian for help or who already know about the worth of IL for their theses or course work. To meet the challenge of too little usage of the tutorial the TUHH library is partner in a further project called BibTutor, which is funded by the German Federal Government. Together with three other university libraries (Darmstadt, Heidelberg, Kaiserslautern) and the German Research Center for Artificial Intelligence in Kaiserslautern, we want to facilitate searching in the original search interface whether it is a library catalogue, a union catalogue or a subject-specific database.

In addition to support database selection, BibTutor will give context-specific advice when the user searches a specific database interface. It also should offer context-specific, just-in-time (e-)learning, through linking, for example, directly into DISCUS. One important question of intelligent systems is which tasks of the user will be taken over by the system and what has the user to learn and to think of when using it. BibTutor should give the user the possibility to reflect on what s/he does when s/he wants to reflect. "Learning how to use databases is not only a technical but primarily a problem of social ‘hermeneutics’ (= the ability to ask critical questions, instead of just believing what is written or programmed or stored)" (Capurro, 1990, p. 132).

In a further project called VISION (Virtual Services for Information Online), the TUHH library plans to create mini-tutorials for inclusion in LMS for topics like presenting information (citation styles, visualization), supporting electronic publication, and consulting in intellectual property and copyright issues. We also want to apply what we have learnt from DISCUS, the importance for visualization of information and interfaces. Furthermore smaller tutorials are perhaps more appropriate to user needs than such a comprehensive tutorial like DISCUS.

Organisational issues: the learning library

The most important reason for the TUHH library to do an e-learning project like the DISCUS IL tutorial was not that we thought that many students would take the time to use such a tutorial. Beneath having a landmark showing that the library does e-learning, the main reason for us was a strategic one: to become, as a library, part of the e-learning discussion within the university, to be visible as a library in the electronic learning environment. Enlarging cooperation with faculty was another strategic goal.

Until now the TUHH - a small university which serves approx. 6000 students, 25% of whom are foreign students - has had no consistent vision or strategy for e-learning. What are found in most cases are unconnected activities in e-supported teaching. In Germany the universities have just begun to enter the area of e-learning, although there are many marketing activities under this headline. In Germany the introduction of bachelors and masters degrees combined with new curricula (including mediating key skills as explicit learning goals) offers opportunities for libraries to get involved in teaching information literacy and in e-learning.

This part of the paper discusses some of the organizational issues when taking the educational role of the university library seriously. Three aspects are important here: issues within the library, within the university, and between libraries in a library union.

Within its organisation the library has to be a learning organisation itself: collecting experiences from other libraries, data on users and their behaviour and ideas from the literature, relating this to its own institution and context as well as to its partners within its parent institution, transforming old and creating new services, new organisational structures and new relationships to old and new partners, and finally increasing its overall value to its patrons.

Educational services of university libraries also influence the organisational development of the library itself, e.g. through creating new special service departments and through cooperating with new partners, for example, the student services department, perhaps even merging the library with the computer centre or the educational centre, if one is present (Collier, 2005). Which way to choose depends on the local situation in the university, which is influenced not only by functional requirements but also by people and their political power. Especially in e-learning local structures determine the role taken by the library, and most approaches are locally based (Melling, 2005)

An interesting development is that of the learning commons as an extension of information commons and as a central facility that provides space, technology, and expertise to support learning. At the University of Guelph in Canada (Schmidt, 2005) it is a strategic alliance that includes the library to combine services in research, reference and IL, as well as computing, in teaching and instructional design, and in writing and learning support. The aim is to enhance learning, writing, research and technology skills. This seems to be an interesting way for the library to be an active partner in a collaborative learning process (Simon, 2004, p. 150). The British model of "educational informatics" may be an academic foundation for such a collaboration (Levy et al, 2004). Another way is the British ”Learning Centre” model (Oysten, 2003). In Finland - see for example the Tritonia Learning Centre – there exist learning centres which are not only responsible for supporting student learning - and here especially with education in information skills - but also for supporting, consulting and training faculty when teaching. The e-learning expert Neil McLean from Instructional Management Systems Centre (IMS) in Australia speaks of different service domains in higher education: E-Research, Scholarly Information, E-Learning and Administrative Computing. What will be the role of the library in these domains in the future? (McLean, 2004)

The emergence of digital libraries forces library networks like the GBV Common Library Network in Northern Germany to develop strategies to cope with specific local demands for teaching and learning in the electronic world and to decide which local demands are also of interest for other network libraries and how to organise this cooperation. The GBV has developed a strategic working paper about the digital future of the library union. The challenge is to cope with the complexity and diversity of existing local and decentralised systems with varying technical solutions and context-specific resources, as well as to integrate them into central resource description systems, portals and other access points (GBV, 2005).

What is not yet really recognised by most libraries is the need for knowledge management instead of information management issues for digital library portals. The growing future of computer-supported cooperative work has to be integrated in library portals and services. It is necessary to provide opportunities to make active and self-directed learning for students possible and to offer a place - real and virtual - where learners can meet in a community to work together and develop shared knowledge.

CONCLUSION: THE LEARNING FACILITATING LIBRARY

The examples above emphasise the consulting role of the library as the most important one, especially in education. The library has to be a learning library itself as an organisation to compete with the challenges of the future and to adapt itself to the manifold needs of its users and its parent organization. The teaching library is not the goal of library development as a service organization, but the enhancement of the learning empowering and facilitating library.

In the future university libraries as service institutions may become more and more part of research and learning. Consultation and media will be offered when needed at the point of use, in the laboratory, in the seminar or lecture or elsewhere. Hans Roes spoke of the rediscovery of the library in education. Universities have to combine their strategies for the development and improvement of learning and teaching with their concepts for the service departments (Roes, 2001).

A story about an exhibition in the Jewish Museum in Berlin last year concludes this paper. The presentation of the exhibition named "10+5 = God : the power of numbers and signs" was accompanied by the display of cards for a card game (‘happy families’, ‘Quartett’) in the exhibition rooms. The cards visualised and mobilised interesting information on the exhibition’s topic. The visitor was subtly urged to collect and organise the cards to get a complete game and so on visiting all the parts of the exhibition. The cards were used as means to transfer knowledge and to educate the visitors. This example of play symbolises the way the university library can work to serve its customers in an educational role: offering its collections in an organised way and allowing patrons to mobilise its contents to educate themselves in a playful fashion.

Acknowledgements

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NOTES

1 According Daniel Boorstein cited by Haigh (2004, p.20)

2. Look at “Library as place: rethinking roles, rethinking space” (2005) of the American Council on Library and Information Resources (CLIR) for more stimulation.

3. For more on Ostwald and his activities as an information pioneer see Hapke (2003).

4. Appendix I, pp. 419-426. An enhanced online version can be found at http://www.tub.tu-harburg.de/2552.html?docinput[lang]=en

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GBV – Gemeinsamer Bibliotheksverbund. http://www.gbv.de/

Stefi - Studieren mit elektronischen Fachinformationen. http://www.stefi.de

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