Virtual Library as an educational tool for information specialists

Ktarzyna Millenia Żurawska and Bronisław Żurawski

Library and Information Science Department, Nicholas Copernicus University

Preface

The conditions of work are changing very rapidly in the modern society. Those phenomena have various aspects. First of all one observe that the knowledge in many professions loose its actuality very fast. Moreover the period, in which the knowledge is up to date, grows shorter and shorter. Another observation one can notice that in the information society the probability to work in one place and doing the same things in whole productive live is rather very small. One should expect that it would be necessary to change the job and profession three or more times in live.

To be competitive on the job market one should constantly improve his/her skills and knowledge. Therefore nowadays permanent education and especially self-education plays increasing role in preparing employees for their tasks.

There already exist many forms of education. The main is learning at the various types of schools and courses organized by different institutions and organisations. However, there are many economical limitations for such education on the large scale. Therefore very promising are the possibilities, which one can reach by learning the knowledge on the WWW pages. So the WWW system with its resources collected in various types of virtual libraries, virtual universities and virtual schools become more and more important in education.

Especially the permanent-education and self-education will play the leading role among the variety types of acquiring new knowledge [1]. Virtual libraries with educational resources will become one of the necessary tools in all teaching and learning processes [2], [3]. That was noticed in many educational institutions. The works on creation such libraries for educational purposes or even the whole educational systems, virtual schools and virtual universities were taken up [4], [5], [6].

Their functioning are much more cheaper than any conventional education institution. Even if they are organised on a commercial basis, the access to knowledge collected in such virtual institution is less expensive than in classical ones.

In distance education the special attention is devoted to appropriate and easy accessible information sources. The success in acquiring knowledge in virtual education depends on many factors: an access to well-prepared educational materials and circumstances, in which the learning process take place. The network tools and resources give the new possibilities in that field. Especially the usage of Virtual Libraries with educational resources is very helpful.

In the majority of documents there are descriptions of the knowledge resources of virtual libraries or various types of virtual schools. There is a lack of papers describing the process

of their creation, the problems faced during preparation of didactic materials, construction of virtual libraries and experiences in their usage in education. To some extend it is understandable because there are many publications about the concepts and projects of such libraries but there are very few realizations.

In the processes connected with all mentioned above changes in the information society the special role should play the information specialists. Therefore it will be reasonable to start and make the tests on new technology and new methods of education of such specialists.

This kind of specialists will be responsible for creation the virtual libraries and all the tools necessary in such type of education, whereas the task to create didactic materials will belong to the teachers of various field of knowledge.

To test the new educational tools, the project in this field has been started. The construction of a virtual library with educational resources and tests of its usefulness in various types of education is included in the project.

The aim of the library with educational resources is to assure and promote, in due time and in appropriate manner, an access to information sources, which are necessary for achievement the best results in teaching and learning.

In the course of realization of our project we noticed that there are a lot of problems, which occurred during creation of such virtual library. During selection of documents the special attention should be paid not only on their contents but also on the form. They should be written in the appropriate language and contain the adequate illustrations. The other problems are connected with the organization of such a library.

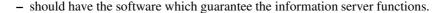# 1   Virtual library with educational resources

Our project consist of work on the structure of virtual library, tools for creating the educational documents as well as the rules, which should be preserved while writing them. However before starting to build the virtual library with educational resources some definitions had to be stated precisely. First of all the mining of term virtual library should be clear.

1.1   Virtual Library

To our purposes we assumed that Virtual Library is a collection of resources available on one or more computer systems, where a single interface or entry point to the collections is provided. The key point being that the user need not know where particular resources are located – the location is "virtual". By application of Internet, and the digitization, any user can use, search, retrieve and access and delivery the service, material, etc. resources by network.

The Virtual Library has the following functions and components:

- should be a collection of electronic documents not necessarily placed on one server - in our case the Web pages,
- should contain the catalogue of that pages,

– should have the software which guarantee the information server functions.

In our case the "collection" consists of the educational resources.

1.2   Educational resources

Before creation of Virtual Library with educational resources the following assumptions about its contents were done:

– it consists of didactic materials, connected with various subjects of Library Information Science studies, prepared by the staff of Nicholas Copernicus University Library and Information Science Department,
– there are links to sources already existing in the Internet (encyclopedias, dictionaries, the other virtual libraries etc.),
– there are methodical instructions for the library users.

The above documents, mainly in the WWW pages format, and lists of links we will treat as our educational resources.

The catalogues of above resources and other tools and software, databases are treated as components of the library.

2   Problems

There were a lot of problems, which occurred during creation of our virtual library. They may be divided to the following groups:

– concerning the structure of the library,
– connected with the selection of appropriate tools for creation and managing it,
– those which appeared during selection of a knowledge resources and refer to their quality,
– connected with further improvements and possible changes of our library according to postulates of their users.

2.1   The structure of a Virtual Library

Because of the future usage of our library in lifelong learning processes there was a postulate: it should be fully available for its registered users.

From the user's point of view the Virtual Library with educational resources consists of general information part, "entrance" part, list of courses and indexes, courses with knowledge, questions and problems to be solved and tests.

In general information part one can find introduction describing the educational project and its product - the virtual library, its mission, general description of its contents and its place in the educational system.

An introduction on how-to use that library, registration module, catalogue of all courses and resources, general guidelines concerning the education process belong to the "entrance" part.

The detailed catalogues of problems and detailed subjects which one can learn i.e. the detailed catalogue of resources are included in the third part.

The presentations, texts of lectures and exercises belong to the part of courses. Each course begins with its description containing rationale, aims, objectives, predicted time of learning, list of needed hardware and software. The knowledge, which should be already known by learner, is indicated. There is also a list of courses, which are suggested to study before and after that course. Each course is split to knowledge units devoted to particular problems. Each unit consists of notes, presentation and description of exercises, which should be done. In the course there are: a list of questions verifying the acquired knowledge and/or multiple-choice tests. In the first stage we have mainly courses on the fundamentals of the information technology, operating systems and databases. There are also links to that documents, placed on the Nicholas Copernicus University Library and Information Science department server or in the Internet, which describe the similar problems or may be of the special interest for learners, some encyclopedias, and so on.

The last part contains various tests and pages with questions. One can proof his/her knowledge using them.

For the disposal of users there is also a search engine that allowed the finding particular document placed in the library. In the beginning its role is not so important but its meaning will increase with grow of number of courses.
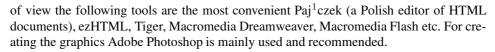
In general our library consists of information resources and tools for its creation, managing and maintenance. Among the last mentioned are information server and browser, Web pages editors, software for registration module etc.

2.2   Tools for creation, managing and maintenance of virtual library

The library is placed on the Sun Ultra Station working under UNIX operating system. As the WWW server the Sun Web Server 1.0 is implemented. From the technical point of view library consists of documents saved in html, ppt, jpeg and gif files linked together. Each course is placed in separated catalog on the server. There is another catalogue with the image files containing elements linked to or included to more than one course document. There is also a separate catalogue for the "entrance" part documents.

There are tools and database for registration of users and their activity. All information, written there, are fully available for administrator. Each user has access only to its own data.

The tools for creation of WWW pages are placed on different computers including IBM compatible PCs with Microsoft software. One can mention various tools for creation of WWW pages. The Microsoft Word 2000 is very comfortable however it gives to long source code because of many unnecessary declarations. Therefore, some WWW documents should be simplified in their HTML code. From the creator of WWW pages point

of view the following tools are the most convenient Paj[1]czek (a Polish editor of HTML documents), ezHTML, Tiger, Macromedia Dreamweaver, Macromedia Flash etc. For creating the graphics Adobe Photoshop is mainly used and recommended.

The same hold for browsers. Various types of them can be used.

The administrator collects question from the users and manage the special list with FAQ (Frequently Asked Questions).

To the special duty of administrator belongs the indexing of the WWW pages with all courses and other resources of the library.

2.3   Selection of knowledge resources

In the process of education some didactic rules should be preserved. Therefore a standard for the WWW pages for our purposes has been established.

The quality of didactic resources depends on many factors, which should be taken into account. During creation of documents, which were included to the Virtual Library with educational resources, the special attention was paid to:

  – their informative contents [7],
  – the sequence of the didactic materials,
  – their adaptation to learner's knowledge and his/her abilities,
  – the appropriate vocabulary, language and style of publication [7].

All above-mentioned factors result from well-known didactic principles and have the influence on intelligibility of material. The sequence of the didactic materials, which should be consistent with the principle of logical succession, has its projection in course structure. Its correctness could be examined by graph method or matrix method.

Each course consists of WWW pages. They could be organized in various structures: hierarchical, linear, linear with alternative links, mixed - a combination of linear and hierarchical or networked. From our experiences it is evident that the mixed structure is the most suitable and it is most frequently found in educational resources.

The other factors are connected with the appearance of the single document, with the arrangement of text, graphics, multimedia or interactive elements on it. The documents (WWW pages) should not be to long. They are sent through the network, which has restricted throughput and the channels have restricted capacity. That is why it is better to have a few pages of medium size than big one. The pages should not be overloaded with graphics. If it is possible the small pictures with a small number of colors should be used. However the value of illustration from the didactic point of view should be preserved.

Taking into account that some users will work with the only text browsers e.g. LYNX each presentation should have its text version.

In our Virtual Library there are links to other external sources, which are not placed on the library server. There were evaluated taking into account the bibliographic data, their accuracy, currency, usefulness and other features. The special attention was paid to:

- the author - what are his/her qualification in the field of knowledge described in that document,
- the date of publication - it is always important to reach up-to-date knowledge, but of the special interest it is in the domain where the development is very fast,
- the publisher - who and why publish it and for what purposes,
- the audience - to whom that document is dedicated,
- the informative contents,
- the language and the style of that publication.

Taking into account all of the above-mentioned criteria some documents has been accepted.

3   The usage of the virtual library in education

The first documents, which were delivered to students of Library and Information Science at Nicholas Copernicus University in an electronic form at our virtual library, were summaries of lectures and questions for revision the knowledge from the subject Databases. After examination session the students were asked for their opinion about that documents. During the inquiry the course participants emphasized the advantages of that kind of presenting knowledge. They indicated that thanks to that documents:
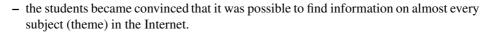
- they exactly knew the range of obligatory educational material,
- they were informed precisely which knowledge they had to learn during lectures and which skills they had to train during practices,
- it was easier to prepare for the tests and examination,
- they knew exactly where to find the interesting for them documents, when they wanted to brush up the appropriate knowledge, they did not lose time in looking for information in the other sources,
- the time spent on preparation to the examination on that subject was shortened.

All mentioned above factors caused that the students were better prepared to the final examination and they feel sure about their knowledge. That is why they passed the examination with better marks.

Could handing the summaries of lectures, written in classical - printed form, to students have the similar effect? May be, but it should be stressed that in the users opinion the tremendous popularity of electronic documents came from new for them and very interesting form of presented materials as well as from short period of time spent on accessing the needed information.

It is obvious that presentation of that documents in classical - printed form certainly would not result in following indirect effects, observed by the lecturer and very important in education process:

- accessing the needed documents students gathered new experiences, they worked more often (frequently) with the computer acquiring proficiency in using the appropriate tools,

– the students became convinced that it was possible to find information on almost every subject (theme) in the Internet.

Moreover the students, asking the other lecturers about possibilities to find the similar documents from the other subjects, aroused teachers' interest in that form of presenting materials. In that way they contributed in automation of process of disseminating knowledge.

On the next step presentations as well as texts of lectures and exercises were included to our virtual library.

On the Library and Information Science Postgraduate Studies there is no enough time for lectures. That is why the postgraduate students were suggested to gain knowledge from our virtual library. Most of them work in libraries, where they have access to the Internet. But even those students, which have not those possibilities, went to the computer laboratory or Internet clubs in order to complete their knowledge. It was checked how the usage of the library documents, which was very high, extended the possibilities of disseminating knowledge. Especially that part of Database course, which treated about library systems, was very necessary for those students. There are polish systems: MAK, MOL and SOWA, which are used in polish libraries. During lectures and laboratories there is time to present only one of them. Thanks to virtual library, students have the opportunity to learn about all of them.

The other experiment concerning the usage of materials spread through the Internet was done with second year students of the Library and Information Science at Nicholas Copernicus University. They were asked to acquaint themselves with the contents of indicated document, accessible in the World Wide Web system, and found there information referring to the specified topic (theme). After some time the level of acquiring knowledge by students was checked. It became evident that some of them have difficulties in learning. They did not know to which problems pay attention. They were not able to indicate most important information. They exposed very often the insignificant details. It was necessary for the teacher to indicate the most important problems discussed in that document. Then, after reading the document once again by the students and discussing its contents with the lecturer, the teaching aims were reached. So it is obvious that documents published in virtual library with educational resources, which are intended to be used in self-education and in distance education have to be provided with the methodical instructions concerning the process of learning.

The virtual library with educational resources should also contain the modules, which could be used for checking the level of acquiring knowledge by its' users.

4   Conclusions

In information society the circumstances of acquiring knowledge are changing rapidly. Lifelong learning and self-education become necessity. The high hopes in all types of education are set with the usage of virtual libraries in education.

The project undertaken at Library and Information Science Department at Nicholas Copernicus University led to construction of virtual library with educational resources from the

field of information science. It contains not only documents created by our lecturers but also links to the other sources, written in polish language, available in the Internet. The documents were selected taking into account their informative contents as well as well known didactic rules, which should be preserved in the educational process.

The costs of virtual library consist of costs of maintenance the hardware and costs of working out the educational resources. It is easier to make changes in the documents delivered in an electronic form than in the printed version.

Library and Information Science students of Bachelor and Master degree and Postgraduate studies tested the usefulness of virtual library in education. The experiences were positive. The students of postgraduate studies have the opportunity to acquire more knowledge and to learn in their own rate.

References

[1] Żurawska, K.; Żurawski, B.: The role of Internet tools and resources in education. Ed.: Beheim, S. et al.: Proceedings of the 7th International BOBCATSSS-Symposium "Learning Society. Learning Organisation. Lifelong Learning". Fachhochschule Darmstadt / Fachhochschule Stuttgart, 1999 Page 509-519,

[2] Żurawska, K.: Biblioteka wirtualna z zasobami edukacyjnymi. Ed.: Tondel, J.: Acta Universitatis Nicolai Copernici, Bibliologia IV - NAuki Humanistyczno-Spo^{3}eczne. Vol.340. Wydawnictwo Uniwersytetu Miko^{3}aja Kopernika, 2000 Page 377-384,

[3] Żurawska, K.; Żurawski, B.: The role of Virtual Libraries in education of information specialists. Ed.: Banke, R. J. et al.: Proceedings of the 8th International BOBCATSSS Symposium on Library and Information Science "Access 2000: Intellectual Property vs. The Right to Knowledge?". Royal School of Library and Information Science, 2000 Page 319-324, 87-7415-268-8.

[4] Cochrane, C.: Access to Learning Resources in Schools in the New Millenium: The Development of The National Grid for Learning in the United Kingdom. Ed.: Banke, R. J. et al.: Proceedings of the 8th International BOBCATSSS Symposium on Library and Information Science "Access 2000: Intellectual Property vs. The Right to Knowledge?. Royal school of Library and Information Science, 2000 Page 83-92, 87-7415-268-8.

[5] Curhalek, T; Jeric, B.; Kerec, M.; Lesnik, B.: Digital Library On The Sunny Side Of The Apls. Ed.: Banke, R. J. et al.: Proceedings of the 8th International BOBCATSSS Symposium on Library and Information Science "Access 2000: Intellectual Property vs. The Right to Knowledge?". Royal School of Library and Information Science, 2000 Page 103-113, 87-7415-268-8.

[6] Zyławski, A.: Challenges for Educational Leadership of Virtual University in Poland. 2000http://www.man.poznan.pl/ist/eunis/programme/EUNIS2000/zylawski.html.

[7] Kobyliñska, W.; Malak, P.; Żurawski, B.: The informative analysis of the educational documents. Ed.: Antanaityte, A. et al.: Proceedings of the 9th International BOBCATSSS Symposium on Library and Information Science "Open 2001: Knowledge, Information and Democracy in the Open Society: the Role of the Library and Information Sector". Vilnius University, Lithuania, 2001 Page 193-199.