Virtual Learning Space in the System of E-Learning

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Abstract

A virtual learning environment is a software system designed for teaching and learning at an educational institution. In the age of computerization and wide network technologydevelopment, active international cooperation with associate higher educationinstitutes, this kind of learning environment makes it possible to use communication tools in order to train highly skilled workers able to conduct breakthrough scientific research studies in priority branches of production, science and technology guided by advanced world experience. The modern society makes great demands of professional, business and personal qualities of graduates who work in real information space. In the meantime, application of new information technology to education and creation of subject-specific teaching methods with the use of computer means is not as intensive as the time presses. Existing software products do not always meet certain needs of the learning process. This research work shows the use of the virtual environment for teaching general educational subjects in institutions of general education. A distinctive feature of the research study is a possibility of improving automated information systems of education, software products employed in educational institutions and creation of a system that makes it possible to derive most benefit from all the resources of the learning process. Methods and techniques used in distance learning are applied to traditional teaching methods intensifying and raising their effectiveness.

Keywords: virtual learning environment, internet-based technologies, multimedia course, e-learning.

1. Introduction

A virtual learning environment is one of the most important components of organizing a system of distance education. Its aim is to create communication interfaces as convenient as possible both for teachers and for students and to facilitate control over the students' learning process. There are certain difficulties in application of virtual learning environments. First, the range of such systems is still limited in Kazakhstan. Second, foreign systems are either expensive or require expensive technical support of the producing company. The aforesaid justifies the importance ad great potential of research studies in this field.

An information-learning environment of open education consists of many interacting components. These are systems of automated learning process, distance learning systems and reference providing information systems. The content of a learning environment is drawn from electronic educational resources and services provided by different educational organizations. Studying the theory and practice of different approaches to the phenomenon of an information-learning environment showed that there are different conceptions of teaching using learning environmentsandinformation-learning environments [1].

Automated systems must be the basis ofan information-learning environment. A virtual learning space is a combination of information-learning environments (ILE) available at an educational institution. In essence, an information-learning environment, which is a part of the information-learning space created on common methodological basis with the use of information and communication technologies (ICT), is an open space.

Since ILE includes the main components of the learning process, it is the main component and, therefore, requires more attention when projecting a virtual learning space (VLS) [2]. The core of modern ILE is an automated learning management system (LMS) [3-4]. Modern learning management systems provide:
➢ Centralized automated learning management
➢ Quick and effective delivery of the teaching content to students

➢ United platform for solution of the main tasks as part of planning, holding and managing educational events
➢ Support for modern standards in the sphere of distance learning technology
➢ Personalized learning content and possibility of multiple use
➢ Wide range of means of organizing interaction between all the participants of the learning process

The targeted audience of the created virtual learning environment is students, lecturers, entrants, teachers and pupils of specialized classes at school. Lecturers will be able to use the existing teaching materials shared in VLS at university's webpage when creating and publish new content (moderated by the created working group), thus building a collective developed teaching space, summarizing experience and coordinating efforts [5]. A virtual learning space can be used both as an auxiliary element of the teaching process at university and independently for distance learning or students' independent work (SIW), which is important for the credit-module education technology.

2. Discussion and Results

In Kazakhstan, modern educational guidelines at state level suggest identical goal sets and aims. Existing achievements are employed in the learning process when training at real objects or using specialized simulators is too expensive or impossible for safety reasons. These tasks require above all imitation of actions and phenomena, such imitation are necessary for training students, using simulators for example. There are no data, however, that such achievements have ever been used for building a virtual learning environment with the view of teaching physical and technical subjects online [6].

The main automated information systems used in the Republic of Kazakhstan are the following [7]:
• Automated Learning Management System Tamos University Suite (TUS ALMS)
• Platonus Automated Information System (Platonus AIS)
• Moodle Leaning Management System (Moodle LMS)

Table 1 shows that Moodle LMS is preferable.

Table 1. Comparative possibilities of automated information systems (AIS)

TUS ALMS	Platonus AIS	LMS Moodle
- Intermediate, midterm and final control by means of testing - Online and offline consultations with lecturers makes it possible to form an individual learning trajectory based on choice of elective subjects taking the standard curriculum into account - Possibility to get news, announcements and to take part in discussion of education topics on the forum	- Individual calendars - System of messages and assignments makes it possible to carry on internal correspondence and control fulfillment of the tasks - Individual curriculum - Virtual classrooms including viewing and access to learning and teaching packages (cases, subject-specific lectures), testing - Powerful system of testing - Graphic board - Common university's forum - Common university's chat	- Elements of a course - Administrator's reports - Types of tasks - Authentication plugins - Blocks - Formats of courses - Reports on courses - Fields of the database (for the Database element of course) - Plugins of subscription to courses - Filters - Reports on marks - Formats of exporting marks - Formats of importing marks - Portfolio - Types of questions in tests - Formats of importing/exporting tests - Reports on tests - File storage - Types of resources - Searching plugins

An educational portal (a multiservice server of open education system) makes it possible to provide education services of different specialized (educational) institutions and offers a vast range of different services to educators, scientists and students. The learning process using functions of an educational portal, makes specific demands of educational services: unconditional and consciously structured formalization of a) creation (and storage) of knowledge, b) sharing (transmitting) and c) control (certification) of knowledge [8].

KATU's portal contains corporate (official) http://agun.kz and educational http://portal.agun.kz/ components.

The corporate part includes university's website management, registration system, user traffic management and different services like news, announcements, blogosphere of university's leaders, scientific editions, etc.

The educational part supports automation of the learning process: publishing content to Platonus AIS, enrichment of the electronic library, taking midterm and final control of students' knowledge. One of the problems of education portals is their isolation from the corporate component, which does not make it possible to control learning and teaching supply of the learning process, get the necessary statistical data on students' progress.

The second problem consists in creation of effective content. Often lecturers delegate electronic subject-specific teaching materials to a special division for publication in the automated system. The lecturer does not track what becomes of the materials next and does not update them. Though lecturers can publish the content on their own, they try to shift this duty to programmers, who are not always initiative in this business [9-12].

Optimal functioning of automated information systems requirescontinuous and successive updating of electronic learning and teaching documents, therefore, it is necessary to insist on lecturers' independency in working with the automated system. In our opinion, it is possible to solve the problem by developing methods and making up recommendations for lecturers about creation of education courses.

In the modern society, the ability to use information and communication technology (ICT) is an integral part of professional, business and personal qualities of graduates who are to work in real information environment.In the meantime, application of new information technology to education, creation of specific teaching methods with the use of computer means is not as intensive as the time presses.Existing learning software products do not always meet the needs of the learning process and do not correspond to the learning conditions. So, it is necessary to use information technology means effectively in order to train specialists and develop information environmentrealization technology.

It is worth mentioning that Kazakh Agrotechnical University (KATU), apart from its own electronic library (http://kazatu.kz), is constantly enriching the Republic Interuniversity Electronic Library (RIEL) and is subscribed to such websites as Russian Scientific Electronic Library, International Higher Education Magazine of Boston College (USA), SpringlerLink, Thomson Reuters, Elsevier, Kazakh National Electronic library, Uchet.kz portal, IEEE Xplore Digital Library, Lan Publishing House Electronic Library System. The list is quite impressive, and as websites intended for educational and scientific activities are going to grow, it is possible to suppose that ordinary education at schools, colleges or higher educationinstitutions will switch to electronic educationin future. In addition, learning management also switches to electronic basis; electronic dean's office is created, etc.

It is necessary to create the basis of electronic education now, and, perhaps, the quantity of electronic libraries will be second to the quality of electronic educational editions, their successful application to the learning process and their importance for students [13-15].

The policy of applying e-learning carried out by the government first implies creation of a material and technical base of educational institutions, development of information and communication technologies, access to broadband Internet. Material and technical resources are commonly perceived not only as computer classrooms, interactive boards, but also as a range of mobile devices meant for reading electronic textbooks. At the same time, it is necessary to pay attention to the fact that the size of tablets' interactive screenmust correspond to the page of a textbook.

It is common knowledge that the most important process in the lifetime of electronic educational editions (EEE) is their approbation and application. And it is necessary to observe that not every EEE has a long lifetime. Among factors, positively influencing application of EEE to the learning process, are first of all teacher'scommitment to the use of EEE when delivering lectures, for example, viewing the content on the interactive board and showing its separate elements. If electronic educational editions contain exercises, examples of problems, methodological directions, it will certainly raise interest among students.

Students can use quality EEE both guided by lecturers and independently. Unfortunately, not many EEE nowadays contribute to students' independent learning of subjects. EEE must be created by an author's team, and this is quite a long process.

In this connection, it is recommended creating and developingan electronic education course on the basis of automated learning management systems. The tools of such systems let the lecturer skilled to work with the mentioned system create educational courses and do without IT specialists. A specific feature of educational courses is a possibility of tracking students' achievement of different levels of knowledge and controlling fulfilment of practical tasks.

Pic. 1. Online lecture for distance learning students at Seyfullin KATU

It is known from experience of applyingeducational content (teaching material published in Platonus AIS) to the learning process at KATU that the principle of presenting teaching material there is not effective. That is modern network teaching technologies must not only deliver knowledge to students, but also look after students' learning process and define their progress.

Today there is a contradiction between the growth of amount of information and keeping the principle of delivering information. In any case, a standard approach to applying EEEs to the learning process is not appropriate because they can have different goals and objectives; in addition, different soft- and hardware teaching means can be used for their practical use. Computerization of the learning process, development of ICT, development and creation of electronic resources (content), automation of the learning process have raised the level of the learning environment at an educational institution, now it can improve the quality of Kazakhstan education.

It is known from practice that application of ICT to the learning process is perceived simply as retelling the content and presenting it with the help of computer means. For example, the university disposes of approximately 80 interactive boards, but the board is used as an ordinary, not modernized board. It is obvious, that such an approach wastes great possibilities to expose students' visual imaginary and theoretical creative thinking. Advanced training on modern technologies in education and methods of distance education is intended to solve this problem. Low efficiency of the courses is first of all caused by workload oflecturers who attend these courses. As a result, lecturers have no opportunity to attend the offered courses properly.

There is a need in information-learning environment with the possibility of importing and exporting distance courses in order to raise the level of lecturers' skill. Under modern conditions, lecturers use computer technology more and more often, and therefore there is a growing need for teaching and methodological materials recorded and stored on different electronic media. Hence, it is optimal when an educational institution provides a lecturer with web-based services where one could store all the necessary teaching, methodological, scientific and other materials.The lecturer keeps the data on the Internet, edits them online and in case of need can use them, for example, during a lecture, showing visual presentation stored on the Internet.

Pic. 2. Training seminar for teachers who deliver lectures using distance learning technology at Seyfullin KATU

Training seminars for teachers who deliver lectures using distance learning technology were conducted as part of a scientific project. Issues of delivering network lectures usinghttp://firmbook.runetwork service were discussed during the seminar.

What is important is the controlling function of automated systems when teachersdraw students' learning trajectories with due account taken of their individual peculiarities and control all the learning process by checking certain types of tasks.

Like in many countries, in Kazakhstan much attention is paid to distance learning. Many universities of the Republic of Kazakhstan guided by the experience of Russia's and other foreign countries'educational institutions have developed and applied distance learning, created a basis for delivering distance education [16]. In recent years, distance education has been further developed with arrival and active use of the World Wide Web. Emergence of powerful tools for developing education courses, communication technologies as well as hypertext systems of online information search has contributed to the development of a new direction in online distance education.

Students working at home or in a computer classroom with access to the Internet can use not only local, but also global information resources on scientific and technical subjects. Table 2 contains a list of distance learning systems (DLS).

Table 2. List of distance learning systems (DLS)

#	Country	Name of DLS	Address
1.	Great Britain	Open University in the UK	http://www.open.ac.uk
2.	Netherlands	Open University in the Netherlands	http://www.ouh.nl
3.	Kazakhstan	Kazakhstan Research and Education Networking Association	http://www.kazrena.kz
4.	China	Open University of Hong Kong	http://www.oli.hk
5.	Russia	Institute of Virtual Education Technology	http://www.prometeus.ru
6.	USA	National Technological University	http://www.ntu.edu

3. Conclusion

Information technology makes it possible not only to form knowledge and skills, but also to develop a personality and satisfy its cognitive interests. Their application to education contributes to development of students' inner motivation for receiving new knowledge. As many authors observe, most young men use computer means mainly for entertainment. There was an opinion poll among second year students in order to reveal what interests youth most when using ICT. 61.5% of students answered that they spend up to 4 hours a day in front of a computer; 26.9% answered up to 6 hours; 7.6% answered up to 2 hours; 3% answered "much", 1% answered "little". The results of the questionnaire are shown in pic. 3.
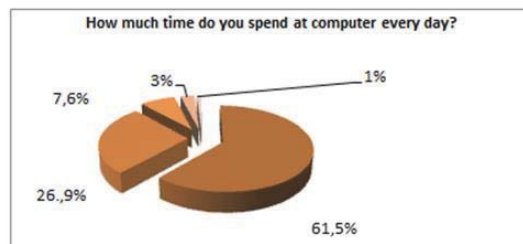
Pic. 3. Results of the survey.

At present, "informal" education (education in massive networks) [17] is widely discussed. Most students who took part in the opinion poll spend much time in the web space. The heightened need in consuming information is one more characteristic feature of a modern person.

The peculiarities of the modern world, dynamic change of life, appearance of new technologies and communication means make social demands of the sphere of education in relation to formation of a personality, whose important components are active independent cognitive attitude, motivation for continuing professional education and comprehensive improvement. In this connection, it is necessary to use in the teaching process modern education technology orientated towards development of specialist's erudition, competitiveness, mobility. It is information technology that has a powerful potential for ongoing education, creative development of a personality and offers a

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possibility to solve more interesting and complicated tasks.

In general, the results of the research study contribute to improvement of the education quality; the developed methods considerably contribute to effective use of information technology means for organizing a process of specialists' training and development of information environment realization technologyfor distance learning.

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