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Ақпараттық жүйелер технологиясы және техникасы бакалаврын білім беру мекемелерінде жұмыс істеуге дайындау барысында электрондық оқыту жүйесін меңгеру

Мақалада ақпараттық жүйелер технологиясы және техникасы бакалаврын білім беру мекемелерінде жұмыс істеуге дайындау барысында электрондық оқыту жүйесіне қол жеткізу сұрақтары зерттелген. *E*-learning-ті меңгеру қажеттігі көрсетілген. Білім беру мекемелерінде жұмыс істей алатын ақпараттық жүйелер мамандарын электронды оқыту жүйесіне арналған электронды оқытудың, жобалаудың, цифрлық білімдік ресурстарын құрудың әр түрлі компоненттерін меңгеру кезеңдері толығымен ашылған. Білім беруде қажет болатын цифрлық білімдік ресурстарын жобалау және құру технологиясы бойынша алған білімдерін тәжірибеде қолдануға мүмкіндік беретін кәсіби әрекетті өткізу мәселелері қарастырылған.

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The study of *E*-learning in the course of bachelor of engineering and technology information systems for use in educational institutions

The article examines the comprehension of *E*-learning in the course of bachelor of engineering and technology information systems for use in educational institutions. The necessity of the study of *E*-learning. Details are revealed stages of studying the various components of *E*-learning, design, creation of digital educational resources for *E*-learning professionals in information systems, capable of working in educational institutions. The issues of professional practice, which gives the opportunity to put into practice the knowledge on technology design and creation of digital educational resources, the demand for education.

UDC 378:004.4

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Software *E*-learning

The article discusses some aspects of the implementation of *E*-learning in the Republic of Kazakhstan. *E*-learning is the format of teaching and learning, based on the use of educational content in electronic form using electronic means. The main components of *E*-learning in the educational institution: a methodology (or model) of training, learning management system (LMS) and online courses. Discusses the main requirements for the training course for *E*-learning. Particular attention is paid to the choice of software for creating courses.

Key words: E-learning, systems LMS, *E*-course, software development training courses, requirements for the development of *E*-learning courses.

Strategic Development Plan of the Republic of Kazakhstan (RK) 2020 defined the further computerization of the education system and the mass adoption of *E*-learning.

The strategic guidelines of the educational policy of the Republic of Kazakhstan in the field of informatization of education will be developed in the following areas [1]:

1. Improving the Standard legal support;
2. The intensification of teacher and administrative staff;
3. Creating a local electronic educational resources;
4. The computerization of the education system and updating of computer park;
5. Modernization of hardware and software;
6. Internetization;
7. Technological and technical support for developing the educational infrastructure;
8. Implementation of a uniform education management information system.

The State Program on the Development of Education in the Republic of Kazakhstan 2011–2020 years of *E*-learning identified as one of the main cardinal modernization of education in order to enhance the capacity of human resources [2].

In world practice, *E*-learning has become an integral part of modern education. By the level of the spread of *E*-learning Kazakhstan lags behind the world leaders in the field (U.S., Finland, Singapore, South Korea, Canada, Australia, New Zealand) for a few years. In this case, by educational models of these countries, and economic leaders are working successfully to achieve the strategic goal — improving the competitiveness of the country.

In the Republic of Kazakhstan *E*-learning (*E*-learning) is under implementation, testing. The prospect of using *E*-learning technologies can be represented as the optimal combination of traditional and innovative ways to implement the learning process.

E-learning — this is the format of teaching and learning, based on the use of educational content in electronic form via electronic means such as a computer, a learning management system (LMS) and interactive learning platform.

E-learning uses a variety of methods and forms of teaching and gives them a new level. If earlier (10–30 years) electronic learning systems were seen as a means to support the traditional educational process, not changing its methods and forms, at the present time, assessing the current state and prospects of development of information communication technology, we can say that they change not only methods and forms of the educational process, but also the educational system as a social phenomenon [1].

The *E*-learning (abbreviated from the English. Electronic Learning) — a synonym for terms such as *E*-learning, distance learning, using computers, online learning, virtual learning, learning through computer, electronic technologies. *E*-learning can be used in both traditional schools and in companies that are interested in the growth of staff competencies. Using the *E*-learning with other forms of training improves the compan.

E-learning, one of the definitions — it's training with the use of computers and computer networks. In contrast, distance learning (for example, sending materials by mail), *E*-learning, takes full advantage of today's desktop PCs: graphics, sound, three-dimensional scenes and animations, virtual simulators, etc. In contrast to the computer-based training (CBT, computer-based training, when user are working one on one with the PC), *E*-learning involves the use of network capacity: the transfer of learning outcomes manager and staff personnel service, collaboration, consultation and discussion, exchange of experience, support for teachers, and more.

The main advantages of *E*-learning:

• individual work with electronic materials, using a personal computer, PDA, cell phone, DVD-player, TV;

• Obtaining advice, tips, assessments by a remote expert (teacher), the possibility of remote interaction;

• Creation of a distributed community of users (social networks), the leading overall virtual training activities;

• development and promotion of innovative teaching technologies, transfer of teachers;

• Timely delivery hour educational materials;

• Availability of standards and specifications for *E*-learning materials and technologies, remote learning tools;

• Creation and modernization of educational resources.

A wide range of *E*-learning allows you to choose methods of electronic interaction with the individual requirements and preferences of the listener: a convenient time for training, a strong mastery of knowledge, constant contact with the teacher, an individual training schedule, saving time and money.

The main components of *E*-learning in the educational institution or any company: a methodology (or model) of training, learning management system (LMS) and online courses.

Technique or model of construction of training — it is the whole set of goals and objectives of the learning arising from their system requirements and courses, rules and restrictions on the process of implementation, methods of evaluating the effectiveness of training.

Learning Management System (or a distance learning system, LMS) at the moment are already well-developed programs to be installed on a server in a local area network or the Internet. Such systems offer both Russian and foreign developers. The main objectives of LMS — the storage and delivery of *E*-learning learners, test automation, reporting on the results of training. Quality Systems Distance learning system to give teachers and staff in the department of personnel and management of the organization to create their own *E*-learning courses, to use in the learning process already existing documents, maintain the knowledge base, manage the reference and actual profiles of competence of staff to carry out the automatic qualification of personnel, integrate LMS with accounting systems frames more. The important features of LMS are mechanisms competence management personnel and automation appraisal.

E-course — it is an object in the system of *E*-learning, which is the main carrier of knowledge of the company. It is a structured material on the subject, the crucial pre-defined learning objectives. The effectiveness of *E*-learning can be more effective printed documents. Animation, virtual role-playing games, interactive models and simulators, simulators equipment and entire three-dimensional worlds to help convey to the student the knowledge and skills of visual and exciting.

In the area of *E*-learning courses can be identified such interesting areas as instructional design (technique for creating training courses and materials that most effectively solves the problem), adaptive learning (technology that allows the course «to adjust to the level of knowledge and preferences of the student), the methods of formalizing knowledge and the establishment of training courses teachers.

Instructional design training courses for *E*-learning must provide a quality learning. Multimedia training courses to accomplish this task effectively. Multimedia courses are able to provide a variety of training tools available, use any method of presentation of the material, from traditional illustrations and videos to animated schemes and systems of feedback to the user. A balanced use of various forms of information increases its absorption, maintains the concentration of students at a high level, and involves different forms of memory: visual, auditory, associative.

The application of multimedia courseware in fact unlimited. Author and lecturer can give multimedia material in any direction depending on the task: stand-alone guide, reference book on the topic, supporting material for lectures, knowledge control system and any other species.

There are the following didactic requirements for *E*-learning:

– The requirement of adaptability: adaptability to the individual abilities of the learner;
– The requirement of interactivity: the implementation of feedback and interaction;
– Require the development of the intellectual potential of the student while working with the course;
– Require systemic and structural and functional connectivity presentation of training materials;
– The requirement of formed and unique jobs in the controlling module: the tasks imposed on students who do not have to be in full before the start of the measurements.
– The requirement to ensure the completeness and continuity of didactic training cycle.

One of the main requirements for the training courses, *E*-learning is to provide interactivity in which the conditions for active and rising student interaction with electronic course in the likeness of human interaction. Interactivity is created in many ways, for example, the creation of different types of tasks for the student. Among the types of tasks are the following.

1. Questions for interactive learning books — reflective questions for student understanding of the differences and similarities between the situation (or case study) and considered in the theory of picture of the phenomenon;

2. Analytical questions aimed at the expansion of the situation on the building blocks;

3. Quest for the correlation of different types of training materials (theoretical and empirical, and received training from their own practice, etc.) and the construction of a unified picture of the phenomena, which can be applied in practice;

4. Quest for the ability to create a generalized picture of the passed in several sections, modules of the material;

5. Self-Tests, tests for assimilation of knowledge, exercises on the application of theoretical knowledge.

Most developers are trying to do at least some of the above requirements in the development of its software products. A comprehensive examination must be answered how it happened and how the end result meets the educational standards and requirements [2].

The organization of *E*-learning — a multi-faceted process that requires a serious program support. *E*-learning systems are complex environment (element), which includes all stages of education on the Internet. These steps are a way of registration and course fees, before the examination and discussion of the results. Modern solutions for remote online training company offering Adobe, ElearningSoft, Upside Learning, NetOP and many others.

Virtual education programs from developers such as «Mirapolis» easily and seamlessly integrated into IT-infrastructure of the organization. These programs make learning accessible and convenient for all employees. Specificity of web-learning is to organize online courses and trainings, considering the objectives of each individual business. Developments Adobe, HyperMethod are tool kits for the preparation of teachers and coaching managers interactive training programs, complemented by text and speech, audio and video. Created virtual classrooms and online courses provide a comfortable environment for the interaction of teachers with students.

Applications Company Upside Learning, ElearningSoft, Adobe made available electronically conducting university online lectures and workshops, offer space for a unified communication with foreign colleagues and students through multimedia presentations and reports, web-conferencing and online meeting.

In the development of *E*-learning courses may require the creation of educational resources of various types. Resources must meet the standard SCORM. SCORM (Sharable Content Object Reference Model) — is the international standard that defines the requirements for the organization of educational material and the entire LMS. Compliance with SCORM *E*-learning standard ensures compatibility of components and the possibility of multiple uses. Training material presented by individual small blocks that can be included in different training courses. These blocks can be used regardless of the LMS and the developer irrespective of the creation.

Advanced universities are developing their software for LMS, and other universities are using publicly available. The spectrum of the software used to create courses range from tools to create hypertext programming languages to instrumentation systems — designers. Rates on the market, you can select the software «1C: *E*-learning. Designer courses, «which allows for the creation, ordering, storage, exchange and presentation of diverse educational information in a user friendly manner. The software product contains the «master» of creating *E*-learning courses and tests. This allows users to create courses, even with minimal computer skills. In addition, the following means of Raptivity, Rapid Intake — Flashform Rapid eLearning Studio, LCDS — a system for creating educational materials and many others.

When choosing software to create courses are advised to follow the following criteria for assessing such products. First, a user interface software, i.e. convenience of working with him, intuitive, easy. The maximum score for this criterion will deserve a software solution that will work in people with an average level of computer literacy without any further pretreatment. In fact, to create a quality educational product may require only knowledge and skills in the field of teacher planning.

Second, the ease of implementation. The principal difference is the development of independent media independence implementation and development of any other software products related to the creation, storage and transmission of knowledge.

The third criterion — is consistent with the international standards of learning objects IMS and SCORM. With the current extent of use of *E*-learning in higher education and professional development, the ability to quickly adapt to different courses LMS simply vital. And the reusability of learning objects increases the return on sales of finished courses.

The last, and one of the most important criteria is the ability to create learning objects simultaneously transmitting multiple channels of knowledge, and not by importing the multimedia components and their own funds and templates. Evaluation of this parameter characterizes the development tool in terms of availability and the number of the necessary tools and a set of templates for creating multimedia learning objects [3].

Current requirements require the fastest and cheapest ways of the generation and transmission of knowledge. *E*-learning is one of the possible tools required to address the acute problem of our time.

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E-learning электрондық оқыту жүйесінің бағдарламалық қамтамасыз етілуі

Мақалада Қазақстан Республикасында электрондық оқытуды енгізудің кейбір мәселелері қарастырылған. *E*-learning — бұл оқытудың форматы. Электрондық түрдегі білім контентін электрондық құралдардың көмегімен қолдануға негізделген. Білім мекемесінде электрондық оқытудың негізі құраушылары: оқыту әдістемесі (немесе моделі), оқытуда басқару жүйесі (LMS) және электрондық курстар. Электрондық оқытуға арналған оқу курстарына негізгі талаптар қарастырылған. Оқу курстарын құру үшін программалық қамтамасыздандыруды таңдауға ерекше көңіл бөлінген.

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Программное обеспечение системы электронного обучения *E*-learning

В статье рассмотрены некоторые аспекты внедрения электронного обучения в Республике Казахстан. Отмечено, что *E*-learning — это формат обучения и преподавания, основанный на применении образовательного контента в электронной форме, с использованием электронных средств. Определены основные составляющие электронного обучения в образовательном учреждении: методика (или модель) обучения, система управления обучением (СДО, LMS) и электронные курсы. Обоснованы основные требования к учебным курсам для электронного обучения. Особое внимание уделено выбору программного обеспечения для их создания.