Nurilla T. Orinbetov,
Senior Lecturer,
Nukus State Pedagogical Institute

Information Technologies and Technical Applications Efficiency in Teaching Electrical Engineering, Radiotechnics and Electronics

Key words: *distance learning, information technology, e-mail, audio-video tutorials, toutor-consultant, individual and differential diagnostics, problem-based learning methods, hypertext and hypermedia systems, electronic textbook, Internet-Intranet network.*

Annotation: *The article provides for the enhancement of the quality of education through the use of modern media to offer a range of benefits for the teacher (pedagogue) and students. Using e-learning tools to improve distance learning, electronic textbooks, manuals, and learning curricula have the capability to use in the distance learning. At the same time, they have more independent thinking, more creativity in learning activities.*

It is well known that the process of training of personnel competence in modern education is carried out with the modern pedagogical and information technologies that require the immediate educational activities to meet the requirements of the modern world, which creates the basis for radical change in the quality of teaching.

The quality of education is expected to be increased as a result of enrichment of teaching methods in the field of higher education. The method of distance learning is a great important for both teacher and students. Internet technologies, such as multimedia, provide the development of computer programs based on the educational materials required for students. The distance education provides access to and use of the latest and most up-to-date methodological literature from worldwide educational institutions. The distance teaching method differs from traditional education. It allows students to study at a convenient time, place and conditions. Curricula for individual and group will be developed regardless of course.

Distance education is the process of acquiring knowledge and skills that facilitates the exchange of learning information through the use of remote learning environments and the implementation of the learning process and management system.

Distance education is an aggregate of information technology that allows students to measure the mainstream content of the learning material, interact independently with students and teachers in the learning process, learn to master the materials they study, and evaluate their knowledge and skills.

Distance education is a remote communication between teachers and students who are involved in the learning process (target, content, method, organizational form, teaching aids, etc.), special tools of Internet technology, and interactivity.

The main purpose of distance learning is to provide students with the opportunity to study at a voluntary international educational institution, wherever they live, to enhance the quality of

teaching by faculty members in educational institutions, to ensure continuous education for learners, and to bring together different forms of education.

The difference of distance education system from traditional education system is its high mobility, the greater the mobility of the audience, the richness of the teaching methodology, and the effectiveness of the learning process, regardless of where the audience are.

The method of distance education puts new tasks in front of expert tutors (pedagogues). This is because the regular replenishment of learning materials, the creative approach of educators and innovation, they need to co-ordinate the indicators with the achievements of the world science.

This tutorial is based on the requirement of education, which allows students to work independently, learn more, work independently with the computer, and use creative knowledge, and the acquired knowledge can be checked supplemented and with specialized teaching materials and tests. With a broad introduction of information technologies, distance education also can be implemented in addressing a number of social issues.

The distance education system can include the following: initial organizational work (also possible in conventional order). This includes getting involved with the group, getting to know the audience, testing them for initial learning, organizing access classes, recommending educational resources and other organizational issues;
- electronic lectures and handouts for students;
- communication the audience with the tutor-consultant;
- communication professor - correspondence with the trainees.

This includes advice by email, seminars, electronic testing, independent work of listeners over the Internet, independent work with audio-video tutorials, keep in mind the knowledge in expert system;
- independent work of listeners;
- current control (exam);
- preparation and presentation of graduation paper;
- presentation of diplomas or certificates to the audience;
- different teleconferences.

The mobility of the distance learning system creates problems for the planning and management of educational audiences, the use of teaching materials and electronic libraries, the use of global and local computing tools for computer networks, and the effective use of educational materials such as toutor - consultants and teachers' training (1, p. 142 -145).

The basic principles of organizing distance learning:
- the ability of a volunteer age group to study, ie flexibility in time and space:
-the choice of high quality teaching materials;
- high level of transparency and effectiveness of the teaching process.

Distance education pedagogically:
- is considered as a specific direction;
- availability of individual and differentiated teaching and learning;

- psychological characteristics of the student;
- Strengthening the motivation of learners to improve their learning;
- provision of interdisciplinary continuity;
- use of problematic teaching methods;
- enrichment of modern teaching methods;
- it has the ability to be consistently used in group and tactile methods.

Distance education provides of teachers and learners the rights to equalize, select, and freely express their opinions. The challenge of today's education system is to teach the audience how to operate freely in the education environment. To do so, it is necessary to create conditions for them to work independently. It requires the teacher participating in distance learning to gain some knowledge and skills. This knowledge and skills can be divided into four parts:

General knowledge and skills of a teacher in the field of new information technologies:
- to know the working principles of personal computers and their external devices;
- modern software;
- acquiring the basic principles and software of the Internet;
- knowledge of methodological materials and scientific literature on the use of new information technologies in education;
- understanding the possibilities of using the computer to manage the learning process;
- analyze the software's didactic capabilities;
- with method of organizing and conducting trainings using new informational technologies;
- independently search for information on the Internet, various e-books, databases, information search engines and dictionaries;
- selecting, storing and analyzing information;
- apply the information received to the problem solving.

Special knowledge and skills of teachers in the field of Internet technology:
- knowing the basic forms of telecommunication systems and general principles of operation;
- understanding the features of users' access to the Internet at different levels;
- knowing the organization and conduct of teleconsultations;
- knowing telecommunication (etiquette);
- accessing various telecommunication means to communicate with other users;
- having the "navigational" skills in the network;
- working with information resources of the network;
- understanding the features of using software to create distance learning courses;
- working with e-mail;
- communicating with users over the network;
- working with modern hypertext and hypermedia systems;
- distinguishing between educational content within the Internet;
- preparing data for network transfer using various utility and utility utilities.

General knowledge and skills of the teacher in the field of pedagogy and psychology:
- knowing the personal style of distance learning in students' learning activities;
- knowing factors that determine the effectiveness of students in distance learning; - knowing characteristics of the process of distance learning;
- knowing the features of organizing independent work of students in the Internet environment;

- having the means to communicate with distance learning participants;
- organizing and conducting psychological and pedagogical tests of students;
- creating personal psychological and pedagogical portrait a student;
- psychological support to learners at the initial stage of the curriculum;
- formation of small groups based on the psychological compatibility of learners;
- psychological and pedagogical diagnostics of virtual learning groups;
- creating a good psychological environment within the virtual learning community;
- preventing and minimizing the conflict situations.

The general knowledge and skills of the teacher in the field of new information technologies:

- modern styles of personality
- learning the methods of collaborative learning, methods of projecting, research methods and other methods;
- having individual, group and frontal methods of education;
- adjust the current form of education used to the Internet;
- combining daily and correspondence forms of education;
- unifying individual, group and frontal forms of education when working with remote students;
- organization and carrying out telecommunication project;
- organizing and conducting a teleconference as a modeler;
- organizing and conducting a topic chat;
- organizing and conducting monitoring of students' academic activities;
- being able to effectively control the students' knowledge and the system of testing (2, p. 160-165).

Nowadays, a lot of works are being done in the Republic to organize and conduct distance education. For use in distance learning electronic versions of electronic textbooks, manuals and textbooks created by all professors and teachers and works are underway to improve them.

An electronic textbook, an electronic learning-methodological complex, and, in general, the advantage of the science-based e-learning resources of textbook is that it has an "intellectual" power, as well as an opportunity to present information on time and in the right place. The electronic textbook should have all the relevant teaching materials in a particular subject, and its intellectual level, in turn, offers a number of advantages over a simple textbook. For example, you can quickly find the information, master the theme level by using multimedia and graphic elements, and so on.

Each e-textbook should have a separate look and meet a specific standard requirement. Electronic textbooks can be divided into four categories based on the use of computer-based learning methods and the comprehensive learning of the science curriculum.

Type 1: Provides educational material in the form of verbal (textual);

Type 2: Provides educational material in verbal (two-dimensional) graphics;

Type 3: "Multimedia" multimedia electronic textbook, which is presented in the form of three-dimensional graphic representation, audio, video, animation and partial verbatim;

Type 4: An electronic textbook that teaches the student the ability to enter the real world and to look at the real world described in the "screen world" by means of tactics (sensing, detecting), without being loud and three-dimensional spatial.

All electronic textbooks provide a great opportunity to increase the efficiency of the teaching process and to provide students with independent learning and distance learning.

The main purpose of the use of electronic textbook is to increase the effectiveness, quality and productivity of the educational process through the formation of a new information and educational method, the use of modern information and pedagogical, information and computer technologies, the widely use of electronic textbooks in contemporary educational resources, practical introduction of distance learning methods and access to the global e-learning system.

The features of the electronic textbook include:
- presentation of educational material on multimedia, using visual, hypermata, voice formats;
- combining all the textbooks for different types of textbooks, dictionaries, collections of topics and practical and laboratory exercises;
- establishing direct contact between learners and instructors;
- possibility of installing a part of the tutor's teaching and control functions on the computer training facilities;
- ability to respond to the student's counseling, explanation, inquiry-seeking information and the ability to quickly control the learning outcomes;
- using computer imaging models of object being studied by computer visualization;
-lack of modifications and improvements to learning materials;
- creating and keeping cheap learning materials;
-increased activity of the student (learner);
- possibility of distance learning in education;
- ability to use in conjunction with traditional textbooks (e.g., paper) and its advantages.

Access to eBooks is based on the psychological aspects of communicating with the computer, providing them with educational material in electronic textbooks, and complying with the verbal-logical, sensory-perceptive and expression of the cognitive process.

Also, psychological processes related to consciousness include information acquisition (mainly sight, hearing, feeling), attention (its stagnation, concentration, transformation, distribution and reputation), thinking (theoretical, practical,
- moving), imagination, memory (momentary, short and long term, short-term, short-term memory allocation) and others;
- electronic textbooks are key to user needs, creative approach to learning and creating optimal working conditions for health (3, p. 58-63).

In summary, we have the opportunity to improve the quality of the learning process using the capabilities of modern media, as well as e-books, manuals, and curriculum-friendly ones. Students will also be able to independently obtain computer skills and timely identify the results of their learning.

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