



CURRENT ASPECTS OF PRACTICAL APPLICATION OF COMPUTER TECHNOLOGY IN THE EDUCATIONAL PROCESS OF TECHNICAL UNIVERSITIES

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Abstract:

The article reveals the theoretical foundations of modern engineering and pedagogical education, proposes the author's vision of the essence of the professional competence of a transport system engineer, the main approaches to his preparation and the results of their use in the educational process of technical universities.

Keywords: information resource, electronic textbook, professional competencies, self-education, communication technologies, multimedia learning tools.

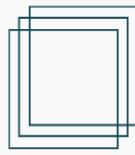
INTRODUCTION

To ensure the competitiveness of engineers, a necessary condition is not only the presence of professional skills and abilities that reflect the graduate's qualifications, but also the ability to think logically, study independently, select the necessary information for this, evaluate and use it to solve assigned problems.

The use of information and communication technologies in training is a necessary condition for the development of these abilities in future engineers. Information technology in education is a combination of the achievements of modern pedagogy and the latest methods of selecting, processing and transmitting information in combination with modern software and hardware, used to organize the educational process in order to optimize it and increase efficiency, as well as constantly update material and technical bases of educational institutions [4].

RESEARCH METHODOLOGY AND ANALYSIS

Computer technologies in teaching are one of the ways to enhance the cognitive activity of students. The use of technology, according to scientists, improves all types of cognitive motives, primarily interest in knowledge, in the content and process of learning. To the extent that a student participates in the search and discussion of different ways to solve a problem, his educational and cognitive motives and interest in methods of acquiring knowledge are improved [7]. It is noted that for the effective organization of the educational process it is necessary to achieve an optimal combination of classical and information technology techniques and teaching methods, to select them taking into account the development of abilities for analytical and synthetic activity and other individual psychological characteristics of students.



Computer technologies make it possible to quickly and effectively organize the “teacher-student” connection, while simultaneously developing not only the cognitive, but also the creative capabilities of each student in learning. As pedagogical research shows, the rapid development of the information society and the widespread dissemination of multimedia technologies, electronic information resources and network technologies make it possible to use information technologies as a means of learning, providing the opportunity for continuous education and self-education.

Depending on the area of methodological purpose, information technology tools are classified into training, simulators, information retrieval and reference, demonstration, simulation, calculation, modeling and educational games [11].

In order to determine in the process of studying which specialized disciplines it is most appropriate to use information technology, we need to solve the following set of problems:

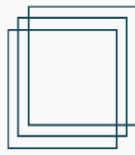
- analyze state educational standards of higher professional education in the area of training;
- to study existing curricula for training engineers of a certain profile;
- determine their compliance with the requirements of educational standards;
- to highlight professional disciplines that form the special competencies of engineers of a certain profile;
- analyze traditional approaches to the study of these disciplines, identifying their main shortcomings and ways to eliminate them using information technology.

Let's consider the process of using computer technology using the example of training transport logistics engineers on vehicles at the Tashkent State Transport University.

This educational standard indicates that the structure of the undergraduate program includes basic and specialized parts. It is the specialized part that is most designed to form the necessary profile of the future logistics engineer. Based on the above, a list of specialized disciplines that form the training profile “Transport Logistics” is compiled on the basis of a list of basic disciplines of the professional cycle.

To ensure the formation of knowledge and skills necessary for carrying out professional activities in the field of transport logistics and the formation of basic professional competencies, the training program in this profile provides for the study of the following disciplines:

- Transport logistics;
- Modeling of transport system processes;
- Multimodal transport technologies;
- Intelligent systems for managing transport processes;
- Transportation of goods by motor transport;
- General course of transport;
- Applied information systems in logistics;



Studying the listed disciplines allows students to develop such basic professional competencies as:

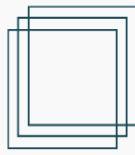
- ability to establish and determine priorities in the field of transport logistics, willingness to justify the adoption of a specific decision when developing new transportation processes;
- select technical means and technologies taking into account the environmental consequences of their use;
- ability to calculate transport capacity and transport efficiency, evaluate and plan the introduction of innovations in the processes of the transport system;
- organization of document flow for the organization of transportation, the ability to use regulatory and technical documentation in the conditions of cargo transportation;
- the ability to search, select and use new information in the field of development of the transport system, the ability to systematize and summarize information;
- ability to control the quality and quantity of transportation and delivery services provided by organizations. [1]

When studying disciplines, traditional teaching methods such as lectures, laboratory and practical classes are used. A significant amount of study time is provided to students for independent study of disciplines. Considering the low self-discipline and self-organization of modern students, it can be assumed that most of the material will remain unstudied. This indicates the need to complement traditional teaching methods with information technologies, which, as already mentioned, increase students' motivation and develop their cognitive interest.

Reinforces the need to introduce information technology into the training process of transport system engineers and the rapid development of this field. The growth of scientific and technical information and, as a consequence, the rapid obsolescence of educational literature, visual aids and material and technical equipment of classrooms and laboratories leads to a discrepancy in the preparation of students for modern production conditions. In this case, the introduction of information technologies into the educational process is a necessary condition for ensuring the training of students in accordance with modern requirements and the level of development of science.

In addition, the traditional method of conducting lecture classes, used in full-time education, involves a significant amount of time spent on taking notes on educational material, which, when teachers prepare visual multimedia teaching aids, can be learned with greater efficiency.

When preparing transport system engineers, it is also necessary to take into account the fact that many students are employed and do not have the opportunity to regularly attend lectures and practical classes. The development of multimedia lectures and laboratory and practical work in this case will allow such students to study the material independently and work at a comfortable pace, without interruption from work and in accordance with their temperament and abilities.



If necessary, they will be able to linger on the study of any issue or return to material already covered, complete assignments independently and submit them to teachers using communication technologies, keeping up with the schedule of the educational process.

A modern electronic textbook is not just a digitized textbook, but is an interactive component of the educational space in which the teacher and student have the opportunity to interact as subjects of learning. From a didactic point of view, an electronic textbook can be considered as a multimedia educational tool that combines traditional and modern teaching tools and methods. In accordance with state standards, the elements of the educational and methodological complex of the discipline include:

- a work program for the subject, defining a list of topics in the discipline being studied and the distribution of hours for studying each of them;
- methodological and didactic recommendations for studying the subject and organizing the educational process and independent work of students;
- main types of electronic educational resources (electronic textbooks, electronic presentations, electronic laboratory workshops, virtual laboratories, educational application software, electronic simulators, etc.);
- additional electronic information resources (legal and information systems, dictionaries, scientific publications, project documentation, etc.);
- automated system for testing students' knowledge;
- list and procedure for using teaching aids to study the subject [10].

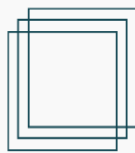
An important condition when developing an electronic textbook on a specialized discipline is the construction of a model for managing the educational and cognitive activities of students. It largely depends on the ability of the software used to carry out interactive interaction between the teacher and the student.

RESULTS

Currently, all tools for creating electronic textbooks are divided into four groups depending on the purpose, functions performed, requirements for technical support and application features:

- programming languages;
- multimedia;
- hypertext and hypermedia tools;
- special software for creating electronic textbooks [12].

To develop an electronic textbook in the discipline “Applied Information Systems in Logistics,” I chose the SunRavBookOffice software product, which includes three components: SunRavBookEditor – a tool designed for creating an electronic textbook, SunRavBookReader – a tool that allows you to read electronic textbooks created in this program and SunRavTestOffice – a tool for developing electronic tests compatible with electronic textbooks developed in the SunRav environment. The software product I



chore is characterized by a user-friendly interface and ease of use; it allows you to create textbooks in various formats, including HTML, which determined our choice. In accordance with the requirements for the structure and components of the electronic textbook described above, to confirm the research hypothesis, I developed an electronic textbook for the discipline “Applied Information Systems in Logistics” in HTML format. The structure of the textbook includes:

- information and methodological block;
- educational and training block;
- control and evaluation block;

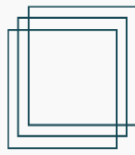
The information and methodological block contains:

- 1) an annotation intended to familiarize students with the goals and objectives of studying the discipline, the results that the discipline is aimed at achieving; a list of sections and topics of the discipline, which details the list of topics and issues studied by students;
- 2) instructions for working with the electronic textbook, which describes the sequence of actions that students need to perform to successfully master the discipline. In addition, this section provides information on the distribution of points between individual types of work performed;
- 3) the section “Information about the authors” contains brief information about teachers teaching the discipline “Applied Information Systems in Logistics” and contains contact information for communicating with them.

The educational training block contains lecture material and methodological instructions for performing laboratory work. Navigation through sections of the textbook can be carried out using a tree-like list in the left window of the page, navigation buttons, or using hyperlinks located directly in the text in the main window of the textbook.

Each topic of the lecture material indicates:

- goals of studying the topic - give students an idea of what knowledge they should receive at the end of its study, and what tasks to complete to receive a positive grade, motivate students to an independent, extensive search for information, thereby stimulating the cognitive activity of students and promoting development they have the ability to search for necessary information using various electronic sources;
- methodological instructions for the lecture - guide students on what topics need to be studied with special attention, what questions to take notes on. Also, the guidelines present individual assignments for each topic aimed at developing students’ skills in using information and communication technologies and various multimedia tools in educational activities;
- key words – basic concepts discussed in this topic and various specialized terms, the meaning of which students can find in electronic dictionaries, or using a link to a glossary available in the discipline course;



– educational material – is lecture material on key issues of the topic, arranged in a logical sequence and provided with hyperlinks to additional sources of information necessary for a more in-depth study of the material.

Methodological instructions for performing laboratory work, in accordance with the didactic requirements for this type of work, contain:

– description of the topic and goals of the work, which allows students to get an idea of what skills they will receive as a result of completing the work and forms their cognitive interest in the upcoming work;

– brief theoretical information necessary to complete laboratory tasks. Theoretical material for laboratory work contains a significant amount of illustrative material, which is presented in the form of videos, multimedia presentations and documents in pdf format.

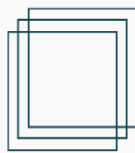
The control and assessment block contains a set of test tasks for the thematic modules of the discipline. Each set of assignments includes tests for intermediate control for each lecture and a final test on all topics included in the module. When conducting thematic control, computer testing allows the teacher to provide feedback and observe the dynamics of the learning process, evaluate the effectiveness of the student's learning process of thematic material of the modules and determine ways to improve the educational process based on the results obtained. The use of electronic testing at the stage of final control allows you to comprehensively assess students' knowledge of the module studied and systematize it.

As pedagogical practice shows, when studying disciplines remotely, the most labor-intensive and problematic is the assessment of students' knowledge.

CONCLUSIONS:

Students are attracted by the novelty of conducting training sessions using electronic multimedia information resources. During classes, an atmosphere of real communication is created in the classroom, in which students strive to express thoughts "in their own words," they willingly complete tasks, and show interest in the material being studied. They learn to work independently with educational, reference and other literature on the subject. They become interested in obtaining better results, readiness and desire to perform additional tasks.

Thus, it can be argued that the use of electronic textbooks and other computer technology tools in the specialized training of future transport system engineers contributes to the development of their professional competence.



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