

STUDY OF GENERAL TECHNICAL DISCIPLINES IN THE CONDITIONS OF BLENDED LEARNING

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The article presents the method of organizing blended learning of future engineers in the process of studying general technical disciplines.

Blended learning is a type of hybrid methodology where a combination of online learning, traditional and independent learning takes place. The tutor can organize the learning process in blended form, using online learning courses, which are based on the use of structured according to the educational objectives of the content. In the training of future engineers, much attention is paid to the study of general technical disciplines, which provide higher education students with a system of knowledge, skills and areas of application of modern technology and make a foundation for further study of professional disciplines. According to the the specifics of teaching these disciplines, namely a significant number of fundamental concepts in each discipline, practice-oriented it is necessary to describe the method of organizing blended learning of future engineers in the study of general technical disciplines.

The example of the world's leading universities shows that quality education is possible with a significantly smaller number of classrooms than in Ukrainian educational institutions. But this requires the competent use of online technologies with appropriate methodological approaches that provide an effective combination of direct and indirect forms of interaction between students and tutors in the form of blended learning [1].

Scientific and methodological support of blended learning includes [2]:

- methodical (theoretical and practical) recommendations for the development and use of pedagogical and informational and communicational technologies of blended learning;
- criteria, means and systems of quality control of blended learning;
- didactic and methodical content of online courses.

The development of modern technologies places increased demands on the future engineer, employers are interested in highly qualified personnel, which are characterized by professional mobility and an appropriate level of professional competence.

General technical disciplines:

- promote polytechnic education;
- provide preparation for the study of professional disciplines;

- help to better understand the laws of science and their application in technology;
- contribute to the formation of a technical worldview.

To the general technical disciplines applies: Mechanics of Materials and Constructions, Theory of Mechanisms and Machines, Descriptive Geometry, Engineering and Computer Graphics, Details of Mashines, Theoretical Mechanics, Standardization and Technical Measurements, Materials Science and Technology of Construction Materials and etc.

The organization of work and technology of presentation of educational content in the online course includes two important aspects: direct educational activity in the conditions of the online course and its monitoring. Online learning activities include a number of tools: lectures can be presented in the form of *lectures with audiovisual accompaniment and interactive lectures*. Lectures with audiovisual accompaniment provide a scientific presentation of a large amount of clearly systematized and concentrated, methodically competently processed modern scientific information, establishing contact with the audience and providing effective feedback, the tutor's monologue is accompanied by slides, videos, tasks; interactive lectures include not only multimedia properties, but also components of interactivity [3].

Explanation, methods of implementation and feedback in the context of blended learning can be carried out through *multimedia presentations* to practical work, based on a type of training sessions of a practical nature, aimed at deepening, expanding, detailing and consolidating theoretical material; and *interactive laboratory work*, when the applicant conducts full-scale or simulation experiments in order to practically confirm certain theoretical provisions of a particular discipline, acquires skills in working with equipment, hardware, computers, measuring equipment, experimental research methods.

Also important component of online courses is *interactive content*: any content (video, graphics, audio) that involves the active participation of participants and build them into tools for learning and knowledge control can be an online survey of applicants for certain actions and availability feedback; survey for higher education applicants, based on the results of improving the structure of the course; chat and forum - with the help of these tools the tutor keeps in touch with applicants, conducts consultations.

Monitoring of educational activities in the conditions of online courses can be carried out by means of testing and direct monitoring of the performed tasks by the tutor. The testing tool is a *training test simulator* – a program designed for self-study (or repetition) with simultaneous control of knowledge on a particular topic, is a complex, modeling and simulation system, computer and physical models, special techniques that are created to to prepare the individual to make quality and quick decisions. With the help of monitoring the performance of tasks in general technical disciplines in the conditions of distance learning courses, the tutor and the applicant can identify topics that need to be better worked out [4].

Thus, the method of organizing blended learning of future engineers in the study of general technical disciplines involves the use of an online course, structured

according to the educational objectives of the content. General technical disciplines have certain specifics that require the use of tools in distance courses, namely: lectures with audiovisual support, interactive lectures, multimedia presentations for practical work, online laboratory work, interactive elements, training test simulators and the use of monitoring system further correction of educational content. The set of outlined tools will provide an opportunity to improve the quality of training of future engineers through quality study of general technical disciplines in the conditions of blended learning.

References:

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