

MECHANISMS FOR DEVELOPING STUDENTS' SKILLS IN THE USE OF DIGITAL TECHNOLOGIES

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ABSTRACT

The introduction of effective mechanisms for the development of students' skills in the use of digital technologies in the educational process is important in teaching the module "Electrification of mining enterprises" in accordance with the requirements of socio-economic development of the country.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

In order to ensure the quality and efficiency of teaching the module "Electrification of Mining Enterprises" there is a need to study the quality of modern teaching aids based on the introduction of innovative and information technologies in the educational process, the use of integration opportunities, intellectual potential, creative abilities of students. . Therefore, in order to adapt specialists to modern and promising labor market requirements, innovative educational environment, new teaching strategies, constantly updated, changing and improving educational information infrastructure, it is necessary to create and implement an information service within the system:

- Ensuring that the created teaching aids reach the classes in a timely manner;
- Continuous improvement of the skills of lecturers;
- Operational implementation of new methods and technologies for teaching science;
- Ensuring the quality and effectiveness of education in the courses;
- Constant monitoring of knowledge, skills and abilities of students;
- Organization of monitoring of current, intermediate and final control over the knowledge of students and masters on the basis of information services.

The laws of informed learning management reflect the objectively existing, repetitive interactions of various elements and events in the management process. Research suggests that the laws of education management are of a general and specific nature [2; 103].

In our opinion, the architecture of the training module "Electrification of Mining Enterprises" is based on the principle of Web-server + Web-client, and if the object of informatization has a geographically branched structure, the effectiveness of education will increase. This includes the staff of the higher education institution, parents of students, the general public and the organization of the educational process.

Therefore, the launch of the central database for the training module "Electrification of Mining Enterprises" requires the development of forms that allow you to enter data, edit them and display them. , All the information about the training module "Electrification of Mining Enterprises" is summarized in the first level in the downloadable data package. After that, the system, which automatically loads the data to the remaining higher levels, displays the forms that appear on the screen. In general, in the development of forms that appear on the screen, special instructions (buttons) are taken into account, which combine systemically and regularly used forms, as well as on the basis of a special program.

In order to effectively organize the training module "Electrification of mining companies" will be a process of integration into the system using computer, information and communication technologies.

The telecommunications infrastructure, which combines geographically distributed information resources, is the result of the industrialization of a technological, product-oriented mode of production. Informatization is a model based on cybernetic methods and management tools, as well as information and communication technology tools.

According to MV Yadrovskaya's monograph "Modeling in the realization of cognitive learning" modeling is the reproduction of a part of reality (object, event, process, situation) or its management based on the authority of the object, using events or similarities in the educational process. research process ”.

AM Novikov studies modeling as an active process and argues that "models in pedagogical systems are arranged in a different hierarchical order as a system" []

A model is some traditional (drawing, diagram, template, etc.) template that is usually presented in its original or abstract (mental or symbolic) form and contains the basic features of the modeled object. The procedure for creating models is widely used in scientific, theoretical and practical areas of human activity.

Summarizing all the ideas, the development of students' skills in the use of digital technologies in teaching the module "Electrification of Mining Enterprises" is a set of integrated and interconnected methods of knowledge theory and practice, logical operations (observation, analysis, synthesis, hypothesis formation, formalization, idealization, abstraction, comparison). , finding similarities by analogy, generalization, categorization, systematization, inference) and practical activities of design (experimentation, interpretation, verification).

A.Yu. In his research, Uvarov uses cluster models to organize and manage the information service of an educational institution. According to the scientist, clustering is based on the following components:

1. Introduction of digital educational resources in educational institutions;
 2. When using different forms of education on the basis of information and communication technologies;
 3. Adequate coverage of the media when provided with software;
 4. Organization of education management on the basis of ICT, development of competencies of teachers to use ICT services
2. Use of ICT services in the educational process.

V.A. Yasvin explores the potential of models in the study of the learning environment in his book, *Obrazovatel'naya sreda: ot modelirovaniya k proektirovaniyu*. In practice, the scientist writes, "a model is a natural or social object or an artificial construction or sign system of an event." Based on this view of the scientist, it can be said that modeling is the acquisition of an analogue or new knowledge about a system through a natural or social object or an artificial construction of a phenomenon or a definite system of phenomena. Therefore, the acquisition of skills in the use of digital technologies in the teaching of the module "Electrification of Mining Enterprises" is commensurate with the stages of formation of competencies in accordance with state standards.

As a result of studying the scientific sources, it should be noted that there are two effective ways to teach the module "Electrification of Mining Enterprises":

Training of the module "Electrification of mining enterprises" on the basis of material models; Teaching the module "Electrification of Mining Enterprises" on the basis of ideal models, ie training on the basis of ideal structures, symbolically defined and reflecting the industry, using digital technologies. The use of the information model in teaching the module "Electrification of mining companies" shows its effectiveness. In this case, the information was presented as information about the object model, object parameters and variables, the relationships between them, the values required for the input and output of objects and the values included in the modeling model of possible states of the object. Consequently, data on the electrification of the mining industry should always be recorded on certain digital media; significantly increase the number and volume of communications, as well as alleviate existing social constraints; significantly increase the speed of communications, etc.

There is a growing need for future engineers to develop a model that will enhance their skills in using digital technologies.

We can conclude that the conditions identified in our study will be realized by future engineers by creating appropriate conditions for them to use their creative potential in an environment of digital technology in the electrification of mining enterprises. The following will be required when teaching the electrification module "Electrification of Mining Enterprises":

- 1) increase the time allocated to independent activities and increase the opportunities for future engineers to express themselves in creative activities outside the classroom and classroom;
- 2) systematization of existing creative tasks and assignments and development of new ones to work in the digital technology environment;
- 3) use of heuristic and problem-based teaching methods;
- 4) establishment of creative digital information cooperation;
- 5) widespread use of digital technologies in order to develop the creativity of future engineers;
- 6) implementation of subject digital integration in the educational process;
- 7) to enable future engineers to acquire new professional creative experiences.

Only on this basis, the goal, the task, the achievement of results, will allow future engineers to effectively develop the use of digital technology.

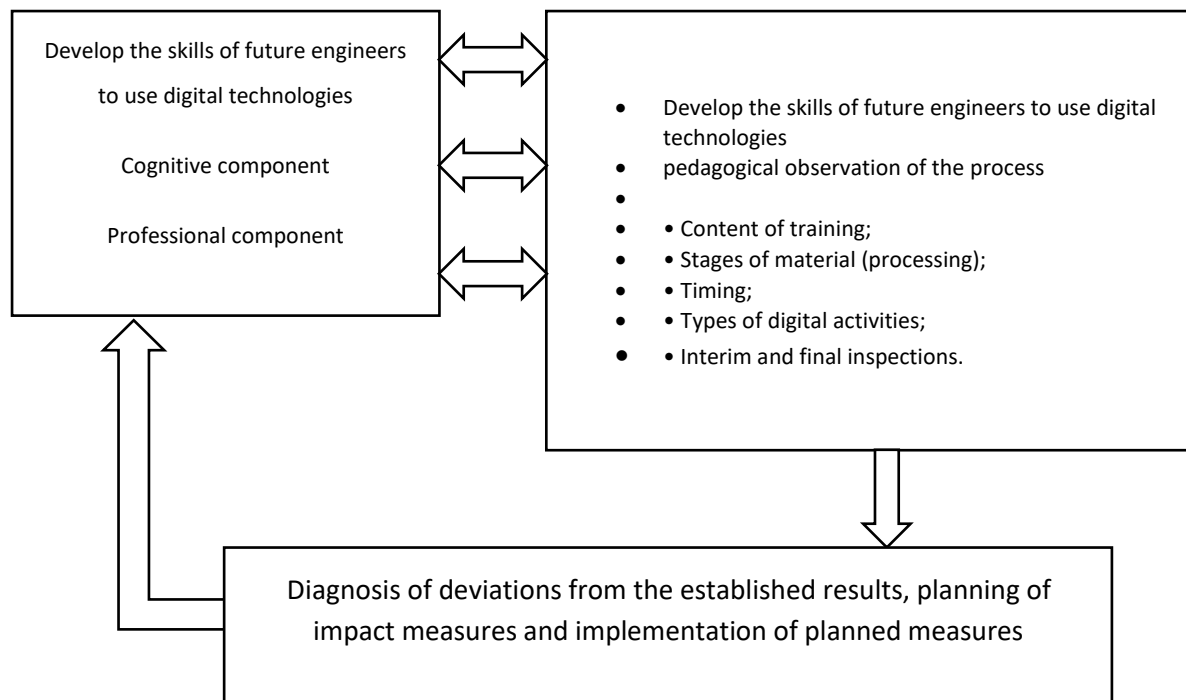


Figure 1. Stages of developing students' skills in the use of digital technologies

The implementation of pedagogical cooperation in the process of developing the skills of future engineers in the use of digital technologies has an effective impact on the acquisition of knowledge, skills and competencies related to important professional and personal qualities. In our opinion, it is expedient to use the first model with a resource center to organize the educational process "Electrification of mining enterprises" related to the development of skills of future engineers in the use of digital technologies. The advantage of this is explained by the fact that our first model, recognized above, is fully compatible with the pedagogical conditions.

The superiority of the network community is determined by the fact that all participants provide simple actions, provide opportunities for social team service in the exchange of messages. This type of modern communication is already characterized by the fact that it has already become a daily necessity for students. The use of the network community for educational purposes reveals a clearly expressed positive advantage, effectiveness.

In addition, the use of the network community plays an important role in pedagogical practice, as it enables its participating subjects to develop collaborative thinking, tolerance, decentralized models, critique, and other similarly important characteristics.

Professional socialization of young professionals should be carried out on the basis of a certain organizational model flow, which defines the constructive requirements for the use of collective resources and placement of subjects of network cooperation subjects.

Compared to the others studied, the two main network collaboration models are widely recognized. For example, when presenting the topic "Methods for determining the design load in the power grids of mining companies", students were instructed to digitize the following indicators for determining the design load of single-bucket excavators, drilling rigs and auxiliary mechanisms (Table 1).

Table 1. Digitization of methods for determining the calculated load on the power grids of mining companies.

№	Consumers	R _n , kVt	The end	$\sum_{i=1}^n P_{Hi}$ kVt
1	EKG-8i	625	4	2500
2	EKG-4.6B	250	7	1750
3	ESH-15/70	2500	2	5000
4	SBSH-250MN	386	2	772
5	Technical Complex	8000	1	8000
6	Mech. Workshop	220	1	220
7	Excess water removal equipment	330	1	330
8	The length of the Lv-overhead line LEP is 12 km			
9	Lk - the length of the cable line LEP - 0.6 km			
10	n– Number of chains of the overhead line -3.			
General:				18572

In order to improve the teaching of the module "Electrification of Mining Enterprises", attention was paid to the use of software designed to improve the quality of education in the educational process.

The behavior of students in the organization of educational activities in the experimental training was as follows:

I. Logical Behavior:

- 1) To be able to model plans related to operations in a standardized sequence.
- 2) Diagnose the parameters, properties, interrelationships of the object, aimed at solving problems.
- 3) Designing behaviors ranging from simple to complex based on information and communication resources.

II. Modeling movement of complex structures:

- 1) Express a statement of the structure of the existing information object under study.
- 2) Mathematical or other, hardware, process modeling of the structure of the existing information object under study.

In the experimental sessions, students also demonstrated predictive actions. They carried out actions related to the analysis of results, decision-making. For example, a) the result obtained is consistent with the modeling objectives; b) were able to show that the result obtained did not meet the modeling objectives (the presence of a return to the previous stages).

In the digital format, the opportunity to organize classes based on traditional technologies, seminars, exchange of experiences, round tables, conferences, discussions, etc. has expanded.

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