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IMPROVING THE BASE TRAINING OF STUDENTS OF TECHNICAL OSMS BASED ON THE INFORMATION DESIGN APPROACH

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A B S T R A C T

On the basis of the information design approach, the technical OSM should take into account the information technologies used in the analysis of strengthened cases of structures in the industry and in design projects to improve the base training of lari students.

K E Y W O R D S

Information, Communication, Technology, Project, approach, Foundation, OSM, student, base, prepared, improvement, society, education, technical, modeling, training, research, component, adaptation.

Introduction

In the context of informatization of society and education, the requirements for a modern specialist for him in order to successfully and effectively operate in the professional field have significantly changed. Specialists must have comprehensive knowledge, a high level of competence, quickly adapt to new situations, easily find direction in the modern information space, competently and responsibly solve professional problems, realize their potential (knowledge, skills, experience, personal qualities), use the latest achievements of ICT, take responsibility for the results of their activities. It is these qualities that make the engineer competitive in modern economic conditions, and the educational system that ensures their formation, acceptable.

In technical universities, the educational process is aimed at qualitatively mastering the content of individual subjects, solving sample issues and performing accounting work. The student's activity is determined by the study of the phenomena and laws of the studied field of science, formed using mathematical apparatus, in a clear form. The student must be able to solve problems, analyze solutions (situations) represented by mathematical models, determine the free (variable) and free (constant) parameters of the issue and the connections between them, learn to obtain the necessary scientific information from interconnected fields of knowledge. It teaches the student not only to solve issues, but also to put issues in relation to the aspects that are known and that need to be identified, to analyze whether it can be solved, whether the solution is uniform, and also allows you to move on to another, more extended issue, where there are more opportunities to find a rational solution. The student should

be trained not only to analyze, but also to synthesize, to actively submit the solution to the desired result. In this case, it is required to harmonize mathematical and Physical Modeling.

In the system of higher engineering education, the search for optimal solutions of base and professionally oriented training based on informatization is underway. This requires changing approaches to training specialists in terms of the use of Information Technology in various disciplines. The main directions for the development of informatization of education and training are presented below.

1. Methodology and strategy of the selection of educational structure and content, methods and organizational forms of education and upbringing, corresponding to the tasks of developing the personality of a student in the conditions of an informed society today.
2. Design of pedagogical technologies aimed at the development of the student's intellectual potential, the formation of skills for independent acquisition of knowledge, the implementation of various independent types of activities in the collection, processing, transmission and development of educational information.
3. Study by dividing the possibilities of using ICT tools in the process of acquiring various fields of science.
4. Realization of the possibilities of educational-information interaction as the basis of a single information educational space and the potential of a distributed information resource of local and global networks.

Engineering education implies a certain specialization in a specific narrow scientific field. Frequent phenomena in each field of science consist of a certain system, in which it is necessary to highlight, among other things, the theoretical aspects, the supporting part that takes into its own iich the laws of problem solving, their development and decision-making. It is this part that makes up the science content of Education.

State standards set requirements for the level of knowledge in mathematics and Natural Sciences for training in OTMs. These requirements are designed to" expand the possibilities of continuing education and academic mobility, meet the needs of the individual, society, state, have an instrumental pedagogical organization based on strictly defined criteria for each stage of Education.

The requirements of the OSCE for the organization of the educational process in technical OSMS and natural educational subjects (mathematics, physics, etc.).) the school curriculum is complicated by incompatibility.

The degree of knowledge of applicants in the natural sciences (mathematics and physics) does not meet the requirements of the OMS.

As evidence of this, we present among first-year students the data of testing the level of knowledge necessary for mastering the curriculum in the first year of technical universities in the main sections of mathematics in a five-point system, which are published in the report provided by technical universities.

In order to effectively conduct lectures and practical classes in these academic disciplines, a large part of the first-year students will have to undergo additional training ("pull"). In the form of mass education, it turned out to be practically impossible to teach all students their natural sciences in the same way. The organization of training" at different levels", as a result of which there was a need to develop appropriate methodological support, new models of training organization. These situations lead to the search and development of new teaching methods and technologies.

From the above, it follows that the internal structure of the state educational standards of higher education is left with the "structural" disadvantages of the current state educational standards of Higher Education.

There is a need to radically revise the traditional concept of studying basic learning subjects. Due to the development of ICT in the course system of the existing training in technical OSMS, it is necessary to establish logical and meaningful connections with the studied academic disciplines of the base block and with the laws and peculiarities of the most general Natural Sciences of the future professional activity. It is also necessary to develop a didactic concept of the integrity of the Educational Sciences of the base block, that is, interdisciplinary integration, based on the requirements of the state educational standard of Higher Education, the achievements of scientific and technological progress in the professional field. The student will have the opportunity to study the subject of study in a dialectical spiral: first he will get acquainted with the narrow theoretical problem of the studied science, and then learn to apply the theory at the conceptual level in various fields of science, then more broadly and with the necessary (necessary) accuracy in solving direct engineering problems. Then engineers will be able to effectively use theoretical knowledge in various fields of Science in their professional activities.

The choice of educational content in the first year of technical OSM should be built in such a way that the logical structures of all subjects are easy for students to understand.

That is, education allows the student to:

- a system of knowledge about nature, society, thinking, techniques and methods of activity, the assimilation of which ensures the formation of the foundations for the targeted activities of people;
- a system of general intellectual and practical skills and competencies that are the basis of many specific types of activities and provide the ability of the younger generation to maintain culture;
- experience of creative activities that provide the ability to further develop culture;
- experience of emotional-volitional interpersonal relationships, which are the basis for the formation of a worldview.

The effectiveness of teaching in Higher courses, consequently, the professionalism of the future specialist, will depend on how purposefully and correctly the content of teaching for first-year students is selected, compiled and organized. The success of training at a technical OSM is determined by the principle of continuity of training at any stage in the consistent development of educational programs. Taking into account these factors, the improvement of the base training of students of engineering and construction universities in the ICT conditions should be based on the basic theoretical training, taking into account logical and meaningful connections in various departments of basic educational sciences and practical training, taking into account the peculiarities of the construction industry.

The components of theoretical preparation are determined by:

- formation of the goals and objectives of the studied topic;
- diagnostic analysis of student knowledge and formation of motivation to acquire new knowledge;
- drawing up a scheme of basic knowledge on topics;
- construction of an ICT input algorithm for the learning process;
- disclosure of the topic: presentation and explanation of the conceptual rules of the theory, as well as its practical application, using logical-meaningful connections of science;

- Independent replication and consolidation of learned knowledge using ICT.

The components of practical preparation are determined by:

- motivation to set a professionally significant educational task, to solve it;
- clarification of the goals and objectives of solving the task, taking into account the Integrative logical-meaningful connections of science;
- identification of ICT functions in the decision-making process;
- implementation of software information;

independent assessment of work, improvement and correction of practical work, formalization of results.

The implementation of ICT capabilities stimulates the emergence of new tools, organizational forms and styles of teaching, as well as the improvement of existing ones that have proven themselves well. This leads to an expansion of the goals of teaching science and a change in the criteria for choosing the content of educational material: they are based on the acceleration of teaching, the development and self-development of the student's personality, the absorption of skills for the formation and independent separation of knowledge, the differentiation of laws, the use of ICT tools as.

The use of modern ICT tools in the educational process makes it possible to solve the following tasks:

- the teaching process is carried out by the students themselves with the specific tasks of the initial stage (knowledge, research, design, etc.).) formulation and solution orientation;
- changing the role of the teacher from informant (supervisor) to coordinator.

All this provides the necessary conditions for the creation of an effective system for the training of engineers and builders and the improvement of its main educational components.

In our opinion, it is necessary to take into account the following components when improving the base preparation in the ICT conditions of students of engineering and construction universities.

1. Motivational – includes the need for self-realization in the use of information technology tools for solving professional tasks, the need for continuous independent education using ICT tools, the desire to make professional and research activities acceptable.

2. Project – The ability to justify the choice of ICT tools, the possibility of designing the technological process of solving their educational (later professional) tasks using selected tools, to assess the accuracy of the results obtained before completing the project.

3. Organizational – information and communication is expressed in the skills of organizing self-knowledge activities in the context of the science environment.

4. Research – the search and selection of professionally relevant information includes the ability to use ICT for its effective analysis.

5. Adaptation – includes the ability to adapt existing tools and technologies to solve a specific task, correct information technology.

6. Constructive – includes the skill of using base information and communication tools to develop its own project and manage its implementation.

Among the priorities for the development of the engineering education system is the formation of a basic professional level of Education. This, in turn, necessitates the creation and development of ICT-based scientific and methodological foundations, new forms, methods and pedagogical technologies. The backbone of the training and training of an engineer-builder is the mechanics of deformable rigid bodies (DQJM), which consists of training courses in construction mechanics, theory of elasticity and plasticity, resistance of materials, theoretical mechanics. The DQJM organizes the educational process with the completion and protection of the diploma project in the period from the first year to the fourth year of the baccalaureate, with access to doctoral and post-graduate education in the two-year graduate stage. The first two courses study wet (theoretical and practical mechanics, including training courses on the resistance of materials), which determine the base, systematizing part of the DQJM. It is worth noting that most textbooks and tutorials on NM and MQ are scientific and informational publications, mainly aimed at presenting final results, due to the abundance of information, which can also leave them behind the process and ways of obtaining results. There are practically no textbooks and teaching aids that make up a system in the specialty of technology, as well as textbooks and teaching aids of an interdisciplinary type.

In technical OSMS, NAM provides the theoretical foundations of general engineering preparation, an invariant core of the base preparation of the engineer-builder, which prepares him for professional mobility, activity in constantly changing conditions of engineering activity.

In technical OSMS, by the basic educational sciences, we understand a set of Educational Sciences that adequately represent the basic laws, logic and structure of the relevant disciplines that ensure the integrity of education in the chosen specialty, combined with interdisciplinary ties and connected with professional competencies (CCS.

Conclusion

The basic training of students of technical ICT should take into account the information technologies used in the construction industry in the analysis of strengthened cases of structures as well as in design projects. To do this, it is also necessary to add information competence to the base training goals. When creating a methodological system for teaching students of engineering and construction universities of educational disciplines that determines base training, it is necessary to take into account the extended educational goals, through which it is necessary to ensure the continuity of information and professional training as well as the connection between fundamentalism and professional orientation in training, which in turn leads to an increase in the level.

The content of informatization of the educational process consists in activating the cognitive activity of students during their independent work, ensuring the interactivity of the student's interaction with the educational material, ensuring an individual trajectory of its assimilation, activating the “student-teacher” feedback. The use of information technology will help to significantly expand the possibilities of individualization and stratification of Education.

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