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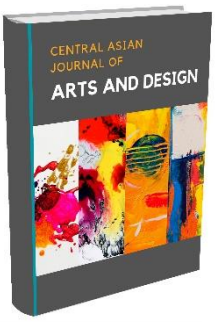

Methodological Problems of Engineering Graphics Teaching Science

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Abstract
The article deals with the problem of teaching methods of constructing images of geometric objects as a methodological problem in teaching the subject "Engineering Graphics". Overcoming these problems is of great importance for the formation and development of the spatial appearance of the object in the future professional activity of future professionals, as well as the elimination of difficulties in its mastering.

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Strategic goals and priorities for the development of the higher education system require special attention to improving the quality of training of highly educated specialists, optimization of educational areas and specialties. Introduction of digital technologies and modern methods in the educational process, individualization of educational processes on the basis of digital technologies, development of distance learning services, webinars, widespread introduction of online technologies, organization of distance learning programs based on modern information and communication technologies, electronic library wide introduction of the system, expansion of opportunities for students to continuously improve their professional skills through the use of the library fund, databases after graduation. Due to the specificity of the directions and specialties of education, the development of the use of modern software products, which are widely used internationally in the educational process, constitutes a methodological problem of teaching the subject of engineering graphics.

As stated in the Decree of the President of the Republic of Uzbekistan* on the Action Strategy for further development of the Republic of Uzbekistan, "Our main goal should be to further improve the

* Ўзбекистон Республикаси Президентининг “Ўзбекистон Республикасини янада ривожлантириш бўйича Ҳаракатлар стратегияси тўғрисида”ги Фармони. // Ҳаракатлар стратегияси асосида жадал тараққиёт ва янгиланиш сари. – Т.: Ғафур Ғулом номидаги нашриёт-матбаа ижодий уйи, 2017.

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system of continuing education, increase the capacity of quality education services, continue the policy of training highly qualified personnel".

One of the urgent tasks today is to sharply reduce the number of reports and information received in higher education institutions, to abandon the paper form of their preparation, to provide electronic management systems and educational processes, library and document management, to introduce an electronic system for monitoring the effectiveness of education.

As with all systems, the electronic or distance form of education has its drawbacks and advantages.

Among the methodological problems of teaching the subject "Engineering Graphics" we emphasize the problem of teaching methods of constructing images of geometric objects. This choice is of great importance for future professionals to form and develop the spatial appearance of the object in their professional activities, as well as explained by the difficulties in mastering it.

The leading form of training and professional activity of the future specialist is to solve various tasks. It is well known that drawing plays an important role in solving projection problems. This is the most convenient means of transmitting geometric data. The theoretical foundations of building visual images are the subject of "image methods".

This topic has great potential for the full implementation of the principles of professional and technological direction of teaching, one of which is the dual principle - a combination of general scientific and methodological foundations of teaching. This combination, in particular, means that students should not only acquire theory and problem-solving skills, but also apply these knowledge and skills effectively in their professional activities. Thus, many issues related to engineering graphics can be used directly in the professional activities of students: for example, the depiction of spatial figures in orthogonal projection, sections of geometric objects, methods of construction of parts, and so on.

The study of theoretical problems and methods of solving problems on this topic should help to master the systematized information about spatial forms, to acquire the ability to create similarities between high-level planes and spatial configurations, to use planimetric data to describe and study spatial objects.

Modern higher education is focused on successful learning and many technologies are being introduced so that the student can solve the necessary tasks in life and easily adapt to a difficult situation. Among such technologies is DBB (integration of didactic units) technology developed by academician P.M. Erdniev.

An extended didactic unit is a "cell" of the educational process that consists of logically different elements with the information community. It has the qualities of consistency and integrity, timely retention, rapid manifestation in student memory.

The concept of unit magnification includes the following interrelated specific approaches to learning:

- Joint and simultaneous study of interrelated operations, operations, functions, theorems, etc;
- Ensuring the unity of the processes of formation and solution of problems, equations, inequalities, etc;
- Consideration of known and uncertain tasks in interactions, in particular, deformed exercises;
- The use of an exercise structure that allows you to contrast the original and modified tasks;
- identify the complex nature of knowledge;

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- Implement the principle of complementarity in the system of exercises.

Integration of didactic units technology has taken its rightful place among the generally accepted technologies and is increasingly used. It is one of the most important ideas in the field of educational technology today.

DBB (integration of didactic units) is a learning technology that improves the quality of student knowledge as learning new material takes place in more meaningful and larger blocks.

The basis of DBB (integration of didactic units) technology is a multicomponent task consisting of several logical heterogeneous but psychologically integrated into a certain integrity of parts, for example:

- problem solving;
- formulate and solve the inverse problem;
- preparation and solution of the task;
- create a deformed problem for some elements that are common to the original problem;
- Solve and construct a generalized problem on one or another parameter of the original problem.

In particular, P.M.Erdniev proved theoretically and experimentally that the method of simultaneous contrast of reciprocal actions is an effective means of developing and strengthening forward and backward connections[†].

Attention to the need for a spatial and temporal combination of elements of extended knowledge has a psychological reason. Any information received by a person is stored in RAM for 15-20 minutes, after which it "goes" to be stored in long-term memory. The operational memory phase is optimal for all types of information transcoding, knowledge modification.

In many studies, the formation of students' integrated knowledge and generalized skills is done in teaching engineering graphics using DBB (integration of didactic units) technology to develop their knowledge independence while saving academic time. The solution to the problem of using DBB (integration of didactic units) technology in higher education is related to the use of special methods of magnification, prof. Emphasized by P.M.Erdniev. However, the specific nature of the subject of "Engineering Graphics" and the process of studying it in a higher education institution precludes the direct transmission of methods developed in the methodology of teaching mathematics.

In the context of DBB (integration of didactic units), we proposed to solve a number of methodological problems of teaching the main sections of the subject "Engineering Graphics". The possibilities of using DBB (integration of didactic units) technology in teaching methods of depicting geometric shapes have not been considered before. The possibilities of using the technology have not been considered before.

The researchers did not raise the issue of identifying the initial didactic units, nor did they disclose the mechanisms and methods of integrating the knowledge units according to the specific features of the Engineering Graphics course. The above is the basis for emphasizing that the theoretical rules of DBB (integration of didactic units) related to the process of teaching engineering graphics in higher education are not sufficiently developed.

[†] П. М. Ердинев, Методика упражнений по математике, Просвещение, Москва, 1991.

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Thus, the analysis of scientific and methodological literature shows that DBB (integration of didactic units) technology exists within the general problem of integrity in pedagogy, and in didactics within the problems of combining knowledge, activating the process of their acquisition, activating students' cognitive independent activity. The methodological level of studying the DBB (integration of didactic units) problem is related to the practical application of the concept of expansion in solving educational problems.

This technology helps to reveal student creativity more fully. This applies to the creation of: tasks; deformed exercises; complex tasks. Also, studying the material in blocks frees the student from the fear of difficulties, the student is not afraid of not understanding or being left behind.

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