

## METHODOLOGICAL BASES OF EFFECTIVE ORGANIZATION OF GRAPHIC WORK OF STUDENTS IN THE FIELD OF ENGINEERING GRAPHICS

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### ABSTRACT:

The article discusses the problems and recommendations for the study of graphic data and independent work of a specialist in the field of modern science and technology, the study of graphic works using computer graphics.

**KEYWORDS:** graphic activity, project activity, self-education, graphic information, graphic ability.

### INTRODUCTION:

Modern science and technology require a high level of graphic information expression from a specialist, the use of modern information processing tools (technical and software tools of computer graphics) is extremely important, and the subject area of illustrative and business graphics is expanding.

The level of professional training is largely determined by the amount of knowledge, skills and abilities necessary for technically competent presentation of any information by means of graphics.

These qualities should be laid down in the study of graphic disciplines throughout the educational route: pre-school education, high school, University, postgraduate education (advanced training, internships, etc.).

### MATERIALS AND METHODS:

Graphics today is considered as an international language of computer communication, a means of developing spatial thinking and a way of compacted recording of graphic information.

Graphic language is a unique means of presenting scientific and technical information. Any objects, processes, or phenomena can be implemented using a graphical language, the alphabet of which is a series of graphic images-points, straight lines, flat curved lines, and so on.

A good command of this language is one of the components of professional engineering competence.

One of the most important tasks of technical universities is the professional training of a modern engineer. Graphic disciplines have a great influence on the qualifications of future specialists and the development of their spatial imagination, thinking and intelligence. The study of these disciplines lays the Foundation for the knowledge necessary for mastering other technical subjects.

The disciplines that form the skills of graphic engineering include: descriptive geometry, engineering, computer, design graphics, technical drawing, architectonics and structure in space, layout design, modeling, machine parts, etc.

Descriptive geometry is the first of the graphic cycle that is being developed in higher education institutions. The process of studying descriptive geometry coincides with the period of adaptation of students to higher education, which imposes some difficulties in its development.

Descriptive geometry, engineering and computer graphics occupy a special place in the formation of an engineer who has professional competence in the field of graphic activity.

Meanwhile, the situation with teaching NG and IG in technical universities in recent years, does not help even a traditional reproductive learning, and even more so for such tasks.

The almost complete lack of graphic training at school, a small number of hours for classroom classes at the University has led to the formation of students' attitude to NG and IG as a secondary discipline and negatively affects their readiness for graphic activities.

These and many of the theoretical foundations of engineering graphics cause difficulties in understanding, thereby cooling the process of studying the subject.

#### **DISCUSSION:**

Thus, we set ourselves the task of applying a method that promotes the development of students' graphic abilities in the process of mastering the discipline, in the conditions of innovative activity of a technical University.

It should be noted that the quality of training of a specialist is determined not so much by the level and volume of knowledge that they possess, but by their intellectual, professional and creative potential, non-standard thinking, and ability to navigate the flow of information. The need to use the project method in the development of graphic abilities of students studying graphic disciplines based on descriptive geometry, engineering and computer graphics is revealed.

The rapid development of the social economy of many countries of the world, their leap into the future is based solely on innovations, the consequences of which have become strategically important.

An effective innovation policy is an activity whose ultimate goal is to introduce advanced technologies based on the achievements of scientific and technological

progress. Tajikistan is forced to accept an innovative call.

Today, the question is as follows: either the reduction in the country's economic, industrial and production potential will be compensated at the advanced scientific, technical and technological level, which will require a sharp increase in innovation activity, or the country will be thrown back not only in terms of output, but also in terms of its technological capabilities, and will forever lag behind highly developed countries in all types of development.

In the process of teaching graphic subjects in technical universities, the goal was to form and develop students' system spatial thinking, which is necessary for successful graphic activity.

Revealing the content of project activities, it is assumed the interests and independence of students' thinking learning is done in the resolution process for trainees interested in his problems, etc.) And negative aspects of the project (e.g., complexity of application because of the difficulty of the motivation of the learner to the purposeful result).

We believe that the technology of project-based learning is optimal for the development of students' graphic abilities in the study of descriptive geometry, engineering and computer graphics in the conditions of innovative activities of a technical University.

In the process of preparing the project, students independently acquire the missing knowledge, learn to use the acquired knowledge, acquire communication skills, develop research skills, and system thinking. When performing a project, students find themselves in an environment of uncertainty, but this is what activates their creative activity.

To create rational conditions for the development of graphic abilities, it is necessary to rely on theoretical positions on such

problems as sensation and perception, spatial representations, memory, speech and thinking.

Independent work of students when performing graphic tasks is one of the most important components of the educational process, during which skills, abilities and knowledge are formed and further interest in creative work is provided and, ultimately, the ability to solve graphic and technical problems arises.

In order for independent work to be effective, a number of conditions must be met:

- Develop the right combination of voluminous classroom and independent work according to the curriculum;
- Provide the student with the necessary methodological materials, literature, computer information for design purposes in order to turn the progress of independent work into creative progress;
- Control over the progress of independent execution of graphic works and measures that encourage the student for its high-quality performance.

Systematic monitoring of students' performance of graphic tasks is the most important component of organizing independent work, which allows them to influence the progress of this work in a timely manner and take the necessary measures to establish academic discipline.

If there are errors, the student is indicated for their presence and given the opportunity to correct them independently.

#### **RESULTS:**

The results of independent work on graphic tasks should be monitored by the teacher, evaluated and taken into account during the final certification of the discipline under study.

The most acceptable form of evaluation of results is a point system, which includes

estimates for the stages of work on a given project.

Assessment of a student's graphic work is an important additional factor that stimulates activity and perseverance in achieving goals, critical attitude to the results of their work, and a good assessment gives moral satisfaction and inspires future educational and cognitive activities. The result of the work is the defense of an individual graphic task, which is an oral presentation, sometimes with the use of test control.

In the course of forming their graphic abilities when independently solving graphic tasks, the student must, first of all:

- Master the theoretical material on the graphic discipline (individual topics, task conditions, visual examples of their solutions, questions to them, etc.);
- Consolidate knowledge of theoretical material (by successfully solving graphic problems);
- Apply the acquired knowledge and graphic skills for analysis
- The final result of their work (development and protection of graphic works).

#### **CONCLUSION:**

The goals and objectives of developing graphic skills on the example of teaching descriptive geometry and engineering graphics are to show students the role of drawing, graphic knowledge and skills in modern life, and their application in information technologies.

#### **GRATITUDE:**

Thanks for proposing research results of the students in the process of studying the course in descriptive geometry develops a point image of parts and Assembly units, forming denote the location points and line and imagination the selected feature in the space.

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