



**ISSUES OF IMPROVING THE TEACHING METHODOLOGY OF
"ENGINEERING GRAPHICS" IN TECHNICAL HIGHER EDUCATION
INSTITUTIONS ON THE BASIS OF AN INNOVATIVE APPROACH**

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ABSTRACT

In the article, it is proposed to improve the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach, by defining 3 levels of the context of the content of graphic sciences. Also, the control levels of the system for diagnosing the level of development of the components of professional competence of the future specialist are defined.

KEYWORDS

Assignment, knowledge, drawing geometry, engineering graphics, construction drawings, homework, job option, construction drawing, computer graphics.

Introduction

In the development of the optimal content of graphic sciences, it is necessary to determine the role of drawing geometry, engineering and computer graphics and structural drawing in the professional activity of a bridge worker. The subjects of study of graphic sciences are:

- subject of work: drawings of construction and engineering structures;
- labor tools: the ability to use modern software that allows you to make drawings by hand, using drawing tools, and in electronic form;
- content and methods of activity: drawings, design technology, etc.;
- object of work: a first-year student will make the first acquaintance with the projects of bridges and other transport structures while studying graphic sciences;
- objects of science, because drawing geometry is the scientific, theoretical and methodological basis of the professional activity of designers and builders of bridges and tunnels.

To eliminate the gap between the abstractness of the issues of improving the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach and the "naturalness" of using them not only in senior course projects, but also in the development of graphic content as a means of solving engineering problems in professional activities, from new multi-level contexts can be used.

In the research, the problems of teaching "Engineering graphics" were studied, and he said that "in the context of the subject, three sub-contexts can be distinguished: Engineering graphics as a system object; future educational and engineering activities; professional engineer's future career..." [3]. It is necessary to promote this position to the teaching methods of engineering graphics, to "put" the theoretical foundations of engineering graphics on the basis of teaching graphic sciences (in the first

semester), and to consider each subsequent topic as an element of the system of teaching graphic sciences.

It is proposed to improve the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach by defining the content of graphic sciences by defining 3 levels of context:

- 1) the connection between the content of graphic sciences and professional competencies;
- 2) The connection between the content of graphic subjects and the content of other subjects in the "Engineering Graphics" curriculum in technical higher education institutions;
- 3) contexts within the subject, in which three sub-levels can be distinguished:
 - refer to the knowledge, skills and competences already acquired in the course of teaching graphic subjects, as well as to the main and meta-subject components of previously formed competence;
 - current conditions that determine the structure and relationship of research;
 - the main elements within the studied topic;
 - reference to future topics - initial context.

It was found necessary to include certain topics in the content of graphic sciences in the improvement of the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach:

- components of professional competence and the content of graphic sciences;
- components of professional competence and subjects of the curriculum in the field of engineering graphics;
- contexts within the subject.

Issues of improving the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach are carried out with the help of a system developed to diagnose the level of development of the components of professional competence of the future specialist. The diagnostic system includes several control levels:

1. Current:

- science knowledge is regularly tested using control tasks (students defend each topic of drawing geometry, engineering graphics and construction drawings);
- the teacher checks the homework completed by the student (recommended drawing geometry assignments for the current lesson, graphic work option and constructive drawing when studying engineering graphics, files with graphic work done in AutoCAD when studying computer graphics);
- weekly monitoring of the timely and independent completion of all work and registration of deadlines for completing the student's study load schedule in the teacher's journal is carried out in order to consider and encourage students who know how to organize and correct their independent work;
- improvement of the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach, continuous diagnosis of the level of development of graphic components (knowledge of the subject and special terminology, algorithmic language and graphic methods, etc.), initial technological components of competence, testing knowledge on construction design and is carried out with constant communication between the teacher and students in practical exercises, counseling, exams and tests.

2. Medium:

- certification of students (assessment of self-organization of a future specialist) during control weeks is held twice per semester;
- once or twice a semester, tests are held on the results of mastering sections or major topics;
- evaluation and correction of the performance of students participating in scientific research works, science Olympiads, etc. is carried out continuously throughout the semester.

3. Result:

Control of the level of improvement of the teaching methodology of "Engineering Graphics" based on an innovative approach in technical higher education institutions is determined when the student defends all the mastered material of the subject in the exam (1st semester), tests (2nd and 4th semester) and completes the training course.

4. Follow up:

- The issues of improving the teaching methodology of "Engineering graphics" in technical higher education institutions based on an innovative approach are determined by observing the quantity and quality of professional experience gained by students during the higher courses and production practice and work in conjunction with studies and during the production activity of the specialist after graduation.

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