



CHECKING AND ASSESSING STUDENTS' KNOWLEDGE, ABILITIES AND SKILLS IN THE SUBJECT OF ENGINEERING GRAPHICS

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Annotation: This article clearly highlights the qualimetric system for assessing the knowledge acquired by students and the effectiveness of the teaching methodology of the subject. The expediency of constantly updating teaching methods, and sometimes using game technologies in teaching, is emphasized in order to achieve a high level of students' skill in teaching "Descriptive Geometry and Engineering Graphics".

Keywords: teaching methods, individual questioning, graphic work, geometric surfaces, frontal questioning, spatial thinking, projection.

An important and necessary part of the educational process is taking into account the progress of students, the correct implementation of which determines the success of learning. Mastering the methodology for testing knowledge in engineering graphics and grading should be considered one of the difficult tasks facing a young teacher. Testing and assessing students' knowledge performs the following functions: controlling, teaching, educating, developing. The controlling function is the main one, and the teaching, educating and developing functions are accompanying, although very important. The listed functions determine the basic pedagogical requirements for the organization of testing and assessment of knowledge: systematic and regular implementation of control;

Control over both the depth and strength of knowledge acquisition and the timely formation of certain skills and abilities; objectivity of control and assessments; assigning grades in accordance with the program requirements for the level of knowledge, skills and abilities;

Objectivity of control (determined by its organization in which, in a minimum time, with the help of a sufficient number of test tasks and questions, it is possible to identify the knowledge of a large number of students)

In the process of teaching students engineering graphics, current and final forms of knowledge testing are widely used, for the implementation of which we use oral and written questioning, and independent graphic work. Oral questioning is the most widely used in practice. However, it should be noted that it is the most difficult type of knowledge testing, since it depends on how students prepared their independent task.

Methods of oral questioning are individual, frontal and compact questioning.

Due to the specifics of the subject, individual questioning is not very widely used in teaching engineering graphics. During an individual survey, the student is called to the board for a detailed answer to the assessment. At the same time, students do not retell the text of the textbook, but, based on previously studied material, independently explain the material. An example of an individual survey would be reading assembly drawings using educational

tables. When planning an individual survey in a lesson, the teacher must decide a number of questions for himself. For example: who to call for a survey? How many students will be interviewed individually? What will the rest of the students be doing during this time? How long will it take for students to respond? Questions about what to check and how to ask are also difficult for a young specialist. Modern didactics and methodology suggest asking students questions that would reveal an understanding of cause-and-effect relationships, the ability to analyze, compare, compare, etc.

Having called a student for an individual survey, the teacher most often invites the other students to listen carefully to the friend's answer, supplement it and correct mistakes. When the teacher needs to listen to the answer of a low-performing student, it is recommended that at this time the rest of the students be asked to do some independent work.

The method of conducting general answers to questions is common in teaching engineering graphics. Conducting a general survey requires a large number of students to search for answers at the same time. The frontal survey with response itself embodies the functions of control and training without spending too much time. It should not be forgotten that frontal survey also has its disadvantages from a point of view. This cannot form a complete picture of the knowledge gained from the mentioned topic. In case of a mixed answer to the same question, several options for answering the same question may be offered. When answering orally, one of them can complete several tasks. This method is much more difficult for the teacher, since students are mainly busy completing the assigned graphic work. This method is most often used to assess student knowledge. The disadvantage of this method is that in this case, the student's learning task becomes sluggish, since students are mainly busy doing this graphic work. This method is considered much more useful for checking students' understanding after completing one section and assigning a final grade. Drawing is a test of practical work performed independently of advanced testing methods in geometry and engineering graphics. When examining independent graphic work, the control function is aimed at educational and educational purposes, but tasks must be assessed rationally, determining whether the student did it himself or not. This method is considered much more useful for checking students' understanding after completing one section and assigning a final grade. Drawing is a test of practical work performed independently of advanced testing methods in geometry and engineering graphics. When examining independent graphic work, the control function is aimed at educational and educational purposes, but tasks must be assessed rationally, determining whether the student did it himself or not. The method of testing basic knowledge is to check that students have completed graphic work. In the program "Drawing in Geometry" graphic work will be planned, which the student must master. Extremely easy assignments do not enrich a student's knowledge. And extremely difficult tasks deprive students of self-confidence and create a nervous state. When planning a lesson during which a graphic task is performed, you should provide assistance to a student whose teacher is not able to master the topic well. It is necessary to examine yourself and hang up a plan of the graphic work to be completed so that it is visible in the training room. Test work is one of the main graphic works. The supervisor needs to explain the procedure for completing graphic work before receiving the test, and clarify the questions asked by students. For students who quickly complete graphic work, a separate task should also be prepared. The function of the test is to determine to what extent the specified topic has been mastered. Working on errors in completed graphic work

performs a training function. During the review of the test case, the manager must indicate on the board which deficiencies are common and which are eliminated individually,

When teaching drawing in geometry and engineering graphics, the implementation of individual independent graphic tasks is widely used.

This type of ongoing task performs both testing and teaching tasks. Independent work is carried out as if it were part of the training. Independent work helps determine the level of knowledge, skills and abilities acquired by students on a particular topic or section. Tests and independent work are carried out when there is confidence that students have mastered most of the topic covered. To ensure the quality of checking graphic work, it is necessary to plan it, focusing on the ESKD standards:

1. The drawing is made according to all the rules (a frame line is drawn, a corner stamp is drawn, the dimensions are correctly indicated)

2. Checking the correctness of the drawing (give importance to the connection of projections, correctly executed line types depending on the task, and the correctness of the answer).

Highlight typical mistakes made by students after testing and teach how to eliminate them. To show the weak side of students in

The teacher needs to draw up a reporting table to determine the graphic readiness of the group, comparisons in various forms of errors found in graphic works. Let's take an example of table forms in an approximate version. Accounting for errors should be carried out in such a way that the errors of each student are taken into account:

1. Based on the results of the oral survey, the grade "excellent" "5" is given to the following students:

a) has mastered the mentioned program well, depending on the given topic, can tell the material covered in his own words, is well versed in symbols and drawing rules,

b) can give a clear answer to a question, understands the educational material well, has sufficient knowledge;

B) does not make mistakes, but makes some minor mistakes when reading the drawing.

a "good" rating of "4" is given for the following points;

a) has mastered the curriculum well, but the lack of spatial imagination is the cause of the shortcomings inherent in reading a drawing, knows the rules of drawing and signs;

b) answers correctly, the conditional value is in a logical sequence;

c) makes some mistakes when reading the drawing, waiting for the teacher to correct it.

A satisfactory grade of "3" is given based on the following points:

a) does not have a firm grasp of the basic program, but has mastered most of the rules of drawing and symbols;

b) cannot fully answer the question posed, there is no consistency in the answer;

c) reads the drawing with uncertainty and constantly needs help from the teacher.

An unsatisfactory rating of "2" is given in the following:

a) does not understand most of the educational material;

b) the sequence of answers is built incorrectly, the level of errors cannot be corrected even by the teacher.

The rating "1" is given in the following points;

a) does not understand the training program at all, does not have any knowledge.



When assessing graphic practical work, an excellent grade of "5" is given to the following students:

- a) draws confidently, the notebook is organized, the graphic work is done correctly;
- b) can easily use the reference book;
- c) does not make mistakes in the drawing, but allows imperfections that are not significant.

The rating "4" is given in the following points;

- a) independently, but without any particular difficulties, completes and reads the drawing, maintaining relative order;
- b) uses a reference book, but the title block makes an error;
- c) makes mistakes that are not of great importance in the drawing, corrects them independently according to the verbal instructions of the teacher.

A satisfactory grade of "3" is given based on the following points:

- a) does not have a firm grasp of the basic program, but has mastered most of the rules of drawing and symbols;
- b) cannot fully answer the question posed, there is no consistency in the answer;
- c) reads the drawing with uncertainty and constantly needs help from the teacher.

A rating of "2" is given in the following cases;

- a) does not perform graphic work, does not hold a drawing in his hands, which must be completed independently;
- b) completes the drawing with the help of the teacher, makes an error in the sequence.

A rating of "1" is given in the following cases;

- a) if the student has not prepared a graphic work, does not have any knowledge and skills in the educational program.

When issuing an annual assessment, you must rely on the supervisor's order to conduct independent graphic and practical work for students throughout the year.

The arithmetic average should not be included in the price. Perhaps the student understood less about the graphic work he did earlier, but by the end of the year his knowledge may increase. Projective knowledge and spatial imagination of more students will become the basis for mastering science. This should be taken into account when making an overall assessment.

When assessing students, it should be remembered that the assessment characterizes only the students' knowledge. It should not be a reward or a means of punishment. It is important to maintain strict objectivity when assigning grades, since a strong student may be unprepared for the lesson, while a weak student may learn the lesson material well.

To maintain objectivity when assigning annual grades, it is necessary to rely on the teacher's observations of students and on data from the analysis of graphic and independent work. The estimate cannot be derived as some kind of arithmetic average. Assessments are the benchmark for studying the entire engineering graphics course.

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