

## REVITALIZING STUDENTS' FREE THINKING IN THE TEACHING OF DRAWING GEOMETRY AND ENGINEERING GRAPHICS

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**Abstract:** In order to achieve a high level of mastery by students in the teaching of "Drawing geometry and engineering graphics", this article highlights the expediency of constantly updating educational methods and sometimes using game technologies.

**Keywords.** teaching methods, innovative technology, game technology, geometric surfaces, spatial reasoning, projection, cubic diagram.

One of the modern requirements for higher education is the organization of a comprehensive program of teaching methods and forms. It is necessary to organize such an environment of teaching that the student has the ability to work independently within the framework of studies, the ability to receive constantly updated information. In order to solve these tasks facing the society, 4 main factors should be developed:

- to learn to understand, that is, to be provided with the main arguments to understand what is happening in the world;
- learning to develop, that is, learning to make important changes to the events around us;
- learning to live together, that is, learning to participate in the activities of specialists in other fields, learning to cooperate;
- and finally learn to live simply;

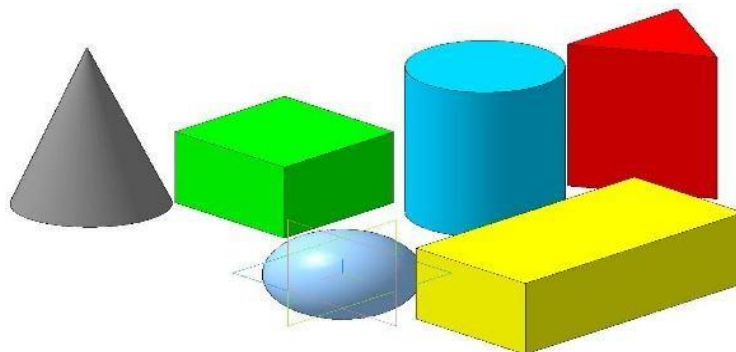
Based on the above, great importance should be attached to the method of cognitive activity activation. In solving this problem, the role of the teacher, who organizes cognitive activities, is central.

It is desirable to constantly update educational methods to increase the student's activity.

Drawing geometry and engineering graphics have their place in the system of academic subjects. Many teaching methods have been used to improve the quality of teaching this subject. But in addition to traditional methods, the use of non-traditional methods will increase the quality and efficiency of teaching.

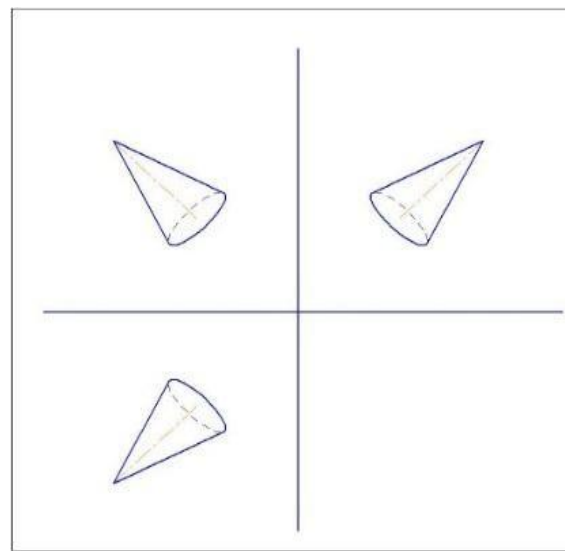
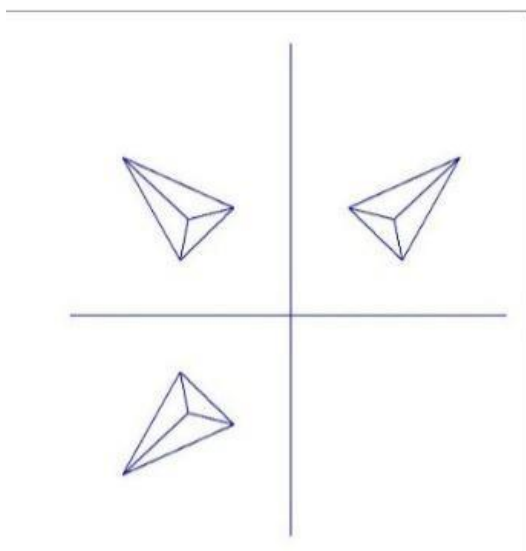
The application of new innovative technology methods has a good effect on students' easy mastering of the subject, improving their skills in performing graphic works from drawing geometry and engineering graphics, increasing their cognitive activity and improving their mastery. Innovative technology can be understood as introducing certain innovations into the teaching process, how the teacher can increase the knowledge and practical skills of students, and develop new methods of determining their mastery. In particular, if interesting issues are solved on the basis of game technology, the creative activity of students will be activated, and their spatial thinking will expand.

The methodology of the game technology called "Sorting" is introduced below. You are looking at simple geometric surfaces. Which surface can be depicted in the same way in 3 projections?



It is often answered that a sphere and a cube can be depicted in the same way in 3 projections. Yes, that's right, but this question was asked for a simple answer.

Answer: All geometric surfaces, except for a parallelepiped, will have the same appearance in all three projections if placed on a cube diagonal



### Summary

In this activity, the teacher teaches each student to think quickly and deeply. Game technologies are distinguished from other methods by the fact that they teach pupils and students to work as a team, to think freely, and every participant is not left out of sight. It is also easy for the teacher to teach and evaluate.

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