THE CONVENIENCES OF TEACHING USING AUTOCAD SOFTWARE

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Annotation. The article provides a comparative analysis of the process of meaningful and effective teaching of lessons using AutoCAD, as well as the process of drawing by hand. There are also a number of guidelines and teaching methods for school students about the convenience and capabilities of AutoCAD.

Keywords: model, graphic, editor, geometric, spatial, shape, detail, straight line, angle, parallel.

It is well-known that traditional methods of developing students' spatial imagination is lacking. In today's fast-paced world of computers, spatial imagination develops more deeply when students learn to draw diagrams for schoolchildren in AutoCAD. When we draw by hand on paper, pencils, compasses and other drawing tools, we can draw a lot of drawings in AutoCAD at the same time, and the more we draw, the deeper the spatial imagination of students, which will help to improve the quality of the lessons. There are many types of graphics programs available today that can be used to create graphics and 3D models. In particular, AutoCAD, TopCAD, JCAD, 3D-MAX and
many similar graphics systems are widely used in various fields of scientific and engineering activities. One of the most popular in the education system is AutoCAD. AutoCAD is also formed as a standardized system of automation of design work in many enterprises and organizations in our country and abroad. In 2002, for the first time in the history of teaching drawing in Russian schools, a CD (KOMPAS 3D LT graphics program), which is one of the components of the educational-methodical complex, was developed and put on sale. The KOMPAS 3D LT graphics program includes the KOMPAS 3D LT Learning System e-learning manual, electronic versions of most of the exercises and graphics for the school drawing course textbook, and a graphic workbook for students. In addition to the forms and drawings related to exercises and graphics, the CD contains many other forms in the textbook "Drawing" by A.D. Botvinnikov and others. Of the 267 forms in the textbook, 70 are provided on SD.

It is important to note that students can master AutoCAD graphics programs relatively quickly if they have mastered computer skills and the basics of projection drawing. In most cases, 2-3 hours may be enough. But it is impossible to cover this time at the expense of drawing lessons. If the school administration considers it necessary to teach students the most popular machine graphics, it can be done by studying in optional, individual and group classes at the expense of time allocated to computer science or compulsory electives with sufficient time resources. possible. Let's talk about computer graphics, which is taught in the drawing course of secondary schools. Current programs and textbooks allow 2 (two) hours for this section, during which students must learn to create projections of simple geometric shapes using a graphic editor and change the spatial position and shape of a given object. It is unclear why this is necessary. In light of the above, students will not be able to learn the alphabet of computer graphics in the two hours allotted. Therefore, it would be more appropriate to suggest a method of using computers and graphics programs wisely during drawing lessons. The following sections of computer and drawing are:
Detail shape analysis;
Dimensions for detail drawings;
• Give students a three-dimensional form of detail. Demonstrations can be useful.

1. A computer is not only useful but also necessary in the analysis of the form of detail. On the monitor screen, students will be able to separate the detail into individual geometric objects, and if there are difficulties, the teacher or the program itself will display a similar image.

2. Shape analysis is one of the most important steps in determining the correct dimensions. So in this case, the computer is used in the same way as before.

3. The use of a computer is also a great help for students who have difficulty imagining the shape of a detail in a drawing. For example, if students have difficulty completing a graphic work on the topic of “doing the third of the two given views,” they can be helped to complete the task independently by displaying a clear image of the detail on the computer. Teachers often advised such students to try to make a detail model out of plasticine or other material. If the school has an SD card for the drawing course, this is not necessary. Students can explore the three-dimensional image of a detail on a CD by looking at it from different angles. Only students will be able to draw the third view independently, without the help of a computer.

Appropriate use of ATD in drawing individualizes learning and helps students to master the learning materials and speed up the learning process. But ATDs can never replace the teacher in the educational process, because independent learning can never be the only and universal way of learning.

Connections. Connect straight, impenetrable and sharp corners.

A junction is a junction in which one line passes from one line to another directly or through a circular arc. The school textbook provides a graphic work on connecting right, acute and obtuse angles, and students will need to do the following to draw it according to the rules of drawing, Picture 1.
• Two straight lines intersect to form a sharp, obtuse, and right angle.
• In order to connect these angles smoothly with a circular arc, straight lines are first drawn parallel to them at a distance equal to the radius R from the given straight lines.
• The drawn parallel straight lines intersect to give the center of the O-joint
• Lines are drawn perpendicular to the lines given by the point O at the center of the connection. Perpendicular straight lines intersect at points n and n1.
• Points n and n1 are then smoothly connected based on the radius R given by the center O found.
• Performing the connections using the AutoCAD program requires the following steps.
  • Draw a straight line (sharp, obtuse, or right angle) with the "C line" button on the "Cherchenie" keypad, and return it with the "Esc" key. The two intersecting straight lines are formed.
  • Select the "Circle" button and right-click to select "RCC" from the "context menu".
  • The two straight lines are marked with the left mouse button, the given radius R is entered and the Enter key is pressed. The result is a circle at an angle. Table2

Using the "Mouse" button, select the "Edit" button on the "Edit" button panel, the unwanted part of the circle with the "Enter" key.

List of used literature:
2. Khalimov Mokhir, Achilov Nurbek, Bekkulov Qudrat, Khojakulov Elbek, Kokiyev boburmirzo some methods of finding angle in the sciences of drawing and drawing geometry 47.

3. Achilov n.n., kokiiev b.b., bekkulov q. Sh. Designing using the autocad program to make visible images journal of scientific and methodological education of the teacher bilim2 2020 ISSN 2181-7138


