



**INFORMATION AND COMMUNICATION TECHNOLOGIES IN DRAWING
EDUCATION**

Tashkent State Transport University

Mamurova Feruza Islamovna

Nishanova Gulnoza Hayrullayevna

ANNOTATION

In accordance with the requirements of the period, very high demands are also made on the issue of organizing a modern lesson at present. One of these requirements is the effective and rational use of Information Technology and electronic applications in place during the course of the lesson.

Keywords: lesson, information technology, information and communication, drawing, spatial imagination.

In today's world, the application of modern information and communication systems to all areas, including the educational process, is a vital necessity. The decree of the president of our country "on the further development of computerization and the introduction of information and communication technologies" and a number of decisions of the Cabinet of Ministers of the Republic on measures for the further development of computerization and the introduction of information and communication technologies are important. In accordance with the requirements of the period, very high demands are also made on the issue of organizing a modern lesson at present. One of these requirements is the effective and rational use of Information Technology and electronic applications in place during the course of the lesson. However, the practical and theoretical foundations of using information technology and electronic manuals in the subject of drawing for general secondary schools have not yet been fully studied.

At our university, we are conducting scientific research on the widespread introduction of information technologies and the creation of electronic textbooks, deeply feeling this responsibility. In the Department of drawing geometry and drawing of Chunonchi, University, Applied and theoretical foundations of the use of Information Technology and electronic applications in drawing science of secondary schools were studied, more than eighty animated personnel were prepared, which was a component of the electronic manual on the Department of projection drawing. This electronic manual is mainly aimed at developing the student's spatial imagination and technical creativity. Because the process of drawing education requires the active functioning of the student's spatial imagination. Most topics in the drawing course are related to spatial processes, and the student must be able to visualize these processes during the lesson and perform graphic tasks based on them. This is one of the pressing problems facing students and teachers. In this place, we mean that the spatial imagination in students is formed to different degrees. The teacher should be able to adequately develop the spatial imagination of students in a short time and form a spatial process in them.

Animated frames are made on the basis of practical programs of the computer graphics program 3D Studio Max, from which the animated frame is a vivid image of the main geometric bodies, analysis of the detailed geometric shape, methods of projection to form a new model from several models, projections into one, two and three mutually perpendicular projection planes, placement of views in the drawing, , it covered processes such as changing the shape of the detail as well as changing the situation of the detail in space, forming a new model from several models, removing some part of the body or creating a new body with the addition of another geometric body, changing the situation of the detail in space, making a geometric body surface spread. The animated frame is dedicated to sections and their representation in a drawing, the choice of the position of the cutting plane when performing a section, simple sections, the difference between a section and a section, and complex sections. These animated frames allow you to visually see all the spatial



processes that occur in a drawing course. For example, in the manual, the central projection method is based on the example of a triangular plank, orthogonal projection on the example of a square plank, and parallel projection with right angles and oblique angles on the example of a triangular plank, through these frames shown in the example of a triangular plank, readers will understand the essence of the projection methods

When projection processes that are invisible to the eye are demonstrated on a computer using animated images, students' spatial imagination develops, and they are able to quickly and easily understand the essence of the topic. Frame 9 is devoted to the analysis of the geometric shape of the detail. The shape of the handle was analyzed using animation, and the handle was shown to consist of a prismatic open-hole sphere, a cylinder, a quarter ring, and a partially cut sphere.

In a staggered clipping frame, which belongs to the subject of complex clipping, a clear image of some detail is formed on the computer screen before, and the detail is cut out with mutually parallel planes A and A1. Then the remaining part of the part in front of the cutting planes is pushed forward. These parts are shown in red in the image. When intersecting the part with planes A and A1, the planes rise from bottom to top using sequential animation. To produce a complex Ridge in projection, the rest of the detail behind the plane is projected onto the V projection plane parallel to the cutting planes, and a stepped Ridge is formed on plane V. The parts of the detail that remain in the incisor plane are shown in red in the image. In this frame, the need for a third i.e. profile cutting plane A2 should be emphasized to students. Because it is impossible to perform a stepped cut without a profile cutting plane. There is no information about this in any textbooks or methodological manuals.

The section is devoted to the section and its representation in the drawing. A clear image of the shaft, consisting of a cylindrical open hole, a veneer ditch and a flat cut, is formed on a computer screen, and in a situation perpendicular to the axis of the detail, cutting planes a, V, D are transferred. Then, leaving the planes in place, the cut parts of the detail are set aside on the shaft axis. This results in cross-sectional shapes in planes a, V, D. The cross-section shapes are shown in red in the image. The cross-section shapes are rotated 90° to the edge and displayed at their actual size. In the reader, the cross section is revealed to be the flat form formed in the cutting plane when cutting this detail with a plane, that is, the flat part of the detail that touches the plane.

The manual is very user-friendly. The reader has the opportunity to master any topic in his medium. When each theme is selected, an animated line of frames opens on the screen, which is the name of the theme and its component. When the animation is displayed, the student has the ability to stop the spatial process at any point and resume it again. Another advantage of the manual is that the user can open and read the relevant text whenever necessary during each animation demonstration.

Another advantage of the electronic manual is that it can be read in two scripts (Latin and Cyrillic). Not only the electronic manual, but also the methodology for using it in the classroom has been developed. Based on this methodology, for several years

Students can use this electronic manual not only in the classroom, but also in independent and distance learning to gain knowledge, skills, and competencies in projection drawing. The electronic manual can also be used by students of a vocational college and a higher educational institution, where the subject of drawing is taught.

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