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USE OF GRAPHIC SOFTWARE IN TEACHING CONSTRUCTION DRAWING CURRENT SITUATION AND PROBLEMS OF STUDENT SPACE DEVELOPMENT

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ANNOTATION

In this article, theoretical data, rules, drawing methods based on the state standard, which is one of the main factors in teaching typing in educational institutions.

Keywords: Standard, blueprint drawings, spontaneous thinking, pupils, lesson reproduction, didactic standards, rules, readings, duration.

INTRODUCTION

The development of spatial imagination depends on a number of factors. These factors include attention, memory, and imagination. While these factors are known to be key, they are also inextricably linked. If we pay attention, we mentioned above at first that the reason is that if attention is not well developed, the corridor that encourages us to remember what is in the memory is cut off. If the attention is well developed, the performance of the memory will also be good and will serve to remember the necessary information. Imagination is also widely developed when memory is strong.

There are the following forms of attention: sensory (perceptual), mental, motor (motor). Cognition is part of cognitive processes such as memory, thinking, and attention helps to increase their effectiveness.

Distribution of attention is a feature associated with the ability to successfully perform (combine) two or more different types of activities (multiple actions) at the same time. A high level of attention is one of the inevitable conditions for a successful learning process.

Memory is the most important feature of all mental processes, ensuring the unity and integrity of man. The specificity of the activity in which the memory and retrieval processes take place is the basis for distinguishing different types of memory.

Some types of memory are defined according to three main criteria:

1) moving, emotional, figurative, and verbal-logical according to the nature of mental activity;
2) depending on the nature of the purpose of activity - free and compulsory;
3) according to the duration of strengthening and storage of the material - is divided into short-term, long-term and operational types.

Here are some aspects of the psychological and pedagogical problems of computerization of the educational process:

- it is possible and necessary to use a computer to organize educational activities, taking into account the development of personal qualities of students;
- expands the possibilities of providing computer training information;
- allows you to overcome and quickly correct failures in computer training;
- the computer can serve as an effective means of organizing the interaction of teacher and student, students with each other, providing various forms of interaction;
- the computer dramatically enhances the creative process, performing regular operations that occur naturally and almost always in all human activities;
- the computer actively engages students in learning activities, i.e., manages student movements. The set of practical learning tasks using a computer will be expanded;
- computers allow the use of tasks to model, diagnose different situations, as well as expand the range of tasks for planning;
- the computer allows you to change the quality of student activity control. This technical device allows you to check all the answers, it is possible to determine the nature of the error; helps to determine the level of formation of individual components of educational activity;
- the computer helps students form a reflection of their activities as the computer allows the student to visualize the outcome of their actions.

People with a rich spatial imagination are quick to receive and analyze information. They are mature professionals in their field. For example, writers in the genre of science fiction, directors of cartoons and movies, architects of buildings and structures, designers of mechanisms and machines. Works created by such experts first appear in several forms in their imagination, choose the best of them, and only then present the result to the public.

Detailed imagination is gradually formed and developed in man. First of all, various spatial puzzles and fun tasks, computer games and constructors help with this. Then, in the process of studying geometry and drawing at school, spatial imagination develops. In higher education, subjects such as graphic geometry, drawing and design are taught. The nature of education leaves its mark on the development of spatial imagination. For example, students of the Faculty of Architecture prefer pluton views, students of the Faculty of Technology prefer volumetric sections, students of the Faculty of Mathematics prefer isolines and volumetric sections.

Drawing geometry has the features noted as a science and a science, because the main geometric images used in it are abstract elements: a point, a straight line and a surface, that is, the object of abstract imagination.

As MPTitova rightly points out, if a student does not have a developed spatial imagination, he or she will not be able to meet technical conditions such as cuts and cuts to visualize the external and internal shapes of the objects being studied. Applying them means that the drawing is completely done. Visual-emotional support is needed to correct errors. The action that comes with imagination leaves the deepest impression associated with it in memory.

Spatial imagination is a type of mental activity that allows the creation of detailed images and their operation in solving practical and theoretical problems. It is a complex process that involves not only logical operations, but also many promising behaviors. That is, to identify

objects based on the creation and presentation of objectively depicted images, based on adequate images, using real or graphic means. Spatial imagination is a type of figurative imagination that retains all its basic features and at the same time differs significantly from it. This is manifested, first of all, in the fact that the spatial imagination works on the basis of images. During this operation, they are changed in the desired direction.

To determine the structure of the spatial imagination can be relied on theoretical data developed by ISYakimanskaya:

1. The structure of spatial imagination is determined by the content of the subject and is formed on its basis.
2. An important condition for the formation of spatial imagination is the use of different visual graphic material.
3. The structure of spatial imagination depends on the role that spatial image plays in the problem-solving process.
4. The characteristics of the structure of spatial imagination are determined by the nature and content of the subject's activities. The direction and content of this activity is determined by the methods of the problem developed by the presentation methods (or found in the solution process).

In general, spatial imagination is a basic skill in understanding, comprehending, and comprehending objects in the real world.

Detailed imagination and thinking are used interchangeably in educational psychology, regardless of whether there is a difference between these terms. Spatial imagination is the ability to visualize, which is an innate ability. Imagination is learned or acquired through practice.

J. Eliot and IMSmit divide the history of the study of spatial imagination into three distinct stages. An additional fourth stage was proposed by S.Strong and R.Smith.

The first stage covers the period from 1901 to 1938 and is characterized by the attempt of psychologists to identify a single spatial imaginary factor. During this period, research focused on identifying visualization as an important factor in cognition. Because at that time, verbal tasks were seen as a key indicator of cognition. It should be noted that the research and development of the graphic design department of the American Society for Engineering Education (EDGD) focuses on visualization. A historical review of SLMiller's research on the development of spatial imagery from 1920 to 1940 (EDGD) is presented.

The second phase, covering the period from 1938 to 1961, focused on the search for several spatial imaging factors, two of which were identified. The first factor is geometric shapes with the ability to identify in space, and the latter with the ability to mentally control these geometric figures.

In the third stage, from 1961 to 1982, the spatial imaging factors were further enriched. The effects of age, gender, and experience on individual spatial imagination were studied. Engineering applications were enriched with 2D two-dimensional and 3D three-dimensional spaces, complemented by graphical presentations and 2D CAD models. Since the 1970s, automated design systems have been created as an effective and inevitable tool.

The fourth stage involves the process of determining the impact of computer technology on spatial imagination and measuring this psychological feature of the individual, arising from engineering graphics. 2D and 3D CAD systems have been introduced in the engineering graphics education system and are still in use today.

The importance of the problem of formation and development of spatial imagination is that a lot of research has been done on this subject. In particular, Uzbek scientists R.Khorunov, Y.Kirgizbaev, I.Rakhmonov, R.Ismatullaev, Sh.Murodov, T.Azimov, D.Kuchkarova, E.Ruziev, P.Adilov on development of spatial imagination , S.Saydaliev, Sh.Abdurahmonov, A.Hamrakulov and others, from foreign scientists IPIstomina, OVRazumova, LVZanfirova, LPRusinova, AVPiliper, Yu.A.Volkova, Ye.P. , I.Ya.Kaplunovich, Yu.F.Katkhanov, Ye.I.Korzinov, IIKotov, MNMakarov, AAPavlov, VSStoletnev, VIYakunin, PAOstrozhkov, IP Kaloshin.

LPRusinova's work on the use of graphic tasks with a degree of difficulty in the systematic formation of students' spatial imagination in her research work is also of particular interest from the point of view of our research.

On the basis of SSSaydaliev's Eastern architectural traditions the scientific research work on development of spatial imagination of students is carried out, offers, recommendations and methods on development of spatial imagination are given. The research considered the development of students' spatial imagination with the help of architectural monuments.

Today, the development of the theory of computerization of teaching requires the establishment of general and specific criteria for the creation of educational and electronic developments that really increase the effectiveness of educational activities, form a positive attitude and interest in the subject.

Student activism and independent thinking problems are one of the didactic roots of the practice. If students are not able to spatially visualize the state of the graphic materials, the teacher’s work will not be effective in terms of a positive educational outcome. Modern computer technologies and software tools based on them effectively help students to think independently and form spatial imagination in the study of science.

In addition to the use of multimedia e-books in the teaching of "Building Drawing", the use of automated design system (ALT) software is highly effective. This category of programs can include ArchiCAD, Revit, AutoCAD, 3d Max, Lumion.

To date, the capabilities of ALT graphics software include 3D geometric modeling, parameterization and 4D modeling, and the use of ALT graphics software in science teaching is highly effective. The ALT ArchiCAD program, which is widely used in educational institutions and design organizations today, has such opportunities. These opportunities play a key role in developing students ’spatial imagination and independent thinking. Using the ALT ArchiCAD graphics program, many topics in science can be explained. For example, it can be widely used in teaching processes of building plan, building facade, building shear, roofing, interior, exterior and other topics.

Today, ensuring the compatibility of new pedagogical technologies, traditional teaching methods and modern computer technologies will be the basis for improving the quality of education. There are the following problems with the use of computer graphics in teaching the subject of construction drawing:

- lack of knowledge of science teachers on graphics programs, computer technology and hardware, as well as graphics;
- teachers 'unwillingness to create modern-looking electronic lectures on science topics that develop students' spatial imagination;
- the lack of available electronic lectures, textbooks, methodological guidelines to develop students' spatial imagination;
- lack of rooms for the science of construction drawing and lack of computers and equipment in the lecture halls;
- lack of methods for effective use of graphics programs in the development of students' spatial imagination in the teaching of construction drawing;
- lack (in some cases, lack of computers) designed to use graphics programs that reveal the essence of the science of construction drawing;
- lack of teachers who know graphics programs perfectly;
- lack of classrooms for students to work in a graphic program for independent extracurricular activities.

Based on the above ideas, in order to develop students' spatial imagination, it is necessary to develop manuals, recommendations, multimedia teaching programs for computer modeling of problem problems based on computer modeling, their synthesis, analysis, comparison.

The use of computer graphics in the classroom requires a great deal of effort and time from the teacher. Because creating themes in multimedia form on a computer requires a lot of work. But then it acts as a tool that provides a convenient and easy demonstration for the educator. The advantages of an electronic textbook based on multimedia computer technology are:

- easy to edit and fill in data;
- does not require financial resources, ie the ability to solve printing problems;
- if the server is hosted on a computer, it can be used by multiple users at the same time;
- created multimedia electronic textbook, ease of reproduction when the demand for manuals increases;
- convenience in the distance education system;

The main purpose of the use of computer-assisted learning technology is the formation of students' information processing skills, independent search for, finding optimal solutions for the development of their intellectual abilities, strengthening research activities [41]. This technology does not negate pedagogical technologies, but rather supports them. The combination of pedagogical technologies with modern computer software and techniques is of interest to students.

Students' independent and creative thinking skills can be divided into 3 levels:

- The student seeks ways to solve the problem, complete the tasks, think independently and think.
- The student completes a given task or task independently, but does not take a creative approach. Solves problems in completing the task independently, but does not track how accurate the result is. Can correct a given task or similar problem.

- Strives to use ready-made solutions to a problem. He asks for help when he has difficulty solving the problem. Does not have the ability to solve a problem or task independently.

The purpose of teaching using computer technology is to provide students with a modern view of the knowledge base and the multimedia form in them, to better master the topics studied together, to enrich their knowledge, to develop creative and logical thinking skills, to develop spatial imagination, The creative approach to their work with the help of the acquired knowledge is to move towards a clear goal and to raise their research activities to a higher level. Graphic activity is the most important component of shaping students 'spatial imagination and enhancing the skills associated with it. After all, no academic science can develop spatial imagination and spatial hypothesis like drawing. In order for a student to have a clear idea of the shape of an object on a drawing, he or she must have a clear idea of the geometric objects and their interrelationships. It is especially important for students to have the ability to make spatial imagination as well as spatial imagination in graphic preparation.

Based on our existing perceptions, we call the activity of our consciousness, which consists in creating images of things and events that we have previously perceived. Imagination can be interpreted in different contexts according to the specific tasks in human practical activity. For example, in graphic activity, spatial imagination is involved in the process of reflecting the relationships and properties of objects in space. Therefore, the role of spatial imagination in the formation and development of skills specific to different areas of graphic representation is incomparable. It should also be noted that spatial imagination and spatial imagination are involved in graphic activities related to the solution of spatial metric problems.

Experts say that the level of mastery of the material is 10% when reading, 20% when hearing, 50% when seeing and hearing, and 70% when discussing with others. This means that multimedia combines several modes of communication - text, static image (picture, drawing and graphics), dynamic image (animation and video) and sound (digital and MIDI) - as an interactive product.

Especially noteworthy is the use of computer technology in the educational process, as it replaces all the visuals.

New requirements included in the complex psychological and pedagogical requirements of the lecture courses of the multimedia educational system: syncretism of the presentation of educational information, full provision of the system of educational activities, the norm of educational information excess, complementarity of traditional and multimedia technologies, as well as the requirements of the dynamically developing theoretical image of students and their impact on the emotional management of learning activities.

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