JOURNAL OF ADVANCED SCIENTIFIC RESEARCH

ISSN: 0976-9595

Journal of Advanced Scientific Research (ISSN: 0976-9595)
Vol.5. Issue 3 page 31

Editorial Team

C/O Advanced Scientific Research,
8/21 Thamotharan Street,
Arisipalayam, Salem

Journal of Advanced Scientific Research (ISSN: 0976-9595)
Vol.5. Issue 3 page 32

ARCHITECTURE-BUILDING, TEACHING DRAWINGS, USING GRAPHIC INSTRUCTIONS, STUDENTS' SPATIAL IMAGINATION, DEVELOPMENT, PEDAGOGICAL THEORY AND PRACTICAL TEACHING

Mansurov Zuhriddin Xalilullayevich

Tashkent University of Architecture and Civil Engineering, Uzbekistan

Abstract: The course on building drawing at the university is aimed at the formation of the visual culture of students, as well as the creative potential of the personality. Most practical work in this area, especially in teaching construction drawing, is achieved through modern graphics software. Among the graphics programs in the field of architecture, Archicad is the most advanced, which is an effective way to illustrate the day of a subject by transitioning to a three-dimensional state of drawings in the eyes of students. Therefore, the practical significance of graphic programs and their descriptions occupy a special place in the coverage of the whole essence of this science.

Keywords: Standard, drawing board, student, practical lesson, concept, necessity, drawing, training, sequence, membership, didactic requirement.

Psycho-physiological factors of personality formation and development, as well as the experience of educational practice, the development of students' spatial imagination depends on a number of factors. Among these factors, personal qualities such as attention, memory, and imagination are the main ones. Although these factors are the main ones, they are also interrelated according to their importance and nature in the process. Among these qualities, especially if the attention is not well developed, it is a way to remember something in the memory. If the attention is well developed, the memory will work well and it will serve to remember the necessary information. If the memory is strong, the imagination and abilities are also widely developed.

Until now, the researches of psychologists in the world have shown that attention is an important and necessary condition for all types of human activity, first

of all, education and work efficiency. One of the important and main factors of the perfect organization of the educational process is attracting the attention of students. Attention refers to the direction and concentration of consciousness that increases the level of sensory, mental and motor activity of a person.

There are the following forms of attention: sensory (perceptive), mental, motor (motor). It is a part of cognitive processes such as attention, perception, memory, thinking, and acts as the main factor in increasing their effectiveness.

Memory is the mental process of remembering and, when necessary, retrieving perceived objects and events or past experiences. It is one of the properties of the nervous system, and is manifested in the ability to store information about the events of the external world and reactions of the organism for a long time and to restore it in the activity of consciousness and in the framework of behavior and behavior. The following main processes are distinguished in memory: remembering, storing, restoring, forgetting. These processes are formed in the activity and determine it.

Memory is the most important feature of all mental processes and ensures the unity and integrity of a person. The specificity of the activity in which the processes of remembering and restoring are carried out is the basis for distinguishing different types of memory.

According to scientific conclusions of the problem in pedagogical, psychological and methodical sources, as well as analyzes of the situation in the practice of graphic education, some types of memory are determined according to three main criteria:

1) moving, emotional, figurative and verbal-logical according to the nature of mental activity;

2) according to the nature of the purpose of activity - free and mandatory;

3) according to the duration of strengthening and storage of the material - it is divided into short-term, long-term and operational types.

When studying any information, it is necessary to take into account that the human memory has the ability to choose. Although human memory belongs to a mixed type, different people have a certain type of memory. Therefore, the

simultaneous use of various educational materials creates more favorable conditions for perception. In this case, students can rely on a more advanced analyzer in them.

The geometry of the product being created is first formed in the designer's imagination, and then reflected on paper or a computer. In the process of forming an imaginary model of the product being created, the main subjective ability of the designer called spatial imagination is used. A developed spatial vision allows not only to create models of products, but also to perform imaginative processing operations on them and create a more advanced model in the automated design system used.

Imagination is divided into abstract and concrete types, depending on the character of the images on which the imagination is based. High-level generalization images with common features belong to abstract imagination. Characteristic features: features such as changes in the visual image, partially or completely unobservable and the formation of an image corresponding to specific tasks of activity or cognition. Thus, abstract imagination is embodied in the form of schemes, drawings, pictures, and in mathematics these are symbols, formulas, graphs. Drawing has the properties of geometry as a science and science, because the main geometric images used in it are abstract elements: point, straight line and surface, that is, it is an object of abstract imagination.

To determine the structure of spatial perception, one can rely on the theoretical information developed by I.S. Yakimanskaya. In his opinion, the following features are taken into account when determining spatial perception:

1. The structure of the spatial imagination is determined depending on the content of the subject and is formed on its basis.

2. An important condition for the formation of a spatial image is the use of various visual graphic materials.

3. The structure of the spatial image depends on the function of the spatial image in the process of solving the problem.

4. The characteristics of the structure of spatial imagination are determined depending on the nature and content of the subject's activity. The direction and

content of this activity is determined by the methods of the problem developed by the methods of presentation (or found in the process of solving).

In general, spatial perception is a key skill in perceiving, understanding, and understanding objects in the real world.

The analysis of the traditional practice of teaching "Construction drawing" showed that the spatial imagination of students is being developed with the help of various detailed models, posters, handouts, etc. in the teaching of graphic education. It can be seen that the demonstration materials used in the subject of "Construction Drawing" taught in the higher education institutions consist only of posters in the form of paper. Nowadays, modern multimedia tools, video projectors are used in the educational process. Demonstration organization of lessons is an urgent task of the teacher today. It follows that there are problems for the science teacher to bring the necessary materials to the lessons. Therefore, as a result of teaching without these materials, graphic education, which is an important educational competence of students, does not have the same result as stated. The reason is that it is difficult for students to understand the object being talked about and imagine its obvious appearance. In order for him to imagine, it must be demonstrative.

So, if this is the case, solving the problem of forming and developing the spatial imagination that students lack in the teaching of "Drawing geometry and engineering graphics" is one of the urgent issues that are waiting for their solution today. It is necessary to widely use multimedia computer technologies as the best and most appropriate tool for solving this problem.

Today, the development of the theory of computerization of teaching becomes necessary to determine the general and specific criteria for the creation of educational-electronic developments that increase the effectiveness of educational activities, form a positive attitude and interest in the subject being studied.

Student activity and independent thinking problems are one of the didactic roots of graphic education. If the students cannot spatially imagine the situation of the graphic materials, the activity of the teacher will not be effective in terms of a positive educational result. In solving this problem, modern computer technologies

and software tools created on their basis effectively help students to think independently and form their spatial imagination.

Experiments show that the use of automated design system (ALT) programs along with the use of multimedia e-textbooks (Computer design and Construction drawing e-textbooks, Appendix 8) in teaching the subject of "Construction drawing" is highly effective. These programs include ArchiCAD, Revit, AutoCAD, 3D Max, and Lumion.

To date, ensuring the harmony of new pedagogical technologies, traditional teaching methods and modern computer technologies is the basis for increasing the quality of education. The analysis of scientific and methodical sources related to the problems of graphic education, as well as the results of observing field practice, shows that the following problems exist in the use of computer graphics in the teaching of the subject "Construction drawing":

- lack of knowledge of graphic programs, computer technologies and technical tools and graphics of science teachers;

- lack of readiness of teachers to create modern electronic lectures on science topics that develop students' spatial imagination;

- that existing electronic lectures, textbooks, methodological instructions are not sufficient for the development of students' spatial imagination;

- Lack of rooms for the subject of "Construction drawing" and lack of computers and technical equipment in lecture rooms;

- The methodology of effective use of graphic programs in developing students' spatial imagination in the teaching of "Construction Drawing" has not been developed;

- lack (in some cases, absence) of computers designed to use graphic programs that reveal the essence of the science of "Construction drawing";

- lack of teachers who know graphic programs perfectly;

- lack of classrooms designed for students to work on graphic software for independent activities outside of class.

Based on the above considerations, it is necessary to develop guides, recommendations, and multimedia educational programs on computer modeling of problematic issues based on computer modeling, their synthesis, analysis, and comparison in order to develop students' spatial imagination. Special research is required to develop such programs on the basis of established pedagogical requirements, technical parameters, and to create optimal mechanisms for their use in the practice of graphic education.

The use of computer graphics in lessons requires a certain professional competence from the teacher. Also, creating multimedia content on a computer requires a lot of work in addition to specialized knowledge of the field. But later it serves as a tool that provides convenient and easy demonstration for the pedagogue. The advantage of the electronic textbook created on the basis of multimedia computer technologies is as follows:

- easy to edit and fill in data;

- does not require financial resources, which means that printing problems can be solved;

- if the server is placed on a computer, it can be used by several students at the same time;

- created multimedia electronic textbook, easy to increase the number when the demand for manuals increases;

- convenience in the distance education system.

We call imagination the activity of our mind, which consists in creating images of things and events that we previously perceived based on our existing imaginations. Fantasy can be interpreted in different ways according to specific tasks in human practical activity. For example, in graphic activity, spatial imagination is involved in the process of reflecting the relationship and properties of objects in space. Therefore, the importance of spatial imagination in the formation and development of skills specific to various fields of graphic imaging activity is incomparable. It should also be noted that spatial imagination and spatial imagination are involved in graphic activity related to solving spatial metric problems.

Experts say that the level of mastery of the material is 10% when reading, 20% when listening, 50% when seeing and hearing, and 70% when discussing with others. Therefore, multimedia combines several methods of information transmission - text, static image (pictures, drawings and graphics), dynamic image (multiplication and video) and sound (digital and MIDI) - as an interactive product. The use of computer technologies in educational processes is particularly noteworthy as it replaces all demonstration.

The new requirements included in the complex psychological and pedagogical requirements of the lecture courses of the multimedia teaching system: the secrecy of the presentation of educational information, the full support of the educational activity system, the excess of educational information, the complementarity of traditional and multimedia technologies, as well as the requirements of the dynamically developing theoretical image of students and educational-cognitive affects emotional management of activities.

Therefore, the use of computer graphics, or more precisely, graphic programs based on an automated design system, in the development of students' spatial imagination gives a positive result. With the help of these programs, pedagogues will have the opportunity to determine to what extent students' spatial imagination is developed and to eliminate the deficiencies in their spatial imagination. In addition, the principle of operation of these programs is based on the same laws, ensuring that students have the same idea about space, planes, mutual proportions of objects in space, etc.

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