

**THE ROLE OF INDEPENDENT EDUCATION IN INCREASING STUDENT SPACE  
IMAGINATION**

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**АКТУАЛЬНОСТЬ**

*В данной статье посвящены педагого - психологические особенности формирования пространственных представлений и творческих способностей при организации самостоятельного обучения учащихся.*

*Методика: Для получения научно обоснованных результатов, в статье использована частная методика, которая позволила получать достоверные материалы по определению пространственных представлений студентов при выполнении различных геометрических задач.*

**Заключение: полученные результаты данного научного материала может быть использован как студентами и учащимися, так и педагогами работающих в данной сфере образования.**

**SUMMARY**

In this article is shown pedagogical and physical abilities to modernize strange visual and creative abilities by organization self- dependent study.

In the current context of rapid socio-economic development and reforms of spiritual and enlightenment life, the renewal of the content of general secondary education, the need to strengthen the teaching of technology, engineering, mathematics, drawing, art, foreign languages in schools, In the process, we justified the possibility of developing spatial imagination in students through computer graphics as a scientific and methodological necessity.

Continuing our theoretical and scientific-methodological ideas in this chapter, we try to cover the characteristics of reading activities of students of general secondary schools, the processes of intellectual development and the development of personal qualities and their psychological impact on the development of spatial imagination in students. Indeed, the concept of pedagogical anthropology is enriched with a new meaning, "The subject of human education" by the great Russian pedagogue KO Ushinsky (1824-1870). As noted in the experience of pedagogical anthropology (1868-1870), "If pedagogy wants to educate a person in all respects, it must know him in all respects."

The improvement of students' graphic training is determined by how quickly and successfully the reconstruction of education is carried out on the basis of advanced ideas of recent years. In secondary schools, work on new programs is being organized, and specialists are working on the creation of a new generation of textbooks.

Now, one of the key issues is to further improve teaching methods. The need for research in this area is explained, firstly, by the growing demand for modern teaching, scientific and methodological training of teachers, and secondly, by the growing demand for didactic assessment of methodological innovations in recent years. possible.

Currently, in addition to the creation of a new program of drawing, there is a constant scientific and methodological work to find ways to develop the intellectual activity of students.

Improving teaching methods and increasing the effectiveness of the pedagogical process is associated with the formation of cognitive activity of students, their spatial perception. Proper organization of students' learning

activities, the formation of rational methods of graphic activity play an important role in the implementation of this task.

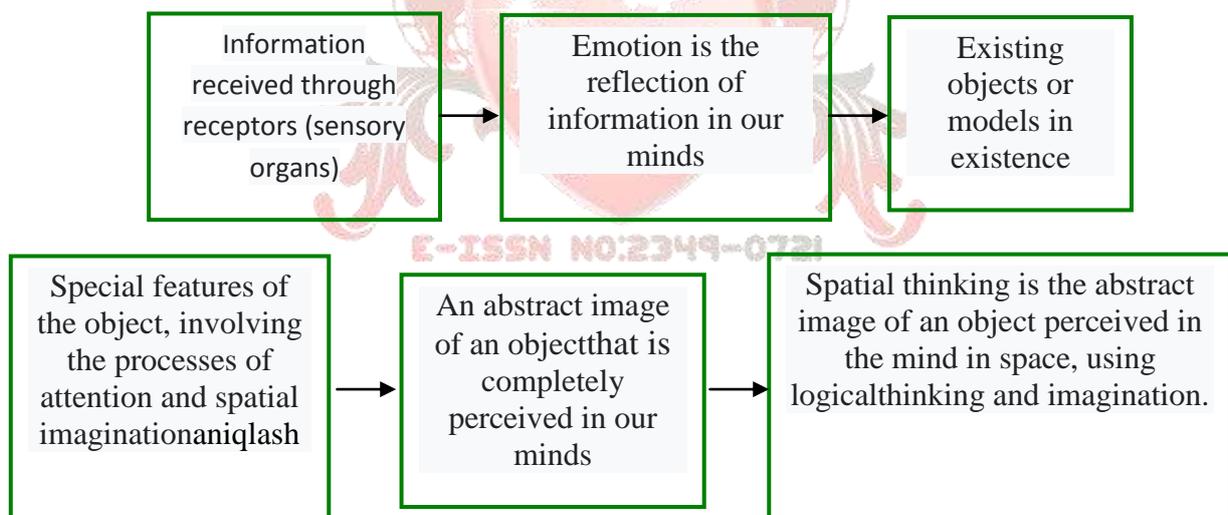
This requires a great deal of pedagogical skill on the part of the teacher. Teachers' pedagogical skills can be developed by involving them in new forms of work, identifying effective teaching methods and testing them in practice.

In recent years, teachers have gained rich experience in organizing students' independent work on handouts, activating students' learning activities and motivating them to solve creative problems.

Further improvement of the work carried out in the field of development of students' intellectual thinking in the teaching process is directly related to the rational organization of students' learning. As a result, students are not only provided with the structure of knowledge, but also have the opportunity to develop rational ways of logical thinking activities related to the solution of various graphical problems.

It is known that in the learning process, working with spatial images involves not only the reconstruction of the object, but also to perform operations on them, disassembly, rounding of individual elements, interaction with other objects as part of the object, and these are effective. is done through spatial thinking.

As a result, they serve to form a generalized spatial image as a whole. Summarizing the above ideas, we have developed a general scheme for the formation of spatial imagination, perceiving objects in our minds.



As the diagram shows, spatial thinking and spatial imagination are important in the formation of a spatial image. The psychological features of spatial thinking are that it is a type of mental activity that allows the creation of spatial images, analysis and graphical operations in the process of solving practical and theoretical problems. Forms of activity such as design, modeling, graphic representation play an important role in its development. Such an approach to spatial imagination has been used by many Methodist scholars in the development of methods for the formation and development of students' spatial imagination [3]. They understand more or less the image of a spatial (geometric) configuration and its elements or the relationship between them. The process of formation and development of spatial imagination is characterized by the ability to imaginatively design spatial images or schematic configurations of the object under study and to perform on them the actions to be performed on the object.

In our research, we proposed as a scientific hypothesis that when special exercises are performed with students, they expand their spatial imagination, the scope of imagination and thinking about objects, their properties and characteristics. In the course of the work, it was proved to be correct and reasonable (see table).

Object	Criteria for spatial cross-section (%)					
	Restore the subject	Perform actions on the subject	Disassembly of the object	Rounding of individual elements of an object	The subject's relationship to other objects	Jami
Experimental group	70	72	71	80	77	74
Control group	51	57	49	58	46	52,2

Table. Students develop spatial representations as they analyze their drawings.

In particular, in the experimental groups, 5 features were selected as the criteria for spatial representation, through which the scope of knowledge and perceptions of the subjects was studied, and the results were much higher than in the control groups. For example, in the experimental group, the positive result was 70% in the control group on the criterion of visual perception of the object perceived in the analysis of the completed drawing work, while the results on this criterion were 51% in the control group. Or, the results on the criteria of rounding the individual elements of the subject were 80% and 58% in the experimental and control group. The overall average positive for all criteria was 77% in the experimental group and 52.2% in the control group.

Achieved diagnostic indicators show that the systematic formation of spatial perceptions leads to high positive results in the science of drawing in students. The role of imagination in cognition is that it is a link in the chain of transition from emotion to thought. Information about geometric objects formed in the minds of students is perceived as concepts and turns into knowledge, skills, abilities and experience.

Imagination, as an important element of cognition, serves to connect the image of things and events with the essence of the concepts about them [4]. The formation of perceptions requires the acquisition of concepts, as concepts determine the essence of the image. According to the Dictionary of Psychology: "Imagination is a visual image of an object or event (event) based on previous experience, based on perceptual and cognitive information" [4]. It can be said that the process of forming spatial perceptions of geometric objects is based on the understanding and knowledge of them.

Based on the above, it can be concluded that the spatial imagination is an abstract image reflected in the process of perceiving objects in space in our minds as real, based on a logical summary of knowledge about things and events. In special methodologies as well as in pedagogical psychology, great emphasis is placed on the selection of basic methods of teaching, through which students will be able to solve common tasks, analyze drawings and effectively comprehend.

Graphic work has a twofold effect on the activation of students' mental activity. On the one hand, it is related to the development of students' visual thinking, and on the other hand, it is related to the development of logical thinking. In the process of teaching drawing, great importance is attached to the development of students' visual thinking and spatial imagination.

After all, the formation of spatial perceptions in students is associated with the development of visual perception, creative imagination and imagination, and the presence of motivation for action in relation to

drawing creates conditions for the creation of gnostic possibilities. In the development of logical thinking it is necessary to work on the methods of distinguishing and comparing different forms of imagination, different objects, images with objects, their insignificant features on the basis of contrast (contrast), induction in the description of new material. settings are coming.

One of the main issues in teaching drawing in secondary schools is the development of spatial imagination in students, which depends on the level of visual perception. Due to the insufficient development of spatial imagining, it is more difficult to teach and train students entering higher technical education. Therefore, the development of spatial imagination in drawing lessons can be done in the following context: first, to develop the ability to visualize the geometric shape of an object familiar to them in the task of making a drawing of an object and reading its given drawing; it is necessary to expand the stock of sections, to bring them into the form of a solid structure.

On the basis of the accumulated reserves of spatial imagination during the performance of drawing tasks, that is, if the ability to adequately visualize spatial images is not sufficiently developed, it is difficult to fully graphically depict an object, and teaching drawing techniques has a positive effect on work. can notrsata. Graphic imagery and intellectual activity, which are the means of imagining and expressing forms, interact with each other in the same way as they do in verbal thought.

The teaching of drawing was founded in the XVIII century, but in the VII-IX centuries Turkestan was the only one in the East in terms of the growth of construction. Abu Rayhan Beruni wrote a large book on geodesy in 1000, "Determining the distance between settlements, defining the boundaries of places." It is obvious that the science of drawing has been developing in Central Asia since the 7th century. In 1930, a new curriculum in drawing was developed, which was an important step in improving students' graphic skills. Beginning in 1932, drawing emerged as an independent science.

Due to the growth of production, the programs of 1945-1953 differed radically in their content and direction from the programs of previous years. Approved in 1954, the drawing program provided ample opportunity to study drawing in practice. From that year, drawing began to develop as an independent science. In those years, drawing was taught as an independent subject in 7th, 8th, 9th, and 10th grades in high school.

It should be noted that the history of the development of drawings should be done in an interesting way through posters, because drawings are the most necessary images. In our time, without drawings, it is impossible to make even small details of various buildings, hydraulic structures, cars, roads and various mechanisms. It is no coincidence that drawing is the language of technology.

For the learning process to be productive and efficient, students must have a certain level of cognitive activity. The development of cognitive activity in art education means the active use of different levels of image exchange in the minds of students. The main factor in the development of students' cognitive activity is the development of figurative and logical thinking, which in turn must be combined with the following qualities of the student's personality:

- 1) intelligence;
- 2) activity;
- 3) independence;
- 4) initiative;
- 5) creative approach to work;
- 6) curiosity;
- 7) acquisition of independent knowledge.

Theoretical analysis helped to identify three different approaches among problem solving experts. The first direction is to accelerate learning to a certain extent by performing exercises and activities that determine the knowledge of more students. The second direction is related to the formation and development of cognitive activity, which focuses on such qualities as internal and external activity, independence, initiative, creative activity and independent learning. The third direction is to create the necessary conditions for the development of cognitive activity.

These directions in the development of cognitive activity do not negate each other, but are inextricably linked. However, due to the breadth and diversity of the problem in all three areas, it is desirable to identify and study the main areas that develop students' cognitive activity. The development of student learning is multifaceted and can take many forms, for example, externally and internally.

The External Aspect of Student Learning	The internal aspect of student learning
Perspective BF: observation of teachers' movement, attention to exhibition	Development of spatial imagination
Oral BF: speaking the topic, reading the drawing	Encouraging creativity
Symbolic BF: drawing (graphic activity)	Independent work, control; mutual control, internal self-control

In short, the organization of pedagogical work with sufficient knowledge and experience of its pedagogical and psychological basis for the formation of spatial imagination and creative abilities in students creates ample opportunities to raise the teaching of drawing to a new level of quality.

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