FEATURES OF GEOMETRIC PROBLEMS FOR THE DEVELOPMENT OF SELF-AWARENESS AND LOGICAL THINKING

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ANNOTATION
This article discusses ways to develop self-awareness and logical thinking through geometric problems.

Keywords: self-awareness, logical thinking, geometric problems, attachment, gluing, cutting

With the increase in the amount of information in the real world, a person is faced with various processes and phenomena. which could negatively affect the future. To achieve positive results, he must be able to think, give self-evaluation to his act. But not every one of us performs our actions consciously. Sometimes think after the act.

In pedagogy, the full formation and development of the student's abilities to independently outline a learning problem, formulate an algorithm for solving it, control the process and evaluate the result obtained - teach to learn [1] .

It is known that the effectiveness and quality of teaching mathematics is determined not only by the strength of the acquired knowledge, skills and abilities that are provided for by the program, but also by the development of schoolchildren, in view of this, the implementation of developmental education in practice is the need of today. As the practice of primary mathematics education demonstrates, many schoolchildren have little or no self-control and self-esteem skills. For this reason, the development of self-control and self-control skills, the development of the habit of evaluating the results of one's own work is the most important task facing the teacher. Speech and thinking play the main role in the formation of these qualities [2].

Animals and humans are multicellular organisms with certain instincts and traits. But, unlike animals, a person has self-awareness , thinking and speech - the main characteristics that put him a step above other inhabitants of the living world.

Speech is the main feature that distinguishes humans from other mammals. Animals can make sounds, but they don't line them up into literate, intelligible, and coherent speech. In many ways, this feature is associated with intelligence and the structure of the vocal apparatus. There are other differences related to thinking, the brain and intelligence.

Those who are sure that mathematics is not for them, in fact, face it every day: when budgeting, eating, while driving, planning a day and evaluating the effectiveness of their own work. In the process of solving mathematical (geometric) problems, logical and analytical types of thinking develop, which are necessary in any field of activity, and thanks to the flexibility of the human brain, mathematics can be learned at any age, regardless of the "turn of mind".

"From the history of the development of geometry, we know that it is one of the oldest branches of mathematics. Through geometric drawings, every invisible and visible object can be described or constructed.

Geometry emerged as a field of knowledge dealing with spatial relationships.

Geometry, from a practical point of view, is the need to measure shapes. It is believed that geometry first became important when the Egyptian pharaoh wanted to tax farmers who grew crops along the Nile River. To calculate the correct tax amount . Which indicates the thought process of the pharaoh.

Knowledge of geometry was necessary to build pyramids, which consisted of a square base and triangular faces. The earliest record of a formula for calculating the area of a triangle dates back to 2000 BC. The Egyptians and Babylonians developed practical geometry to solve everyday problems, but there is no evidence that they logically deduced geometric facts from basic principles . "[1]

The system of monitoring and evaluating the educational work of students cannot be limited to a narrow goal - checking the assimilation of knowledge and the development of skills and abilities in a particular academic subject. It poses a more important social task: to develop in students the ability to check and control themselves, critically evaluate their activities, identify errors and find ways to eliminate them.

Mastering the ability of self-control provides comfort in learning, relieves stress and provides students with the opportunity to study with great interest and desire, and also gives students a real "tool" through which they are able to manage their own learning process at further stages.

Great and rapid development of self-consciousness and thinking in education can be achieved through geometric problems. The idea of developing thinking is not new, but mathematical thinking, of which abstract and spatial thinking is a part, is functional. The task of "working" with visual images in elementary school geometry courses - the accumulation of experience in representing images of real objects through their properties and posing problem situations that lead to the necessary generalizations, primarily refers to the pedagogical task of the geometry course. [3]

"Mathematical ability is related to the level of development of logical thinking and reasoning - and the mental gymnastics that you need to do to understand abstract things like geometry can also help my burgeoning sense of physical space."

Geometric problems develop in students such types of thinking as: development of verbal, figurative-logical, logical-figurative thinking. Also, which is especially important for future teachers of mathematics and engineers, stereographic thinking and related mathematical thinking can be developed.

At the initial stage of the development of thinking, one can imagine mathematical problems that have the following meanings:

- distribute cards with figures that can be applied to compare their areas;

-distribute figures where you need to complete the task of cutting according to certain conditions;

-distribute figures where you need to complete the task of gluing under certain conditions;

- distribute cards from the image where you need to find the difference;

-hand out cards and images where you need to find the way to the exit, etc.

At the second stage, more difficult tasks are given, i.e. tasks for the rotation of a straight line, a segment around a point or around a certain side of a given figure. You can build figures that are symmetrical about a given point, about a given line, about a plane. And also you can give several ready-made solutions to problems, where the main goal is to compare the solution and find the optimal solution.

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[1] From the history of the development of geometry

At the third stage, it is possible to solve geometric problems of varying degrees of complexity. You can begin to solve problems for the construction, the image of spatial figures, the image of sections of a spatial figure by a plane.

The essence of mathematical thinking lies in the ability to abstract and generalize - in other words, it is a set of logical operations. A person with developed mathematical thinking is able to operate with a large amount of information and identify cause-and- effect relationships, break complex tasks into smaller ones and come to a consistent problem solving .

All of the above types of geometric tasks force the student to think logically, represent the abstract, verbal, figurative into visual, stereographic.

Logic is the ability to think in stages, analyze and compare facts in order to come to a conclusion . Geometric problems create a problem or situation associated with logical thinking . Logical thinking requires structuring, identifying relationships between facts and consistent reasoning — to think logically means to think step by step [4] .

In his book The Development of the Brain , Dr. Karl Albrecht argues that the basis of all logical thinking is sequential thinking - this process involves considering important ideas, facts related to a problem, and arranging them in a chain that itself makes sense.

Conclusion: the basis for solving geometric problems is the construction of a logical chain of inference and the presentation of information in the form of a visual image. The correct and complete image of the presented information gives the correct result, which is an incentive for self-esteem and self-awareness.

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