METHODS OF TEACHING INTERESTING GEOMETRIC PROBLEMS

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Annotation. The methodology of teaching geometric material is aimed at developing students' interest in geometry, developing logical and spatial thinking, as well as practical skills in applying geometric knowledge. The article discusses the use of interactive methods in teaching geometric problems.

Keywords: mathematics, geometry, polygon, shapes, program, figure

In our country, the modernization of the education system, its structural restructuring, the introduction of innovations into the teaching process taking into account the modern achievements of education, science, engineering and technology, economy and culture at the global level, as well as the creation of necessary and sufficient conditions for the participants of the educational process in terms of their capabilities and needs, are becoming increasingly urgent.

The main task of studying geometric materials in primary grades is to form clear concepts and ideas about geometric figures, points, straight lines, sections, broken lines, polygons, angles, circles. Therefore, the system of exercises and the content of geometric problems should be focused on the formation of knowledge, skills in spatial representations, observations, comparisons, abstractions and generalizations. First of all, it is necessary to give students the skills of measuring and drawing geometric figures, as well as drawing and measuring tools, as well as using the eye, hand, etc. It also includes making various figures from paper, sticks of different lengths, and various weapons. The classroom must have a ruler, a triangle, and a compass. Geometric materials should be taught appropriately.

Each lesson at school should contain clearly formulated objectives. In order for a geometry lesson to be held at the proper level, a clear understanding and

consistent implementation by the teacher of the general educational, educational and developmental goals and objectives of the lesson is necessary. During the lesson, in the process of solving a problem, each student masters a system of mathematical knowledge, special and general educational skills and abilities, a certain level of development and upbringing - his creative thinking develops. Each lesson objective should be specific, since it expresses certain qualitative changes in knowledge, skills, in the development of creative thinking of students, in the improvement of moral qualities of the individual. The content of the lesson should include material that contributes to the solution of specific problems for the development of creative thinking of students. Teaching methods, as ways of joint activity of the teacher and students, are chosen with the expectation of maximum involvement of students in the cognitive process.

Geometric materials in primary grades are related to the materials taught in preschool institutions, and are somewhat more complicated. Even in preschool, they become familiar with a sphere, cube, circle, square, triangle, and right-angled triangle.

In primary grades, it is necessary to give clear knowledge and imagination to concepts. It is necessary to be able to show, name, draw and even make figures of a given length on paper and a board. Already in the 1st grade, they get acquainted with points. They put dots in a checkered notebook and give the task of connecting them. They take the points and connect them with a straight line. After that, students understand how to write points, a straight line, or connect them using cuts.

It is also of particular importance for a primary school teacher to teach “Geometric materials” according to a program developed for mathematics. It will be especially effective and interesting for students if it is taught to students through a creative approach.

Studying geometric materials: - To accumulate (expand) the stock of ideas about geometric figures; – helps develop spatial thinking, analysis, generalization,

and imagination skills; – helps develop important practical skills; – prepares children for later study of geometry.

The concept of a polygon, angle, and circle is taught sequentially in all grades of primary education. In grades 1-10 (decimal), these are used as didactic materials. With their help, students use them to count, compare numbers, and solve problems. Later, they also get acquainted with the shapes of a circle, triangle, and square. Gradually, they become familiar with the elements of a polygon: sides, angles, and vertices.

In the first grade, the initial acquaintance with geometric shapes and their properties is largely completed, in the second grade, students reach a much higher level of geometric development, children's measuring skills improve, geometric imagination is defined and expanded. Students' mathematical vocabulary increases and strengthens. Just as in the first grade, in the methodology for studying geometric material, a large place is given to the method of comparing and contrasting, to the method of using the relationship of their mutual location to determine the properties of shapes. In the formation of geometric ideas, a creative approach is used, using methods such as observing geometric shapes, cutting out geometric shapes, gluing them, making models, folding a sheet of paper to make shapes, dividing a shape into pieces and constructing new shapes from pieces.

In the second grade, geometric material is distributed throughout the school year and should be allocated a few minutes in each lesson. The number of lessons devoted solely to the study of geometric, algebraic, and arithmetic material is very small. This allows geometric facts to be studied through algebraic facts and, conversely, algebraic facts through geometric facts. In the second grade, not only is what was covered in the first grade repeated, but a number of new materials are also studied, including: using letters to designate points and intersections, representing numbers with intersections, comparing the lengths of intersections using a compass, getting to know a circle and a circle, a broken line, the perimeter

of shapes, and millimeters. We will look at the content of geometric material and the specific aspects of its study.

It is known that the formation of geometric ideas in children is significantly influenced by the activities of students related to the formation of geometric ideas. One of the main activities for mastering concepts is definitions (description). However, the boundaries of the use of definitions in the initial grades when familiarizing with geometric concepts have not yet been determined, since they can be different in different versions. In primary school practice, there are two types of deviations: an excess of definitions or a complete absence of definitions. Both of them make education ineffective (unproductive). How can a teacher be protected from these deviations? Methodologists believe that in the process of forming concepts such as a right rectangle, square, acute and obtuse angles, etc., the need to reflect the content of these concepts is satisfied, and their pedagogical and psychological properties are strengthened in the process of mastering geometric concepts.

The following methods in teaching geometric elements, for example: using geometric modeling, making models of figures (shapes) from paper, sticks, plates and wires, drawing geometric shapes on paper - can be a factor in the development of geometric imagination in children's minds. In such conditions, regardless of the type of material, color, size, position on the plane, shapes should be selected in such a way that children can determine their main features (shape, geometric qualities). Attention should be paid to this so that students can distinguish all the qualities of geometric figures. These shapes help to make the imagination correct. For example, in the process of studying a right-angled rectangle, children should understand its two main qualities - that it is a rectangle and that its angles are right. The teacher should explain it in such a way that it is understandable and interesting to students.

The methodology for forming primary school students' ideas about geometric shapes is set separately for the above-mentioned tasks and includes the following stages:

Stage 1 (preparatory) - identifying general ideas about geometric shapes that children have (children's life experience, practical work).

Stage 2 - forming ideas about geometric figures in them based on practical work with students.

Stage 3 - performing specially selected exercises and tasks related to the construction of shapes in order to firmly retain the studied material in memory.

During the lesson, students will be introduced to another basic geometric shape, the straight line, and its properties. In this lesson, a straight line is not defined as a geometric shape, but is explained with examples such as a point, and it is an infinite, unbounded line that continues in both directions, and it is important to teach that we can draw it in a drawing.

In conclusion, during the lessons on solving geometric problems, the shortcomings and shortcomings in the process of teaching multiplication and division operations in the previously carried out educational work with primary school students were taken into account. The methodological and methodological foundations of the approach to performing arithmetic operations were used in the organization of the work. A layered approach to students during the lessons on solving problematic problems expands the opportunity to develop practical skills and competencies, psychologically and pedagogically, and choose different forms and methods of education. Solving geometric problems can also be used in work on educating students as patriots through arithmetic operations.

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