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THE TECHNOLOGY OF FORMING GEOMETRIC CONCEPTS IN PRIMARY CLASS STUDENTS WITH INTELLECTUAL DEFECTS BASED ON THE INNOVATION IDEA "INTEGRATION CLUSTER" ON THE BASIS OF INTERDISCIPLINARY RELATIONSHIPS

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ABSTRACT: - This article describes the technology of formation of geometric concepts in elementary school students with intellectual disabilities based on the idea of the innovative idea "Integrative cluster" based on interdisciplinary communication. In mathematics and technology classes, an analysis of the methods of forming geometric imaginations in elementary school students with intellectual disabilities was given.

KEYWORDS: Elementary students with intellectual disabilities, geometric imagination, interdisciplinarity, integrated cluster of geometric concepts, innovative idea, technology, knowledge.

INTRODUCTION

The didactic phenomenon of "interdisciplinarity" consists of such a structural structure as knowledge related to one field of science, knowledge related to more than one field of science, and connections of this knowledge (skills) in the teaching process. The unification of knowledge involves the explanation of cause-and-effect relationships, generalization and generation of new generalized knowledge, concretization of common concepts, generalization of related events. Special education system interdisciplinary communication is considered a logically completed relationship between the structures of different academic subjects, expressed in a general form. On the basis of interdisciplinarity, lesson plans were prepared and put into practice on the formation of geometrical concepts in primary school students with intellectual disabilities using

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the innovative idea of "Integrative cluster". All the subsequent material is completely based on the previous material. Increasing the level of independence. It was proven that practical methods serve as a basis for organizing observations, as well as for strengthening the concepts of geometric shapes, for forming the skills of using them in similar and new life-practical situations. The conversation, the organization of observations using visual aids was embodied by exercises, practical work of a production nature and games. During the preparation of the object, the teacher encouraged the children to compare the intermediate result of the actions (the part being performed) with covering or placing it on the sample object: "Put your part on the sample: Its Pay attention to whether you made (cut) the shape correctly? What needs to be changed?" This formed a careful attitude towards the model in children, the ability to rely on its shape to control their actions. Similar comparisons were used to evaluate the quality of the finished products. Their form was compared with the sample, and a conclusion was made about the quality of the work.

In mathematics lessons, practical methods such as making shapes from plasticine, making shapes from paper strips, constructing from sticks and plasticine, modeling from wires and threads, obtaining shapes by cutting paper and folding a sheet of paper into layers, and drawing drawings were widely used in mathematics lessons. We combined the essence of work with the content of technology lessons. For example, when getting acquainted with right angles in the 2nd grade (2nd quarter), in the process of practical work, children bent a sheet of paper and obtained right angles. In the technology class, a "New Year's Snow Sparkle" item was made to decorate the school tree. In this work, students used the same practical method of working with paper. The teacher activated children's understanding of right angles and the practical ability to obtain them in a similar situation, and then in a new situation. Tasks and types of exercises were structured according to the level of increasing difficulty. Secondary characteristics (color, size, material) of geometric shapes and object models were different.

In order to strengthen the corrective and developmental effect in the system of practical tasks, we have additionally introduced exercises related to the constructive activities of children. During the exercises in this group, students mastered the intellectual-practical skills of modeling geometric shapes, transforming them, combining them, and learned to apply concepts in a new situation. The following technology system was used in mathematics and technology lessons:

The volume and complexity of tasks for each student during the exercises depended on the group to which he was assigned. Pupils of the weak group performed the exercises in a small amount,

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they were provided with individual support (joint actions of the pupil and the teacher, presentation of an individual sample of the form, etc.). Students of the strong and medium groups were offered to do exercises according to their capabilities (changing the conditions). Different types of exercises were used in the mathematics lesson at the stage of initial consolidation of the new material, and in subsequent lessons on the subject, for its repetition, consolidation, and systematization. For example, in the lesson on getting to know a new geometric shape - a square (grade 1, quarter 2), after mastering the visual representation of the shape and its verbal designation, students practiced choosing squares from among many figures of different colors and sizes (didactic handouts) according to samples . In the next mathematics lesson, where knowledge on this topic was strengthened, students independently performed exercises on dividing squares by sample and name, as well as practiced their separation on drawings consisting of several shapes (house, car), surrounding objects and samples of objects. In the training on the next topic, exercises were used to construct squares from various materials (folding and cutting of paper, sticks, plasticine, constructor, bending from wire).

In the technology classes, geometrical knowledge was applied before starting to analyze the sample and perform practical work on the preparation of the object. The stage of applying geometrical knowledge in technology lessons has become mandatory in our teaching methodology. After that, the teacher showed the item that children need to prepare. Students have determined what geometric shape it resembles. The instructor provided technical information, demonstrated tools, etc. For example, after studying the topic "Square" (grade 1, quarter 2) in the Technology lesson, a New Year's flag was prepared with the application of geometric shapes. At the preparatory stage of the lesson, children used previously learned concepts of geometric shapes (circle, triangle) and square. From the parts given by the teacher, they chose shapes by names and samples: "Children, choose all the circles from the parts I distributed. Choose all the triangles. Look at the sample. What other shapes are there? Choose the same shapes." " Before making an object in technology lessons, introducing exercises similar to practical exercises in mathematics lessons also had a positive effect (strengthening the methods of construction and transformation of shapes, the ability to distinguish them in images and objects of complex shape).

In the process of performing practical tasks, we constantly paid attention to the development of students' speech, enrichment of their vocabulary with geometric and special technical terms,

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interrelationship with verbal signs and images of geometric shapes. Students were required to fully answer the given questions, give oral reports on the actions performed, and explain the practical actions in speech.

Mastering geometric material causes more difficulties in children. This leads to a decrease in interest and activity in educational activities. We have developed a system of exercises taking into account the specific features of the mental development of elementary school students, in which the game becomes an important activity for them. Therefore, in a number of lessons, the exercises had a game character, interactive games with geometrical content were held. In mathematics and technology classes, entertaining exercises are used to improve the mastery of the previous material, to clarify and strengthen it. For example, 2 groups of students competed in naming objects of a given shape (objects in the classroom or objects presented). We used interactive games that are used in mathematics classes: "Magnificent bag", "Fourth plus", "Find the same item", "Lotto", "Find what is missing", etc. To form intellectual-practical constructive skills, we used the following interactive games: "Collecting the cut shape", "Fixing the toy", "Making an ornament", "Draw the shape to the end" and others.

In the technology lesson, the methods of making were used to repeat, strengthen and systematize geometric material. For example, in the generalization lesson on the section "Geometric shapes", 1st grade students used all practical methods of obtaining geometric shapes from different materials (making, folding paper, dividing shapes into parts by passing lines, two shapes). In the mathematics classes, an initial acquaintance with the methods of working with geometric shapes and drawing-measuring tools took place. In the technology lesson, they are included in practical activities, clarified and strengthened. In the mathematics lesson, the teacher showed children the name of a geometric shape (sphere) and called it ("This is a sphere"), and showed models of spheres of different colors and sizes made of different materials. Students were given handouts (plastic and wooden balls of different colors and sizes). At the request of the teacher, the children took them in their hands, held them, examined them, rolled them on the table. In this, the children's attention was drawn to the fact that all these models are balls, regardless of color and size ("Take the balls in your hands. Compare them. How big are they? What are their colors? All the shapes differ in color and size, but they are the same shape. All these shapes - balloons"). Students received balloons of different colors and sizes from different materials as handouts. The children held them, ran their fingers around them, rolled them on the

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table. Pupils practiced distinguishing balls by shape ("Choose all the same shapes") among several shapes (balls, cubes) offered by the teacher, naming each selected shape ("This is a ball"). Balloons were chosen by children by name ("Choose all the balloons among these shapes!"). At first, balls of the same color and size as the sample were used in the exercises, and then they were replaced with other types.

In the course of repetition and generalization of the material in mathematics lessons, new methods of making geometric shapes from various materials are necessarily used. Students not only remembered the method, but also performed practical actions to implement it in similar conditions and with their changes. For example, students were asked to make cubes and blocks from plasticine of different colors, to get geometric shapes of different colors and sizes by drawing on the ends of shapes, to get triangles by dividing a rectangle into two parts (not into a square, as in the Technology lesson). In mathematics and technology classes, the task was given to remember to make shapes from plasticine, to construct from sticks and plasticine, from paper strips, to draw by dots, to fold paper, to cut.

In the process of similar practical work performed in the technology class, they studied the elements and properties of geometric shapes by means of research. Practical types of work were used, such as obtaining geometric shapes by folding paper, changing them by bending (obtaining right rectangles by bending a square (in the same way, parts for the application "Machine" were prepared in the 2nd grade), making wire bending, modeling elements of shapes from threads. Paper or by bending wires to make shapes, students compared the properties of their elements. By changing the important and non-important properties (changed the angle, the length of the sides, or took materials of a different color and size), they learned to distinguish between the primary and secondary properties of the shape.

Thus, constructive activities were included in practical activities in the lessons of students in both subjects. A distinctive feature of educational training was expressed by the early abandonment of working on templates, the introduction of drawing and graphic skills to the work on the preparation of items at the same time as they were mastered in mathematics classes.

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