



## Formation Of Abilities And Skills In Measuring Activity In Preschoolers

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### ABSTRACT

This article is devoted to clarifying the goals and objectives of teaching mathematics in the preparation of future educators in preschool education. It describes the methodology of using interactive methods in teaching mathematics based on the competence-based approach for the formation of skills and abilities in measuring activity in preschool children.

### KEYWORDS

Size, volume, mass, length, speed, number, measurements, size of objects, more, less, equal.

### INTRODUCTION

The formation of the elements of measuring activity in preschool age lays the foundations for the skills and abilities necessary for further practical activities of a preschooler, as well as for their successful mastering of mathematics at school. The formation of concepts about size in preschool children creates a sensory

basis for its further development as a mathematical concept. This goal is also intended to master the elementary methods of measuring activity, which affect the mental and mathematical development of a preschooler.

The mathematical concept of “quantity” appeared in ancient times. In mathematics, it is considered basic. In the course of the history of the development of society, this concept was concretized and generalized. By magnitude, we consider volume, mass, length, speed, number, and so on. The term “quantity” is considered in a double sense. First, as a concept that means a spatial feature of an object. Secondly, as a concept that defines a mathematical value. Arguing about the problem of the development of concepts in preschoolers, about the size of objects and ways of measuring it, we narrow down the concept of “size” and determine the size of objects (El Tikheeva, LV Glagoleva, FN Bleher). Only based on comparison is it possible to establish the size of an object. The criteria for comparing objects with each other, give us the opportunity to determine the relationship of equality and inequality of quantities. Comparability, variability, transitivity are the main properties of a quantity that can be realized by children in the most concrete form, in actions with various objects when selecting and comparing their length, width, height, volume. When perceiving an object, preschoolers, as a rule, pay attention to its volume, then give a description of the object, in words large or small. Also, when perceiving an object, the gaze of children falls on the relationship of individual dimensions - length, width, height. Length has actual significance for a person, being the basis for determining 4 dimensions. Measurement can be both direct and simple comparison of the unit of measurement and the measured one, as well as indirect. It is possible to determine a quantity only based on comparison, since comparability is the main property of a quantity. As a result of comparison, it is possible to come to an understanding of the

relations that lead to new concepts: more, less, equal. These concepts characterize the various qualities of an object: length, width, height, volume, and many others. Objects are not always subject to specific comparisons. We often make a mental comparison of a certain object with the general concepts of the sizes of familiar objects that have formed in us. In this case, the size of the object that is perceived is compared with a generalized image, which, as it were, contains the experience of the practical difference of objects. The quantity is also characterized by transitivity, which consists in the fact that if the first quantity is comparable to the second, and the second to the third, then the first is comparable to the third. Relativity lies in the fact that we perceive the same object as larger or smaller. It depends on what size object it is being compared to. Therefore, the problem of forming the skills of measuring activity in older preschoolers in the process of studying quantities remains relevant at the present time. When forming ideas about values in older preschool children, the teacher must rely on age characteristics. As many psychologists note, preschool age is a sensitive period in personality development. The older group of the kindergarten is attended by children aged 5-6 years. In the older group, one lesson is held per week for 20-25 minutes. The training is carried out based on visualization, previously acquired knowledge and experience in solving mathematical problems. That is, a new representation is formed based on its inclusion in the system of those previously learned. Quantity is one of the mathematical concepts that is a generalization of more specific concepts: length, volume, mass, etc. Quantity is a special property of real objects or phenomena. The concept of magnitude is

associated with methods of comparing certain properties of objects. Homogeneous quantities are those that have the same units of measurement. Determination of a quantity is possible only based on comparison since comparability is the main property of a quantity. Through comparison, one can come to an understanding of relationships and to new concepts: more, less, equal, which are subject to various qualities, including length, width, height. The size of the perceived object is compared with a generalized image, which, as it were, contains the experience of practical differences between objects. The quantity is characterized by variability. For example, changing the length of a given table only changes its size, but does not change its content and quality - the table remains a table. The third property of magnitude is relativity. The same object can be defined as larger or smaller, depending on what size object it is compared to. The quantity is characterized by the following properties: comparability, variability, relativity. Measurement is a kind of mathematical activity. Continuous quantities (length, mass, volume) are determined. An important place in this is occupied by the concept of measure, which is widely used by preschoolers in mathematics. Measuring activity requires from a preschooler certain abilities and skills, experience in a differentiated assessment of the size of an object, namely, length, width, height. All this makes it possible to concentrate the attention of children on measuring actions. The ability to coordinate the movements of the hand and the eye is an important condition for accuracy when taking measurements. Comparability, variability, relativity - these basic properties of a quantity can be comprehended by preschoolers in the most concrete form, in

actions with various objects when identifying and comparing their length, width, height.

### THE MAIN FINDINGS AND RESULTS

The ability to coordinate the movements of the hand and the eye is an important condition for accuracy when taking measurements. Comparability, variability, relativity - these basic properties of a quantity can be comprehended by preschoolers in the most concrete form, in actions with various objects when identifying and comparing their length, width, height.

The essence of the measurement consists in the quantitative fragmentation of the measured objects and the establishment of the value of this object in relation to the adopted measure. Through a measurement operation, a numerical relationship is established between the measured value and a preselected unit, scale or standard.

Conventional measure (measure) - an object used as a measurement tool, a kind of measurement tool. At the same time, it acts as a measure (unit of measurement) in this case. With tape, rope, stick, step, the length of the path in the garden can be measured. A spoon, a cup, a jar, a glass is used to determine the volume of liquid and bulk substances. The measurement of objects with conventional measures is peculiar: the unit of measurement is chosen arbitrarily, depending on the situation and specific conditions (this does not require knowledge of the generally accepted system of measures), the assessment of the value is private and less accurate than when measuring with generally accepted units.

Older preschoolers master several types of conventional measurement. The first type should include a linear measurement, when

children, using strips of paper, sticks, ropes, steps and other conventional measurements, learn to measure the length, width, and height of various objects. There are other types of measurement - determination using a conventional measurement of the volume of bulk and liquid substances, the mass of objects, etc.

The ability to perceive the size of an object separately is formed by the end of the 1st year of life. But up to 2 years of age, the value as a sign of an object in children is assigned to a specific object as absolute, and not as relative.

At 2-3 years old, children in games often do not pay attention to the sign of size. In passive speech, children have words such as “long”, “short”, “narrow”, “wide”, “high”, “low”. However, at this age, children do not perceive the size of objects differentially, but are guided by the total volume of the object, not highlighting the length, height, width. These words are replaced in the active speech of the child with the words “big”, “small”. This is influenced by the fact that adults themselves use non-specific words in their speech. Meanwhile, the correct designation by a word significantly influences the perception of magnitude. Children also designate all differences in the mass of objects with the words “big”, “small”, although the words “heavy”, “light” are in their passive vocabulary.

At 3-4 years old, children are already able to differentiate objects in length, width, height, if these signs are pronounced. For example, in low objects, children do not distinguish height at all. For items with the same parameters, they also cannot highlight it. Children are able to compare 2 objects in width, height, thickness, length by application and overlay

methods. If the compared objects are contrasting in the indicated attribute and are the same in all others.

At 4-5 years old, children recognize objects that are contrasting in weight with a weight ratio of 1: 2.5 (in the zone of heavy objects, heavier than 150 g) and with a difference of 1: 4 (in the zone of light objects). Children can compare 2 objects, taking into account 2 signs at once. Children are able to compare 2 objects using a conventional mediator measure, and are also able to arrange more than two objects according to a specified criterion, i.e. build serial lines.

At 5-6 years old, the threshold capabilities of the eye of children increase. Children are able to measure objects using a conventional measure as a unit of measurement and designate the measurement result with a number. At this age, children understand the purpose of measurement. However, measuring instruments are not yet distinguished from conventional units of measurement. For children, the number of measurements is important, not their quality characteristics.

The reform of preschool education, the introduction of new generation standards in primary school, the emergence of new federal requirements for the structure of the main general education curriculum dictate the need to rethink the long-established and newly emerged concepts associated with the mathematical education of preschoolers. In recent years, the theory and practice of teaching mathematics to young children has been replenished with new concepts, concepts and technologies.

Representations, including mathematical ones, are subjective images that are

objectively existing, recreated by memory or created by the imagination, arising when something material that has generated these images does not directly affect the subject's sense organs. Genetically, representations are intermediate between perception and concepts. Representations precede conceptual thinking, accompany it, give concreteness and certainty to conceptual thinking. Mathematical education is aimed at preschoolers mastering ideas, which are a prerequisite for the formation of mathematical concepts (number, size, geometric shapes). Mathematical ideas (about the set, number, counting, the shape of objects, geometric figures, quantities and their measurement, the simplest calculations), comprehended by the child at the empirical, sensory level, are called elementary.

Work on the formation of measuring skills is structured in three areas: "linear" measurements using conventional measurements and measuring instruments; measurement of bulk solids using conventional measurements and measuring instruments; measurement of the volume of liquids using conventional measurements and measuring instruments.

Analysis of publications and practice of working with children allows us to conclude that more suitable conditions for the formation of measuring skills are formed in specially created plot-didactic games of mathematical content. Domestic teachers, psychologists, characterized the game as a form of practical knowledge of the surrounding reality and as a way of transition from ignorance to knowledge.

In the game, children acquire previously unknown knowledge, new skills and abilities,

without knowing it. That is why teachers should widely use plot and didactic games of mathematical content.

Children are attracted not by the educational task inherent in the game, but by the chance to be active in the implementation of game actions and achieve the result. It should be noted that if the player does not possess knowledge, mental operations that correspond to the learning task, he is not able to successfully implement game actions, to achieve a result. The child's active participation in the game stimulates his desire to memorize, compare, classify, pay attention, and refine his knowledge. Children most successfully determine concrete measurements in objects by directly comparing two or more objects.

The word "magnitude" itself is incomprehensible to many children, since they rarely hear it. When the attention of children is drawn to the size of an object, educators prefer to use words that are the same, the same, which are polysemantic (the same in color, shape, size), therefore they should be supplemented with words denoting the sign by which objects are compared (find the same in size: length, height, width, etc.). Game exercise, "Measuring the road to school." The teacher clarifies: "Where will you go on the first day of autumn? What is the name of the first month of autumn?" Children have cards with diagrams of the path from home to school.

The teacher suggested that the children find out the length of the road from home to school: "How do you know the length of the road to school? (Measure.) How will we measure the road? (First from home to turn, then from turn to school.)



- How can you measure the length of the road? (Answers of children.)
- Today we will measure the road from home to school using a conventional yardstick. Now I will remind you of the method of measuring with a conventional yardstick.

It is necessary to apply the measurement so that the edge of the measurement and the beginning of the road coincide. Using a pencil, draw a line along the opposite edge of the measurement. Next, we apply the measure to the line and mark it again with a pencil.- Now measure the length of the road yourself on your picture.

First, measure the length of the road before the bend and record how many times the measurement fits completely onto the strip. And then measure the length of the road after the turn, and also write in the square how many times the measurement was completed after the turn. After completing the assignment, the teacher asked: "What is the length of the road from home to the turn? (Children answer according to the figure indicated.) What is the length of the road from the turn to the school? What is the length of the road from home to school? How did you know the length of the road? " (We added the number of measures and indicated the result with a number.) - Well done, we coped with this task.

### CONCLUSION

Thus, the exercises carried out in the formation of measuring skills in the study of quantities in older preschoolers made it possible to create a control system for the pedagogical process. It can be concluded that the problem of the formation of measuring

skills in older preschool children can be considered relevant, and the results obtained in the course of our research can be used by teachers of preschool institutions in order to solve problems on the formation of measuring skills of older preschool children.

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