

DEVELOPING MATHEMATICAL IMAGINATION IN PRESCHOOL EDUCATION

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Abstract

This article highlights important aspects of developing mathematical imagination in preschool educational organizations. Here you can learn about the theoretical foundations, practical methods, and importance of developing mathematical concepts in children.

Keywords

preschool age, Piaget's theory, time method, motivation, object, puzzles, individual, dolls, reproductive.

In accordance with the Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoyev dated September 30, 2017 "On measures to radically improve the management of the preschool education system" and the Resolution "On the organization of the activities of the Ministry of Preschool Education of the Republic of Uzbekistan", a new system was created in this area. This system was tasked with developing and implementing a unified state policy in the field of preschool education, expanding the state and non-state network of preschool educational institutions and strengthening their material and technical base, providing them with qualified pedagogical personnel, sharply increasing the number of children enrolled in preschool educational institutions, and implementing modern educational programs and technologies in educational processes to comprehensively develop children intellectually, spiritually, aesthetically, and physically, and radically improve the quality of their preparation for school.

Developing elementary mathematical concepts in preschool children is essential not only for the formation of mathematical knowledge, but also for improving general mental development. Children of this age are able to understand the world around them in the learning process, they master mathematics in a simple and interesting way. Elementary mathematics helps children to further improve their logical thinking, knowledge, and imagination and develop their abilities. Theory and methodology of mathematical imagination formation

Formation of mathematical imagination is a complex process aimed at developing mathematical concepts in children. This process is carried out through the child's interaction with the environment and didactic games.

Piaget's Theory

Jean Piaget's theory emphasizes the importance of the sensorimotor and operational periods in the formation of mathematical imagination in children.

Vygotsky's Theory

Lev Vygotsky's theory emphasizes the importance of social influence in the formation of mathematical imagination in children. It is advisable to apply the following recommendations of L.S. Vygotsky in practice. The educator shows the children how to solve the problem and gives them a similar problem to solve themselves. The educator recommends that the child complete the problem he has started. Explains the principles of solving the problem, asks auxiliary questions, poses problems, divides the problem into parts, etc. A person cannot determine the goal without moving. In other words, goals cannot be described, they cannot be an unfounded subject, they are given in objective situations. That is, movement is necessary to find the goal. The more diverse our activity, our actions, the greater the opportunity to determine the goal, to foresee it. The depth of thinking is expressed in mathematical accuracy and the ability to penetrate into the essence of the problem, to distinguish the main from the secondary. The activity of thinking is reflected in the constancy of diligence aimed at solving the problem. The criticality of thinking is manifested in the ability to assess whether the way to solve the problem is chosen correctly. As children grow older, their independence in performing exercises increases. The role of verbal instructions, explanations, clarifications, organizing and directing the independent activities of preschool children increases. After completing the task, exercise, children actions, self- and mutual verification. But it is also possible to include it in the group of seminar methods. In this, the special importance of various games, various seminar actions, for example, building a whole from parts, rows of figures, counting, placing on top of and next to each other, grouping, generalizing, comparing, etc. is taken into account. The effectiveness of the method of activity, the correctness of the result is expressed in the ability to constantly keep the activity within the norm. Rational thinking is determined by the ability to compare methods of activity by setting different parameters, and finding methods that will spend less time on solving the problem. The accuracy of thinking is the solution of the problem or given issue in a different way than other methods. It is often manifested as a result of the depth and depth of thinking. Independence of thinking is expressed in the ability to independently, without help, to find a method for solving the problem, to see the

intermediate and final results of the activity, and to independently, freely and reasonably reasoned opinions.

There are various methods for developing mathematical imagination in preschool education. These methods are adapted to the age characteristics of the child and include games, practical exercises, and other activities.

Counting Method:

Children learn to count numbers, quantities, identify and compare numbers.

Geometry Method:

Children learn geometric shapes, their properties, and dimensions.

Measurement Method:

Children learn to measure and compare length, weight, and volume.

Time Method: Children learn the concept of time, the times of day, and the calendar.

It is important to develop children's mathematical abilities. Teaching children to think logically by comparing, arranging, and grouping shapes and numbers can increase their interest in mathematics. Through games and group activities, children learn to communicate, express their thoughts, and work collaboratively. Methods for developing elementary mathematical concepts in preschool educational organizations:

Games- Didactic games help children form mathematical concepts.

Stories- Stories on a mathematical topic help children understand mathematical concepts more easily.

Puzzles- Puzzles develop children's ability to solve mathematical problems.

Drawings- Through drawings, children express mathematical concepts creatively. Through these methods, children's imagination in elementary mathematics increases. They learn mathematics more easily and effectively. The use of visual aids in the process of forming mathematical imagination makes an important contribution to the formation of mathematical imagination in children. They make it easier for children to understand and remember mathematical concepts. For example, when going through lessons with the help of dolls, children learn numbers and quantities. Using blocks, children learn geometric shapes and their properties. Using pictures, children visualize mathematical concepts.

Conducting various activities in the lesson (health exercises, interesting tasks, games, songs and drawings) contributes to the comprehensive development of children, as well as to the study of mathematical concepts, increasing their interest in elementary mathematics.

The Importance of Productive and Reproductive Mathematical Exercises
 Productive exercises teach children to independently solve problems, think

creatively and develop new ideas. In productive exercises, children independently solve problems. In reproductive exercises, children repeat the knowledge they have learned. The current problems of forming mathematical imagination in preschool children are as follows;

1. Lack of interest
2. Lack of educational resources
3. Lack of interest from parents

To improve these problems, there are directions in the methodology of teaching mathematics in preschool educational organizations. The methodology of teaching mathematics in preschool education is aimed at forming mathematical imagination in children, helping to increase their interest and activity. Main directions of the methodology;

1. Teaching through games
2. Practical exercises
3. Using visual aids

All the pedagogical methods mentioned help to activate children's elementary mathematical activities. Children increase their interest in mathematics. They solve problems in everyday life, play various games, organize their toys, and their interest in mathematics increases even more. Elementary mathematical concepts and examples, problems are often related to appearance, sound, movements and shapes, sizes. Therefore, it is very important and necessary to teach children to distinguish these things and compare them.

In conclusion, it is worth saying that in order to form elementary mathematical concepts, the educator must develop the mathematical imagination of preschool children. He must create interactive, game-based, individualized and emotionally supportive pedagogical conditions with children. These conditions create an interesting and effective mathematical learning environment for the students, further improving their learning process. Teaching mathematics should be interesting, practical and interactive for the students. It is possible to strengthen mathematical concepts by arousing the interest of preschool children in elementary mathematics and providing opportunities for their practical application. The development of children's knowledge of mathematics through game activities should certainly be carried out based on their age characteristics.

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