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# Formation of Mathematical Skills of Educators in Preschool Education

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**Abstract:** This article analyzes the importance and effective methods of forming mathematical skills of teachers in preschool education. Teachers play a significant role in teaching children mathematical knowledge, and they develop children's mathematical thinking using various interactive methods, visual aids and practical exercises. Updating their knowledge and taking into account the individual needs of children are effective approaches to forming their mathematical skills. The article also contains recommendations for the formation of mathematical skills in preschool educational institutions.

**Keywords:** preschool education, teacher, mathematical skills, interactive methods, visual aids, practical exercises, individual approach, mathematical thinking, educational methods.



## Introduction

Preschool education is the foundation of children's intellectual, social and emotional development. The role of educators during this period is very important, because they, along with teaching children new knowledge, form the skills necessary for them to express their opinions and apply knowledge in practice. In particular, mathematical skills are of great importance in developing the worldview and logical thinking of preschool children. This article discusses the need to form mathematical skills of educators in preschool institutions and the methods and techniques that contribute to the effective implementation of this process.[1]

*Mathematical skills in preschool education*

Mathematical skills are understood as the ability of children to understand numbers, shapes, quantities, order and relationships and to apply these concepts in practice. The main task of educators in preschool education is to convey mathematical knowledge to children in simple and interesting ways. These skills not only develop children's interest in mathematics, but also help strengthen their logical thinking, problem-solving and expressive language skills.[2]

In order to qualitatively organize the mathematical development of children, a teacher must have mathematical knowledge, be able to select those of them that a preschool child is able to comprehend, understand the patterns of formation of logical structures of thinking and development of creative abilities, have the means of psychological and pedagogical diagnostics of

children's achievements, predict the further mathematical development of children, etc. Taking into account the listed professional actions and skills, we can talk about the need for free mastery of not only psychological, pedagogical and methodological content, but also subject, in our context - mathematical content of professional activity.[3]

Our analysis of dissertation research also showed the existence of a number of problems. Thus, V. V. Abashina [1] emphasizes that the mathematical development of children in kindergartens is strictly regulated and is uniform in content, methods and forms. Teachers do not strive to develop children's mental abilities and cognitive interest in the process of studying mathematical content, but only try to provide the material provided for by the educational program. According to the author, this indicates insufficient preparation of preschool teachers to implement children's mathematical development. The works of O. A. Enik [2], V. A. Kozlova [3], E. R. Minibaeva [4] and L. V. Voronina [5] discuss ways to solve the identified problem through a qualitatively new professional training of students-future teachers to implement preschoolers' mathematical development. In order to identify deficiencies in the professional readiness of preschool teachers, it is necessary to determine its structure and content.[4]

**Result and methodology**

*The main methods of teachers in developing mathematical skills*

*Interactive teaching methods*

Interactive teaching methods in preschool education help children understand mathematical concepts more easily. Games, interactive exercises and activities allow teachers to teach mathematical concepts while maintaining children's interest. For example, the "find the shape" game or the "count the number" exercise are effective tools for developing mathematical skills in children.[5]

*Visualization*

The use of visual aids is very important for children to better understand concepts. Using pictures, diagrams, shapes and graphs, teachers can teach children to work with numbers and shapes. This method makes it easier for children to apply mathematical concepts in practice and makes it more interesting for them.

*Developing pedagogical skills*

The development of a teacher's own mathematical skills is essential for effective teaching in preschool education. Teachers need to update their knowledge, master new methods and technologies. At the same time, teachers need to be ready to self-analyze and create learning processes that meet the needs of students.

*Mathematical games and practices*

Preschoolers learn best through play. Mathematical games help children understand numbers, shapes, and quantities. For example, games such as "finding numbers," "separating shapes," or "working with colors" develop mathematical skills in an interesting and effective way.[6]

*Demonstration and practical activities*

Teaching children to apply mathematical knowledge in practice using demonstration activities is an effective way. For example, you can make math learning more interesting and engaging by doing hands-on activities with children, such as making shapes, counting, or comparing quantities using different materials.

*Individual approach*

Each child has their own rhythm and unique learning style. By implementing an individual approach, teachers can maximize the development of each child's math skills. This approach involves choosing materials and exercises that are appropriate for each child, taking into account their individual needs.

The system-forming component in the structure of readiness is the axiological one, expressed in the attitude to the activities carried out. It has a significant impact on the dynamics of readiness development, since one of the components of this component is reflection, which helps the future teacher to realize his or her deficiencies and potential opportunities. In the axiological component, we can highlight:

- in the field of mathematics: understanding the importance of mathematical knowledge in professional activities; showing interest in the mathematical content of the activity; awareness of the importance of continuous mathematical self-education;
- in the field of preschool psychology: understanding the importance of knowledge in the field of preschool psychology for the implementation of mathematical development of preschool children;
- in the field of preschool pedagogy: understanding the need to master a variety of methods, means and technologies for the mathematical development of preschool children to solve current professional problems in this area;
- in the field of methods of mathematical development of preschool children: reflection on the results of mathematical development of preschool children.[7]

In order to identify the levels of development of readiness of future preschool teachers for mathematical development of children, it is necessary to take into account the completeness of assimilation of the components of the readiness in question as a complex of mathematical, psychological, pedagogical and methodological knowledge, skills and experience of activity, as well as personal attitude to professional activity.

Based on the identified structure of readiness for mathematical development of preschoolers, we will formulate the criteria and indicators of their development. Based on the essence of understanding the structural components of readiness of future preschool teachers for mathematical development of children, we identified the following criteria:

1. Cognitive criterion. Characterized by the presence of knowledge of basic concepts in the field of mathematical development of preschool children, logical thinking techniques, mathematical dependencies and relationships, mathematical types of activity.

2. Praxiological criterion. Characterized by possession of mathematical skills and methods of activity, their correct and effective application in the process of

solving professional and creative problems.

3. Axiological criterion. Characterized by the presence of cognitive need and interest in mathematical development, understanding of professional significance and demand for readiness for mathematical development of preschoolers, the ability to identify their own deficiencies in mathematical development and organization of mathematical development of children and eliminate them. [8]

Each of the described criteria of readiness of future teachers for mathematical development of preschool children is characterized by a set of indicators. The presented components of readiness for mathematical development of preschool children are diagnostic in nature, they quite accurately describe the requirements for a preschool teacher who carries out mathematical development of

children, their characteristics are laconic and unambiguous. In addition, the presented set of components of readiness, in our opinion, is optimal for a preschool teacher focused on the mathematical development of a child.

**Discussion**

Recommendations for educators

*Continuous learning and updating of mathematical methods:* Educators should constantly update their teaching methods by learning new approaches, methods and technologies in mathematical education.

*Taking into account children's interests:* When teaching mathematical knowledge, it is important to take into account children's interests and needs, making lessons interesting and practical.

*Increasing the difficulty of exercises:* Educators can strengthen their skills by offering children to repeat the same types of exercises, but it is important to make these exercises difficult carefully.[9]

**Conclusion**

The process of forming mathematical skills in preschool education has a great impact on the professional development of educators and the successful development of children. Educators need to constantly update their mathematical knowledge, choose child-friendly approaches and organize learning processes in an interactive and interesting way. This, in turn, helps children develop mathematical thinking skills and make them successful in the educational process.

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