



METHODOLOGY FOR DEVELOPING COGNITIVE ACTIVITY IN CHILDREN THROUGH FORMATION OF ELEMENTARY MATHEMATICAL CONCEPTS

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Abstract: his article discusses the theoretical foundations and practical methods of developing cognitive activity in preschool children through the formation of elementary mathematical concepts. It also analyzes the importance of effective pedagogical approaches, game technologies, and interactive methods used in the development of mathematical imagination.

Keywords: elementary mathematics, cognitive activity, thinking, analysis, synthesis, comparison, preschool education, methodology.

The formation of elementary mathematical concepts in older preschool children (5-7 years old) is an important stage of cognitive development. This period is characterized by the formation of the child's ability to think logically, perceive abstract concepts, and master mathematical operations. According to L.S. Vygotsky's theory of the zone of proximal development, the gap between a child's existing knowledge and potential capabilities is the most effective area of pedagogical influence. The correct formation of mathematical concepts in preschool age creates a solid foundation for future academic success. Based on the theory of cognitive development developed by J. Piaget, children of this age are in the transition to the concrete operations stage, where they are able to master abstract mathematical concepts through concrete objects and practical activities.

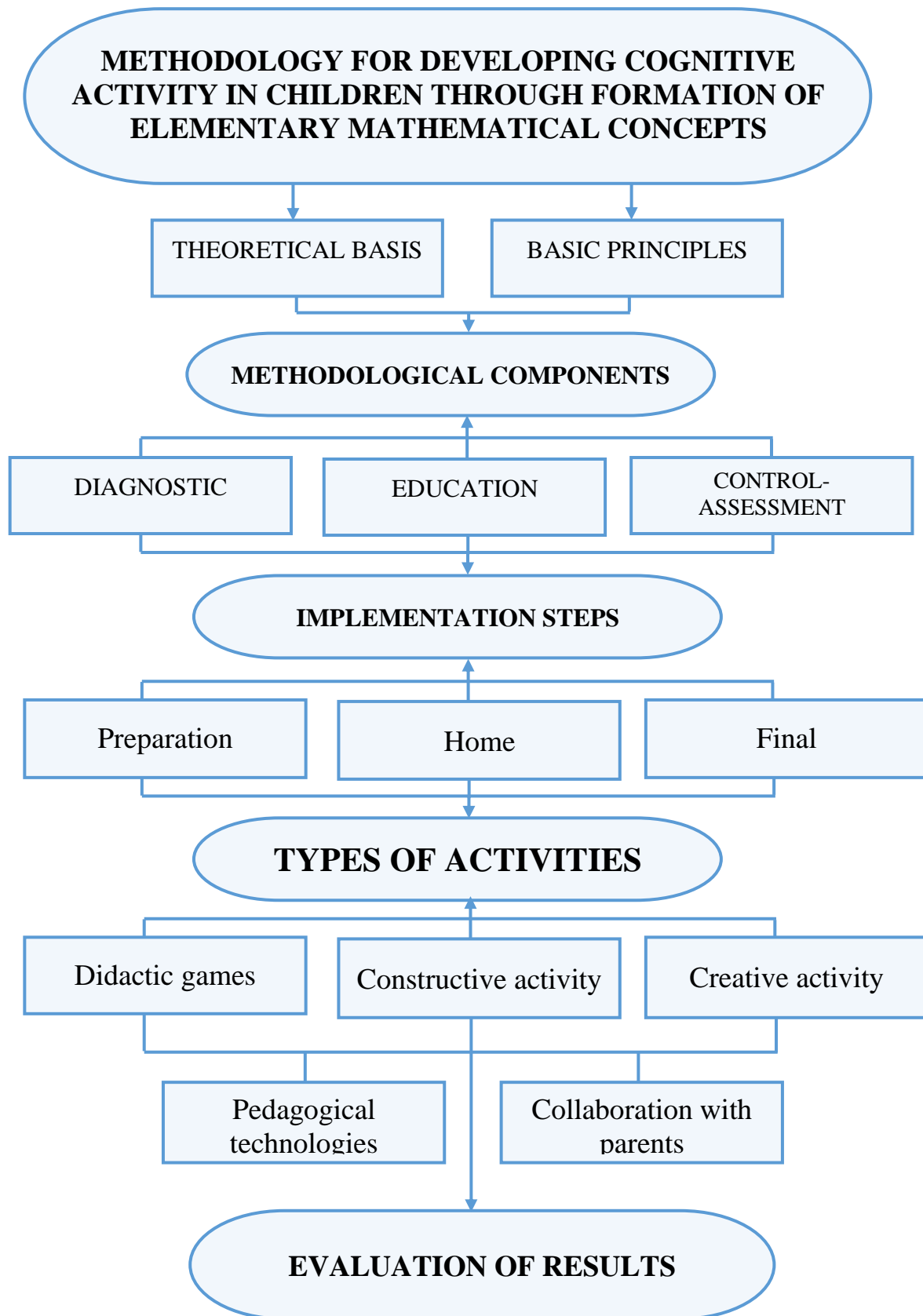
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The basic principles are a set of rules that underpin the practical and theoretical foundations of the methodology. They determine how the methodology works in the process of developing cognitive activity in children.

Methodological Components:

1. Diagnostic component. This stage is aimed at determining the level of children's initial knowledge, skills and competences. Tests, observations and portfolios are used as the main tools in the diagnostic process. This approach allows you to assess the level of cognitive development of each child, determine the dynamics of personal growth and correctly select further methodological approaches.

2. Educational component. This part is carried out directly in the process of classes. Through games, classes and practical work with children, mathematical concepts, logical thinking and creative activity are formed. In particular, the use of didactic games activates cognitive processes and arouses interest in knowledge in children.



Advantages of the methodology:

1. Increased motivation: through game and practical elements, children enjoy the learning process, which increases their motivation to participate in new projects and tasks.



2. Development of cognitive skills: The multi-level learning approach includes various cognitive functions by developing classification, logical thinking, spatial orientation and quantitative calculation skills.

3. Individualization of education: educators can adapt the game and practical content to the interests and level of development of each child, which allows them to develop strengths and gradually overcome difficulties.

Strengthening motivation. One of the main advantages of the methodology is to increase children's motivation to learn. Motivation is a key factor in the successful acquisition of knowledge and skills, especially at preschool age, when a positive attitude towards the educational process is formed. The game and practical elements of the technique naturally involve children in the learning process, encouraging them to participate in tasks and projects.

Motivation for play. Play is a natural activity for preschoolers. The role-playing and creative games used in this technique allow you to combine learning with play, as a result of which children enjoy the process. They themselves are eager to participate in games and learn new things, because they see it as an opportunity for creative expression and fun. For example, construction games allow children to develop mathematical skills by creating architectural structures.

Practical motivation: Practical activities also increase motivation because children see the real results of their work. The ability to design objects, measure objects, and visualize data graphically helps them understand the practical significance of the concepts being studied. Children know that their efforts will lead to tangible results, which instills a desire to solve new problems and learn more. **Competitive motivation:** The use of elements of competition in a playful way encourages children to maintain interest in the learning process and try to solve problems faster and better than their peers. As a result, children are motivated not only by external rewards, but also by an internal desire to succeed.

Cognitive skills development. The methodology develops children's basic cognitive skills using a multi-stage approach that includes various sensory channels and forms of thinking. This contributes to the comprehensive development of cognitive activity in preschoolers.

Classification and logical thinking: games and practical tasks teach children to analyze objects and classify them according to their properties. This can be sorting geometric shapes, grouping objects by color or size, and creating sequences. Gradually, children acquire the skills of recognizing patterns and cause-and-effect relationships, which provide the basis for the development of logical thinking.

Spatial Orientation: Hands-on tasks involving measuring and constructing objects develop children's spatial thinking skills. They learn to differentiate geometric shapes, match their sizes, and use them to create structures. Games that involve orientation in space (such as finding hidden objects) develop the ability to judge distance and direction.

Quantitative Calculation: Shopping, construction, and travel games allow children to develop quantitative calculation skills in a playful way. Counting money, measuring building materials, and analyzing the number of objects on trips provide children with hands-on opportunities to apply and reinforce number concepts.

Individualization of education. The methodology allows educators to adapt the game and practical content to the interests and level of development of each child, which creates conditions for individualization of learning.



Diagnostics and planning: educators regularly diagnose children's cognitive abilities, which allows them to identify the strengths and needs of each child

Interest Integration: Integrating a child's interests into the learning process increases their motivation and helps them build on their strengths. For example, children interested in nature can participate in research related to measuring natural objects, and design enthusiasts can learn to build complex structures using geometric knowledge.

Variety of teaching methods: The combination of game and practical methods allows educators to use different forms of presenting materials that suit children's different learning styles. Some children learn better through visual channels, while others learn better through hearing or touch. Thus, a variety of teaching methods and tools ensures the full development of children.

Conclusion

Overall, these methodologies have a number of important advantages, including increased motivation, cognitive skills development, and individualized learning. The combination of game and practical elements, supported by quality feedback and monitoring of results, contributes to the effective and targeted development of preschool children.

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