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# DEVELOPMENT OF LOGICAL THINKING IN THE LESSONS OF MATHEMATICS IN YOUNGER SCHOOLCHILDREN

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**Annotation:** The article reveals the problem of the development of logical thinking in mathematics lessons in primary school. It substantiates the idea that it is necessary to work on the formation of logical thinking in younger students from the 1st grade. Considerable attention is paid to the disclosure of the content of concepts: thinking, analysis, synthesis, comparison, systematization, classification, generalization.

**Keywords:** development, thinking, mathematics lesson, interactive whiteboard, analysis, synthesis, systematization, generalization, classification.

No one will argue with the fact that every teacher must develop the logical thinking of students. This is stated in the methodological literature, in the explanatory notes to the curriculum. However, the teacher does not always know how to do this. Often this leads to the fact that the development of logical thinking is largely spontaneous, so most students, even high school students, do not master the initial techniques of logical thinking (analysis, comparison, synthesis, abstraction, etc.)

The formation of logical thinking is the most important part of the pedagogical process. Helping students to fully demonstrate their abilities, develop initiative, independence, and creativity is one of the main tasks of a modern school. The successful implementation of this task largely depends on the formation of students' cognitive interests. The role of mathematics in the development of logical thinking is exceptionally great. The reason for such an exceptional role of mathematics is that it is the most theoretical science of all studied at school. It has a high level of abstraction and in it the most natural way of presenting knowledge is the way of moving from the abstract to the concrete.

As experience shows, at school age, one of the effective ways to develop thinking is the solution of non-standard logical problems by schoolchildren. Mathematics has a unique developmental effect. Like no other subject, mathematics provides real prerequisites for the development of logical thinking.

“She puts the mind in order”, i.e. in the best way forms the methods of mental activity and the qualities of the mind, but not only. Its study contributes to the development of memory, speech, imagination, emotions; forms perseverance, patience, creative potential of the individual. A mathematician plans his activities better, predicts the situation, expresses his thoughts more consistently and more accurately, and is better able to justify his position. The main purpose of doing mathematics is to give the child a sense of self-confidence, based on the fact that the world is ordered and therefore comprehensible, and therefore predictable for a person. What can you teach a child when teaching mathematics? Reflect, explain the results obtained, compare. Guess, check. Are they correct; observe, generalize and draw conclusions.

In principle, in mathematics textbooks, a line is quite clearly traced towards the development of students' cognitive interests: they contain exercises aimed at developing attention, observation, memory, as well as developmental tasks, tasks of a logical nature, tasks requiring the application of knowledge in new conditions. Such tasks should be included in classes in a certain system through the

use of the method of inductive reasoning, to lead students to the goal. It is necessary to teach children to notice patterns, similarities and differences, starting with simple exercises, gradually complicating them.

It must be remembered that mathematics is one of the most difficult subjects, but the inclusion of didactic games and exercises allows you to change the types of activities in the lesson more often, and this creates conditions for increasing the emotional attitude to the content of the educational material, ensures its accessibility and awareness.

A well-known domestic teacher V. Sukhomlinsky devoted a significant place to the issue of teaching younger schoolchildren to logical problems in his works. The essence of his reasoning is reduced to the study and analysis of the process of solving logical problems by children, while he empirically revealed the peculiarities of children's thinking. He writes about work in this direction in his book "I give my heart to children": There are thousands of tasks in the world around us. They were invented by the people, they live in folk art as riddle stories.

Sukhomlinsky observed the course of children's thinking, and observations confirmed that, first of all, it is necessary to teach children to think about a number of objects, phenomena, events, to comprehend the connections between them ... Studying the thinking of slow-witted people, I became more and more convinced that the inability to comprehend, for example, a task - a consequence of the inability to abstract, to be distracted from the concrete. Children should be taught to think in abstract terms.

Here is one of the tasks that the children solved at Sukhomlinsky's school: From one bank to another, a wolf, a goat and cabbage must be transported. At the same time, you can neither transport nor leave a wolf and a goat, a goat and cabbage together on the shore. You can transport only a wolf with cabbage or each passenger separately. You can make as many flights as you like. How to transport a wolf, a goat and a cabbage so that everything goes well?

It is interesting that the problem of a wolf, a goat and a cabbage is analyzed in detail in the book of the German scientist A. Nouman "Make a decision - but how?" Where the basics of decision theory are outlined in a popular form. The book contains a picture depicting a wolf, a goat and a cabbage on the bank of the river, as well as a graphical scheme for solving the problem, reflecting the state of passengers on both banks, as well as crossing the river back and forth. It is interesting that after a while this problem is given in the textbook Mathematics Grade 3 by L.G. Peterson. Thus, a comic problem is the first link in the construction of a serious mathematical discipline.

In the work on the development of logical thinking, it is also necessary to use a system of non-traditional tasks, exercises, games. They are aimed at the development of almost all mental operations. They can be successfully used in the classroom, recommended to use their parents during classes with children. Moreover, non-traditional tasks, exercises, games are not currently in short supply. A huge number of printed materials, video products, all kinds of games - all this can be used selectively, taking into account the age and psychological characteristics of students, in educational, extracurricular work and, accordingly, in the family.

But the development of logical thinking is impossible in principle without knowledge of the characteristics of the psychology of primary school age. All this is necessary for the child to successfully complete the lower grades, successfully study in the middle school, i.e. it is necessary to help him in the development of his mental processes, the formation of mental functions that contribute to:

- formation of theoretical thinking;
- "memory becomes thinking";
- "perception becomes thinking";
- attention becomes arbitrary;
- formation of the ability to self-regulation;

- there is an awareness of one's personal relationship to the world;
- the content of the internal position of children changes;
- the nature of self-esteem changes;
- develops character;
- An interest is formed in the content of educational activities, the acquisition of knowledge.

Considering all this, it is necessary to start learning logical actions from the formation

Relevant elementary skills.

As tasks that develop logical thinking in mathematics lessons, these are tasks for:

1) Selection of features of objects
2) Recognition of objects by given features
3) Formation of the ability to highlight the essential features of objects
4) Comparison of two or more items
5) Classification of objects and phenomena.
6) Exercises aimed at developing the ability to divide objects into classes according to a given basis
7) VII.Geometric lotto.
8) Here work with children continues, their knowledge, shapes, sizes and colors of objects are consolidated.
9) The development of logical thinking is facilitated by tasks that can be called "Mistakes - invisible."
10) Logical tasks.

Most elements of the development of logical thinking have a game meaning, but children should not be taught to expect games or fairy tales at every lesson, since the game should not be an end in itself, but must necessarily be subordinated to those specific educational and educational tasks that are solved on class and outside of class.

The systematic use in mathematics lessons and extracurricular activities of special tasks and tasks aimed at the development of logical thinking expands the mathematical horizons of younger students and allows them to more confidently navigate the simplest patterns of the reality around them and more actively use mathematical knowledge in everyday life.

The development of thinking also affects the upbringing of the child, positive character traits develop, the need to develop one's good qualities, working capacity, activity planning, self-control and conviction, love for the subject, interest, desire to learn and know a lot. All this is essential for the future life of the child. Sufficient preparedness of mental activity relieves psychological overload in learning, preserves the health of the child.

The main task of teaching mathematics, and from the very beginning, from the first grade, is to teach to reason, to teach to think, - wrote the innovative teacher A.A. Joiner. The most important task of mathematical education is to equip students with general methods of thinking, spatial imagination, developing the ability to understand the meaning of the task, the ability to reason logically, and learn the skills of algorithmic thinking.

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