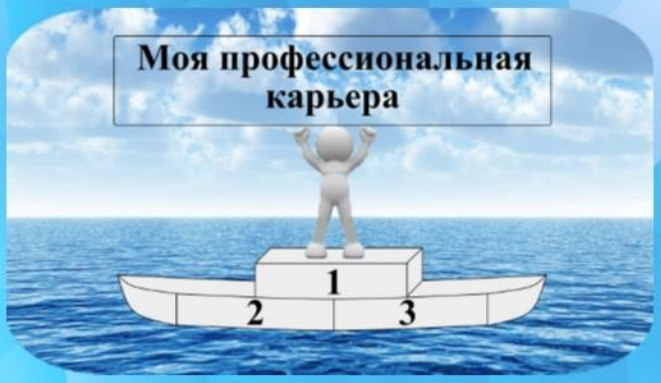
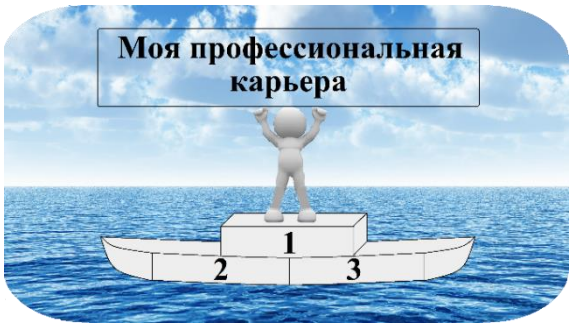


Научно-образовательный электронный журнал

ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ

Выпуск №10 (том 4)
(январь, 2021)



Международный научно-образовательный электронный журнал
«ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ»

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Материалы публикуются в авторской редакции. За соблюдение законов об интеллектуальной собственности и за содержание статей ответственность несут авторы статей. Мнение редакции может не совпадать с мнением авторов статей. При использовании и заимствовании материалов ссылка на издание обязательна.

СОДЕРЖАНИЕ

ФИО автора: Yuldashev Bakhodir Narzullayevich (Bukhara State University, Bukhara, Uzbekistan)

Название публикации: «DEVELOPMENT OF LOGICAL THINKING IN YOUNGER STUDENTS IN MATH LESSONS»

Annotation: *This article is about primary education is designed to lay the basic foundations for the general mental development of children. Article is about give help primary education teachers are prove their knowledge. Mathematics is exactly the subject where this can be largely implemented. The article is about improved mathematics.*

Key words: *logical thinking , logic , Greek philosopher , theory, primary educa*tion ,

Logic is the science of the laws and forms of correct thinking. She studies the forms of reasoning, abstracting from the concrete content, establishes what follows from what, looking for an answer to the question: how do we reason? The founder of logic as a science is the ancient Greek philosopher and scientist Aristotle. He first developed the theory of inference.

The term "logic" comes from the Greek word "lo g os," which means "think", "reason".

Primary education is designed to lay the basic foundations for the general mental development of children, which would create conditions for the upbringing of an independently thinking person who critically evaluates his actions. At primary school age, children have significant developmental reserves, it is this age that is productive in the development of logical thinking: children are included in new types of activities and systems of interpersonal relationships that require them to have new psychological qualities.

The thinking of a child of primary school age is at a critical stage of development. During this period, a transition is made from visual-figurative thinking, which is basic for a given age, to verbal-logical, conceptual thinking. By other teacher should develop logical thinking of students. The formation of logical thinking is the

most important component of the pedagogical process. Helping students to fully demonstrate their abilities to develop initiative, independence, creativity is one of the main tasks of a modern school. Ability to think logically, carry out inference without reliance on clarity, to compare judgments according to certain rules is a necessary condition for the successful assimilation of educational material. The main goal of work on the development of logical thinking is for children to learn to draw conclusions from those judgments that are offered to them as initial ones. The successful implementation of this task largely depends on from the formation of students' cognitive interests.

The educational standard of the new generation sets new goals for primary education. Now, in elementary school, the child must be taught not only to read, count and write, he must be taught two groups of new skills. First of all, we are talking about universal educational actions that make up the ability to learn: the skills of solving creative problems and the skill of searching, analyzing and interpreting information. Secondly, we are talking about the formation of motivation in children for learning, self-development, self-knowledge. The teacher, who previously was engaged in just mathematics as such with the children, will now have to solve new non-standard problems using the material familiar to him. Already in elementary school, children must master the elements of logical actions (comparison, classification, generalization, analysis, etc.). Therefore, one of the most important tasks facing the primary school teacher is the development of an independent logic of thinking, which would allow children to build conclusions, provide evidence, statements that are logically related to each other, draw conclusions, substantiating their judgments, and, ultimately, independently acquire knowledge. Mathematics is exactly the subject where this can be largely implemented.

By the logic of universal action are:

- analysis of objects in order to identify features (essential, insignificant);
- synthesis - making a whole from parts, including self-completion with the replacement of missing components;
- selection of grounds and criteria for comparison, classification of objects;

- bringing under the concept, deriving consequences;
- establishment of cause-and-effect relationships;
- building a logical chain of reasoning;
- proof;
- putting forward hypotheses and their justification.

From the above it follows that already in elementary school children must master the elements of logical actions (comparison, classification, generalization, etc.). Therefore, one of the most important tasks facing the primary school teacher is the development of all qualities and types of thinking that would allow children to build inferences, draw conclusions, substantiating their judgments, and, ultimately, independently acquire knowledge and solve emerging problems.

First grade:

The system of tasks provides for several groups of systematically built tasks and tasks, aimed primarily at identifying, tracking, distributing and changing various features and characteristics of objects .

In the second grade , work continues on the development of the ability to perform simple logical actions. Classification tasks have become more complex: they are inextricably linked with the development in children of the ability to build chains of logical reasoning.

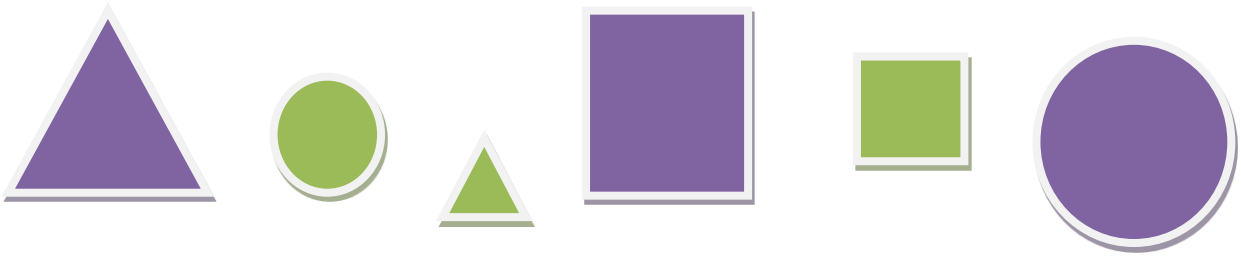
The development of verbal-logical thinking at this age is possible with the help of tasks to determine the truth or falsity of a statement, tasks to understand statements with quantifiers of community and existence.

In grades 3-4, schoolchildren should learn to analyze the connections between objects and phenomena (part and whole, opposite, cause and effect, the presence of certain functional relationships, etc.).

By the end of primary school, the child should have formulated such operations of logical thinking as generalization, classification, analysis and synthesis. The student must learn such elements of analysis as the identification of other connections between concepts: the opposite, the presence of certain functional relationships, part and whole, etc.

Starting from grade 1, you can, for example, apply tasks of this type:

- - What are the names of the figures that you see?



- Group them.

- How will you do it? (by color , by size)

Children distribute the figures into groups .

- How many rows did you get?

- What are the figures in the first row?

- What color are they? How many are there?

- What are the figures in the second row ?

- What color are they? How many are there? (etc.)

- Find and name the similarities and differences of these figures?

- Tasks related to finding the missing figure, also designed as an incomplete table.
- Divide the figures into 2 groups in different ways. Divide each of the selected groups into 2 groups again.

It is necessary to give non-standard problems, they require increased attention to the analysis of the condition and the construction of a chain of interconnected logical reasoning. Non-standard tasks can be entered already

from 1st grade. For instance:

- *Tanya had 5 nuts. She gave one to her brother , and they got equal numbers of nuts. How many nuts did your brother have first?*
- *There were 3 chickens in the yard, the same number of ducks, fewer turkeys than ducks,*

but more than geese. How many birds were there in the yard?

The use of such problems expands the mathematical horizons of younger students, promotes mathematical development and improves the quality of mathematical readiness. We form their ability to perform logical operations and at the same time develop them. The selection criterion for such tasks is their educational purpose; relevant to the topic of the lesson or lesson series. Such tasks can be solved both when explaining new material, and when reinforcing what has been learned.

When getting acquainted with direct and inverse problems in grade 2, I ask the students the following questions:

- What is common and different in terms of direct and inverse problems?
- What are the required quantities? What is common and different in solving direct and inverse problems?
- What action was used to solve each of the tasks? Why?

- *There were 8 people in the construction team. In the summer, 4 new foremen were hired . How many people are there in the brigade?*

In the second grade, I let the guys solve puzzles :

- *7ya, 100l, vi3na, s3zh , 100litsa , pa3ot, 40a, po2l* and others.

Children in the 3rd grade like to solve entertaining problems:

- *8 trees grow in a row at a distance of 3 meters from each other.*

What is the distance between the two extreme trees?

- *4 pencils and 3 rulers cost 54 rubles, 2 pencils and 2 rulers cost 34 rubles. How much do: a) 8 pencils and 7 rulers? b) 8 pencils and 4 Line Menus*

When solving entertaining problems, the following goals are pursued:

- formation and development of mental operations: analysis and synthesis; comparisons, analogies, generalizations, etc .;
- development and training of thinking in general and creative thinking in particular;
- maintaining interest in the subject, in educational activity (the uniqueness of an entertaining task serves as a motive for educational activity);
- creative personality development, cognitive th Activity and , perseverance and , persistence and in achieving the goals of independence and ;

- preparing students for creative activity (creative assimilation of knowledge, methods of action, the ability to transfer knowledge and methods of action to unfamiliar situations and see the new functions of the object).

You need to start with easy patterns and gradually complicate things. All of these tasks are creative and contribute to the development of interest.

to mathematics.

Having studied the actions of multiplication and division, it is useful to use the following tasks: "Between the numbers put the signs of arithmetic operations and, if necessary, parentheses, so that the correct equality is obtained."

- 6 * 2 * 4 = 3 9 * 4 * 6 = 30

In the 4th grade - tasks for planning actions, with a fabulous plot.

- *Carpet - the plane flew for 2 hours at 132 km / h and 3 hours at 143 km / h. Find the average speed of the carpet-plane for the entire flight time.*
- *The kid bought 8 cakes and 12 buns with jam for Carlson, paying 408 kroons for the whole purchase. One cake costs 24 kroons. How much does one bun cost?*

Thus, the formation of logical thinking is an important component of the pedagogical process. Help to fully demonstrate their abilities, develop initiative, independence, creativity is one of the main tasks of a modern school. The successful implementation of this task largely depends on the formation of logical thinking in students.

I believe that the use by an elementary school teacher of these forms and methods of developing logical thinking in mathematics lessons is not only a desirable, but even a necessary element of teaching mathematics.

The systematic use of special exercises and tasks aimed at the development of logical thinking in mathematics lessons and extracurricular classes, broadens the horizons of primary schoolchildren, allows them to more confidently navigate in the simplest laws of the reality around them.

Working on the development of logical thinking in mathematics lessons, I noticed that when doing independent work, even weak students reason, highlight the question.

In the course of regular classes, children develop not only cognitive abilities, but also personality traits such as endurance, perseverance, hard work, honesty.

It must be remembered that consistency and systematicity in working with children is the key to the successful solution of the tasks .

For this purpose, I use smart tasks, puzzles, puzzles. Puzzle with sticks called tasks Thinking geometric character, since in the course of solving id e t convert one shape to another. The course "Mathematics and Construction" is especially helpful here. The guys build different shapes by removing one or two sticks. Tasks for ingenuity are given in a certain sequence: from a simple task -

to complex. Further, the process of solving such problems becomes more complicated. Composition games also contribute to the development of thinking.

from the geometric shapes of various objects. Children are fascinated by the result - to make up their plans. The main complication in the presented tasks is the gradual increase in requirements for children, in development, speed of solution, and the ability to justify it. A certain interest, which means

and the activation of the mental activity of students in calculations is created by numerical puzzles and labyrinths, which are a kind of deformed examples.

The program of 1-2 classes provides for the maximum amount of work

with visual examples, starting from grade 3, this type of activity is moderately reduced and preference is given to a system of scientific concepts. The mental operations that the student encounters on a daily basis are becoming more and more distant from concrete practical activity and visual support. The ability to think abstractly makes it possible to solve logical problems and draw conclusions based on essential internal properties, and not on the obvious signs of objects. Gradually mastering the techniques of mental activity, the student acquires the ability to solve assigned tasks "in the mind", as well as to analyze the process of his reasoning. The reasoning is gradually acquiring a logically correct character, including the operations of analysis, synthesis, comparison, distribution

and generalizations. A new stage in the development of thinking becomes the basis of formal logical thinking, and the child gradually masters the actions of modeling, learns to compare objects.

In my lessons, I always find a moment when I can offer students joke tasks , smart tasks, tasks in verse. This helps to make the learning process more interesting, and contributes to the development of logic:

- *Misha had 9 sticks. He broke one of them. How many sticks does he have left?*

Hint: If you break one stick, then their number will not decrease, but increase. Solution: If you break the stick, you will get 2 sticks from it. Now Misha has 10 sticks.

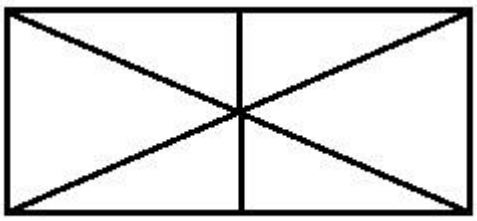
In such lessons, I suggest tasks that require special attention and reflection:

- *- Kolya had 5 blue and 7 gray pigeons. 2 gray pigeons flew away. How many blue doves are left ? How many gray pigeons are left? How many pigeons were there?*
- *In one vase there are 3 roses, and in the other the same. How many roses are there in two vases?*

Mastering in the learning process such mental operations as analysis and synthesis, abstraction, concretization, generalization, students are more deeply aware of the material being studied, learn to substantiate their judgments. They develop logical thinking, abilities and skills to independently solve the assigned tasks, consciously use the acquired knowledge.

Using math puzzles, crosswords, puzzles in the classroom, I provide students with additional opportunities in studying the subject .

- How many triangles are in this figure?



Over the years of work in this direction, I came to the conclusion that all the students, no matter what dates they have, with interest carry out the tasks I offer to develop logical thinking. And the lessons of mathematics have become a favorite subject for them. Therefore, the use by an elementary school teacher of these forms and methods

of developing logical thinking in mathematics lessons is not only desirable, but even a necessary element of teaching mathematics.

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