



DEVELOPMENT OF CREATIVE ACTIVITY OF THE YOUNG PUPIL IN THE PROCESS OF SOLVING NON-STANDARD TASKS

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Annotation

This article deals with the development of creative activity of the young pupil in the process of solving non-standard tasks. The various components of the methodological system, especially the content and methods of teaching mathematics at all levels of school education, are currently being improved.

Keywords: task, component, creative, current, cognitive

The improvement of methodology is aimed at maximizing the cognitive activity of students in the learning process. One of the important means of increasing the effectiveness of mathematics learning and activity of schoolchildren in learning is the rational organization of work in teaching young pupils to solve text tasks. Task solving promotes the development of logical thinking, memory, attention, creative imagination, observation, strict sequence of reasoning and its proof, besides, it teaches the art of short, precise, clear and correct expression of thoughts.

However, the vast majority of tasks perform mainly teaching and training functions, which contributes to the formation of only reproductive thinking of a schoolchild. Such tasks are called "non-standard" in mathematics methodology. The unconventionality of these tasks is not in their complexity but in their unfamiliarity to students. The emergence of non-standard tasks testifies to the evolution of the content and structure of textual tasks depending on other components of the methodological system, to changes in their role and place in teaching, i.e. is quite a natural, reasonable process.

According to L.M. Friedman, non-standard tasks are those for which there are no general rules and regulations in the course of mathematics defining the exact program of their solution. "A non-standard task is a task whose solution algorithm is not known to students, that is, students do not know in advance either the ways of solving it or what learning material the solution relies on." [3, c. 186]. These tasks teach children not only to use ready-made algorithms, but also to independently





identify original ways of solving tasks, to master a variety of methods of mental activity, and ensure a more conscious mastery of the basic content of the mathematics course.

When solving non-standard tasks, it is important to teach pupils to think, reason, guess and draw the right conclusions. The teacher has the opportunity to combine different ways of thinking: the ability to analyse, synthesise, compare, contrast, generalise, classify objects and phenomena and draw conclusions. And these skills have a generalised, cross-curricular nature. The performance of these tasks fosters such qualities of knowledge as depth and completeness, awareness and efficiency. Creative approach to solving non-standard tasks does not emerge by itself. Certain conditions have to be created for it. The greatest effect non-standard tasks of developing character can give only if the teacher skillfully organizes the search activity of children, correctly directs the thought of students [2, p. 197]. It is important to use a variety of non-standard tasks and exercises to form general methods of solving any tasks available to students' age.

It is necessary to emphasize the great educational importance of special training of younger pupils in solving non-standard tasks. Each non-standard task is a small task, which requires from pupil's mental activity and resourcefulness in searching for non-trodden ways of solution.

Non-standard mathematics tasks used in primary schools can be roughly divided into the following groups:

- Weighting tasks

In these tasks you have to find the item you want to weigh for a limited number of weighing. Finding a solution in this case is done by comparing operations, though not only single items, but also groups of items among themselves.

Example: Out of nine coins, one is false: it is lighter than the others. How can one weigh two coins on a cup scale without pieces of weights determine, which one is the counterfeit coin?

- Transfiguration tasks

Tasks in which using vessels of known capacity you are required to measure some amount of liquid.

Example: An eight-liter can contains milk. How to measure 4 litres of milk using a five-liter can and a three-liter jar?

- Tasks to be solved from the "end".

These tasks become a separate group because of the way of reasoning when solving them, which is done from the "end" of the task.





The way of solving from "the end" is very useful, if there are fewer paths leading from the final aim than from the initial position.

Example: A salesman at the market reasoned: "If I had half of my apples and a dozen of them, I would have a hundred!" How many apples did he have?

- Tasks to establish a one-to-one correspondence between sets

The solution to such tasks should be given in the form of a table. Elements of one set are put on rows, elements of another on columns.

Example: Kostya, Tanya, Julia and Ira are making jam. Two girls made it from currants and two girls made it from strawberries. Tanya and Ira made jam from different berries. Ira and Olga also made it from different berries. Ira made jam from strawberries. What kind of berries did each girl make jam from?

- Tasks for guessing

An analysis of the conditions of this kind of tasks leads to the necessity to compare two (three or more) groups of objects, similar in their essence but having distinctive features (for example, different number of legs, different pages, etc.).

Example: Trucks each have 6 wheels and cars each have 4 wheels. How many, what kind of cars are there in the garage, if there are only 3024 wheels?

As seen, non-standard tasks are in most cases solved by the same methods as the standard ones: algebraic, arithmetic, graphical, practical, the assumption method, the enumeration method.

Methods for solving such tasks may include reasoning, making tables, graphing, methods of billiards or Euler circles, Dirichlet's principle.

Systematic use at mathematics lessons and extracurricular activities of special tasks and tasks aimed at the development of logical thinking, expands the mathematical outlook of primary school students, activates the cognitive activity of students and allows them to navigate more confidently in the simplest patterns of reality surrounding them and more actively use mathematical knowledge in everyday life. It is therefore not only desirable but even necessary for primary teachers to use these tasks in their mathematics lessons.

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