

PRINCIPLES OF WORKING WITH STUDENTS WHEN TEACHING PROBLEM SOLVING IN PRIMARY SCHOOL

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Abstract:

This article analyzes the need to change the methodology of teaching simple tasks in elementary school, which should include a practice-oriented approach, interdisciplinary communication and deep integration into modern society.

Keywords: Method, problem, relevance, innovative, skills, didactic material, technology, arithmetic, task, comparison of numbers, expressions, sets, result.

Introduction

The Decree of our President approved the National Program for the Development of School Education in 2022-2026. The main directions of the Development Program are: full implementation of the National Curriculum in school education, developed on the basis of advanced international experience, as well as the practical application of modern textbooks created by domestic and foreign authors¹.

The age period of a junior schoolchild implies a gradually increasing transition from simple to complex. It is important to understand that without proper consolidation of a certain stage of preparation for solving simple problems, the

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student will lag behind and lose all interest in mathematics. To do this, the teacher must use all kinds of visual aids as motivation to improve the student's cognitive activity.

When solving simple problems in class, it is necessary to adhere to general didactic principles:

scientific nature includes understanding the material being studied, the importance of voicing mathematical terminology, as well as consistency in their actions. When solving problems, students from the first days should get used to voicing the arithmetic operations "add" and "subtract" instead of "plus" and "minus", since they are just mathematical signs. In simple problems, everything is basically subordinated to components: addition, subtraction, product, division.

Knowing these basic components, any simple problem is solved easily;

the principle of education - includes many criteria that should be in every lesson, namely respect and humanity to the student, not hanging labels. Not everyone is born to be a mathematician, but there is always a chance to awaken motivation for activity. The teacher is the main center of attraction for his students. Therefore, it is important to consider: naturalness; inclusion in the activity; reliance on the positive;

creation of a situation of success; communicative education in the team;

connection with life;

the principle of clarity - includes a conversation in the subject children's language until the student himself switches to visual-figurative thinking;

the principle of accessibility includes learning without difficulties for the student, that is, this includes: taking into account age characteristics, a person-oriented approach, gradual complication, the use of clarity, clear speech of the teacher and pedagogical diagnostics, which helps to track the student's performance. It follows that the principle of accessibility is a motivational path to knowledge. If this principle is violated, inhibition in learning occurs and the younger student loses interest in learning;

the principle of consciousness and activity is closely related to the principle of accessibility, there will be accessibility, then there will be consciousness and activity. Creating a situation of success, encouraging a non-standard solution will help younger students gain confidence in their abilities;

the principle of durability of knowledge acquisition paired with the principle of consistency - all joint activities of the student and teacher in elementary school

consist of exercises and systematic repetition of the material studied. The proverb: "Repetition is the mother of learning" is very appropriate here.

Narimbetova Z.A. highlights the focus of interactive tasks on the formation of universal learning activities in students; the basics of logical thinking; the acquisition of initial experience in applying knowledge obtained during the study of the subject in everyday life; promotes skills in project and research activities. Here I would like to dwell in more detail and note the important phrase "acquisition of initial experience in applying knowledge in everyday life". And where can primary school students gain invaluable experience? Of course, in a technology lesson! There is a direct connection here: construction, design depends on knowledge of mathematics. These two subjects are complementary, for example, when approaching topics related to volumetric figures, it is important to construct a scan of a volumetric figure, for example, a cube, in a technology lesson and glue it. It is also necessary to explain to children when constructing a scan of a cube that it consists of 6 flat squares. While they are constructing the scan, they will remember all this perfectly. In order for children to understand the topic well, they must gain their own invaluable experience by touching everything with their own hands and eyes.

All arithmetic problems can be divided into two groups: simple problems solved by one arithmetic operation, and compound problems, which consist of two or more simple problems. Solving simple arithmetic problems is one of the means that helps children learn arithmetic operations. Children approach the study of each of the four arithmetic operations from operations with sets of objects, and from them - to arithmetic operations with numbers.

When solving various types of simple problems, children understand the meaning of arithmetic operations; they learn in which cases this or that arithmetic operation is used, they are consolidated when solving problems in two or more actions, that is, compound problems.

The content of the problems includes numerical data that characterize the relevance of today. By solving problems, children acquire financial skills, learn to think logically, consolidate the ability to perform oral and written calculations, which in the eyes of students acquire meaning.

Starting from the first grade, practicing composing problems based on a given example, and then composing numerical formulas for solving problems in two or three steps, students establish a connection between problems and examples,

learn to consider an example as a record of a problem solution, and to represent a solution to a compound problem as a numerical formula.

The teacher uses problem solving to form basic mathematical concepts in schoolchildren. When solving problems, students understand, for example, the meaning of the expressions “two more”, “two less”, denoting a given difference, learn that the questions “how much more?”, “how much less?” express the requirement to find the difference between two numbers. Thus, individual features are gradually imprinted in the children’s minds, which will later be combined in the concept of “difference”.

The expressions “a few units more”, “a few units less” and others similar to them denote the relationship between the numerical values of the same quantity. For example, in the first grade textbook, part 1, topic: 13 "Comparison of numbers", page 29, task 6 students are asked to draw apples, those that Amir collected - 7 pcs. and Lola - 4 apples. It is necessary to find out who collected more and by how much? To solve this problem, children can visually: compare the number of objects visually;

calculate arithmetically $7 - 4 = 3$; draw a conclusion, to find out how much one number is greater than another, it is necessary to subtract the smaller number from the larger number.

When solving simple problems, the teacher introduces children to the relationship between quantities, for example, between the price of one item, the number of items and their cost. By the price of one item and the number of purchased items, they find their cost; by the cost and price, they determine the number of purchased things; by the cost and quantity, they find out the total cost. Thus, simple problems solved by multiplication and division are the basis for familiarizing schoolchildren with the relationship between quantities. Children, learning to find the connection between the desired and the data when solving problems in two steps, first deal with quantities that are more familiar to them. Then they move on to finding the connection between the desired and the data to more difficult problems, when the relationship between less familiar quantities is given and more than two actions have to be used to solve the problem. For example, in the problem for the third grade, part 1, topic "Multiplication of a three-digit number by a single-digit number", page 86, task 9, they ask to buy goods from a list. It is necessary to find out how much you will have to pay for the entire purchase, if the price per unit of goods is indicated. The list consists of: 2 kg of carrots, 1 l of

butter, 5 kg of rice, 3 kg of meat. Cost data per kg and l: 1 l of butter - 12,000 sum, rice - 9,000 sum, meat - 56,000 sum, carrots - 6,000 sum.

Firstly, the task is very educational and economic. Here we study the market (the data can always be changed on the day of solving the task).

Secondly, the task is appetizing, you can add the missing ingredients, namely onions and spices. So, 2 kg of carrots * 6,000 sum = 12,000 sum; 1 l of oil * 12,000 sum = 12,000 sum;

5 kg of rice * 9,000 sum = 45,000 sum;

3 kg of meat * 56,000 sum = 168,000 sum

Total: $2 * 12,000 + 45,000 + 168,000 = 237,000$ sum the cost of purchase according to the list.

Thirdly, when all the calculations are made, you can find out how many people they can feed with such an amount, as well as the cost of one serving of pilaf.

That is, each problem must not only be solved, but played to the student's advantage and linked to his level of thinking.

Students' mastery of the ability to solve simple problems is a necessary condition for successful learning to solve compound problems:

- Read the problem (understand the meaning of words in it, highlight key words).
- Highlight the condition and question, the known and the unknown (given and sought).
- Model the situation given in the problem.
- Establish a connection between the data and the sought, the result of which is the choice of an arithmetic operation.
- Write down the solution and the answer.
- Control the result (master the methods of checking the answer to the problem).

Main types of work on simple problems:

- Make up a problem: from a picture, from a drawing, from a schematic drawing, from a short note with key words, from a solution.
- Make up a question for a given condition or a condition for a question.
- Change the question (or condition) so that the problem is solved by another action.
- The problems are read, and the children write down only the solution.
- Comparison problem solving (one is solved in writing, the other orally, or we make changes to the short note of the problem with a pen of a different color, and below in the same color we write down the solution to the new problem).

-Solving problems with missing and extra data. Problems of this type teach children to analyze the content more carefully.

-Solving "problems-questions". It is necessary to solve as many of these problems as possible, since they are preparation for solving problems of the main type.

- Logical problems are introduced systematically, taking into account the increasing difficulty as students master them.

Methodology

The method of sequential reasoning - the simplest way to solve simple problems is sequential reasoning using all known conditions. Conclusions from the statements that are the conditions of the problem gradually lead to the answer to the question posed. Problems on pouring and weighing.

A type of reasoning method is "from the end". This method of solving is a type of reasoning method and is perfect for problems in which we know the result of performing certain actions, and the question is to restore the original picture.

M3.CHD.29 Knows the order of performing actions. Distinguishes between the order of actions with and without brackets.

Numbers from 1 to 9 are given. Abdullah was given the numbers 7, 2 and 4; Munise 6, 5 and 1; Firdavs is 8, 3 and 9. Children can use 4 arithmetic operations (addition, subtraction, multiplication, division) and each number only once. -Who can't do 20?

The method of reasoning "from the end". Specifically for this task, it would be good to apply the method of "role play", each of the students takes on the role of the main characters of the task and receives the cherished numbers. The numbers are written on the board and the participants are told the result, with only one proviso that someone will get "inequality".

Numbers: 7, 2, 4 $(7-2) * 4 = 20$

Numbers: 6, 5, 1 $\neq 20$

Numbers: 8, 3, 9 $8 + 3 + 9 = 20$

Table method. The main technique used in solving text logic problems is to build tables. Tables not only allow you to clearly present the condition of the problem or its answer, but also greatly help to make the right logical conclusions in the course of solving the problem. The table method helps children with weak abstract thinking. In order to teach children to solve logical problems, they must be armed with different methods of solving. M3.ES.1 Collects, expresses and analyzes information about real situations (data series, diagrams (lines, columns), tables).

Yasmina, Sevara, Komila and Hilola have birthdays on March 1, May 17, July 20 and March 20. Komila and Sevara were born in the same month. Yasmina and Sevara have the same birthday number, but a different month. Whose birthday is May 17? The first column is the girls' names, the second column is their birth dates. If Komila and Sevara were born in the same month, then we write only "March" opposite, without putting the date. If Yasmina and Sevara have the date

Girls	Date of birth
Yasmina	20
Sevara	March 20
Hilola	
Comila	March 1

the same, but the month is different we put the same numbers opposite, and such numbers are in July and March, so we got that Sevara was born on March 20, which means Komila was born on March 1. Filling out the table it is easy to see the missing data and all that remains is to simply enter them.

Conclusion

Simple tasks open the way to complex tasks. In mathematics lessons, it is important to work on developing the students' mental operations. I think it is very important to practice oral counting skills at the initial stage, because it will be impossible to return to this period, and many children have problems with tabular addition and subtraction, I will not even mention division and multiplication. The ability to count orally is one of the types of logical mental operations. To add or subtract within ten, you need excellent knowledge of the composition of the number, to add or subtract with the transition through ten, you need to mentally divide the numbers into tens and units, add up to ten to perform the action. Next, knowledge of the components of addition, subtraction, multiplication and division.

The general orientation in mathematical reality, the ability to master mental operations: comparison, analysis, synthesis, abstraction, generalization and concretization largely depend on the initial concepts learned by children. Simple tasks in our time are filled with new and interesting information for children, immersing them in the world of data and the sought.

Work on problems of different types must be carried out throughout all four years of study, consolidating skills until the skill appears. Apply various techniques and

methods for solving a complex of developmental problems, using various didactic materials for both individual, group and frontal solutions.

Using entertaining minutes in mathematics lessons, consolidating what has been covered on an ongoing basis, using new interactive and innovative technologies will help children master the necessary knowledge in solving both simple and complex problems.

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