Development of Cognitive Activity of Elementary School Students in Mathematics Lessons

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Abstract

This article highlights the ways of creative approaches to solving problems in elementary school. The article defines the essence of cognitive interest, gives the characteristics of the main stages of its development, shows its relationship with the educational objectives of teaching mathematics, describes the ways and means of cognitive interest development.

Keywords: mathematics, mathematical education, mathematical thinking, mathematical knowledge, teaching technologies, teaching methods, educational content, cognitive interest, the motivation of educational activity, the sources of cognitive interests' development.

In our country, mathematics is defined as one of the priority areas for the development of science in 2020. Over a certain period, a number of works have been carried out aimed at raising mathematical science and education to a new qualitative level. At the same time, a number of issues that have not been resolved in this area indicate the need to implement measures aimed at improving the quality of education and the effectiveness of scientific research in the field of mathematics.

The development of cognitive activity of elementary school students in mathematics lessons is an interactive process that requires prompt enrichment of the learning content with new knowledge, purposeful and effective communication to students. The use of modeling techniques in this process, in teaching educational and cognitive activity, gives a positive pedagogical effect.

The skills of creative thinking, independent analysis and application of mathematical knowledge in everyday activities are manifested through the performance of non-standard tasks in mathematics.

The cognitive activity of younger students can be increased by teaching numerical expressions and performing actions with them. In this process, it is necessary to create opportunities for resourcefulness and independence of students.

Example 1. Perform the following calculations by putting the correct numbers in place of the asterisks.****+1=*****

When you add one to a four-digit number, you get a five-digit number.

For example, 9999+1=10000.

Example 2. Calculate the sum. a=100-99+98-97+...+4-3+2-1

When doing this task, you can reason as follows:100-99=1

98-97=1

96-95=1

....

4-3=1

2-1=1. Getting 1 requires a lot of steps and can take a long time.

Therefore, when subtracting odd numbers adjacent to them from even numbers, each subtraction is equal to 1. In this expression, there are only 50 such differences, and its value is 1•50=50. When performing such tasks in the standard way, the student will have to perform more actions than necessary.

Example 3. Find the sum of all numbers from 1 to 100. How can this be done in a fast and convenient way? 1+100=101

2+99=101

3+98=101

....

49+52=101

50+51=101

In this expression, the total number of sums is only 50, the value of which is 101•50=5050.

Example 4. Some digits of given numbers are denoted by letters. Based on the data below, it is necessary to determine the numbers hidden under the letter.

1) 9СА4, 36АБ, 3СБ5, 97А4, А3БС

Hence:

9СА4 < 97А4

9СА4 >95А4

36АВ<3SB5

В<3

А=, В=, С=

Answer: A=1; B=2; C=62) αβγ<βγα

βγ > γα

αγ >γα

α, β, γ – what will be the inequality?

α=8, β=9, γ=7

1. Example 5. Find the value of the expression by putting the necessary action signs instead of dots, and the desired numbers instead of the "window":

35..... $\square$=48

2. 19.....$\square$=7

3. 24....19....24=43

4. 2.... 8... 3=1

Example 6. The example can be performed in several versions by putting action signs and brackets in different ways:

1) (24:6)·3=12   24-(6·2)=12:

2) (15:3) ·2=10   15-(3+2)=10

Example 7. Assignments for equality or inequality.

1. Make the correct equality by putting the action signs and brackets accordingly: 320...10...22=10 Solution: 1) (320:10)-22=10 2) 320:(10+22)=10

2. Make the correct equality by choosing the correct number and action sign.

...120...2=100

Example solution: 1) 40+120:2=100. 3) 218-120+2=100.

2) 340-120•2=100. 4) 222-120-2=100.

1. Compose the correct inequality by putting brackets and action signs in the appropriate place:

18...6...3<1 (a) (18:6)-3<1 в) 18-(6•3) <1

2. Make the correct inequality by choosing the correct number and action sign:

...3...1<50 (a) 60:3-1<50 в) 60: 3: 1<50

...3...1>50 (a) 60•3-1>50 в) 50+3•1>50 c) 50+3-1>50

3. Make the correct inequalities by choosing the right number and brackets:

45+ -12<36 (a) (45+2)-12<36 c) (45+1)-12<36 s)(45+0)-12<36

Methods of organizing educational activities in elementary school in mathematics lessons is a method of interaction between a teacher and a student, which is based on the acquisition of new knowledge, skills and abilities. There are several complexes of methods for organizing educational activities. When conducting practical exercises on data sources, we recommend the following methods: oral, visual, practical methods

Oral methods.

1. Perform addition. In doing so, create the numbers 18 and 41, using the numbers in each track only once.
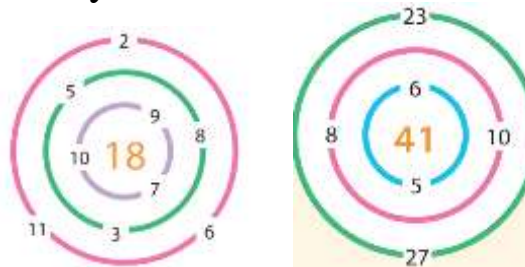
To create 18: 6+5+7=18.

To create 41 : 27+8+6=41.

2. Follow the steps and find the hidden numbers.

By directions: 9-1+4=12.   9+2-10=1

The verbal method.   When using the verbal method, the teacher asks students questions and receives answers through communication. For example:

1) How can I find out multiplications: 453·86 ?

2) Using multiplication 453·86=38958 how can I find the quotient 38958:453 or 38958:86? Activation leads to these questions students' thinking encourages them to compare events and facts, to separate or group, to look for connections with them.

In conclusion, we can say that the development of cognitive activity of primary school students is one of the important social tasks. One of the factors of social progress is the increase in cognitive activity of students, the development of interest in cognition, increased motivation to increase their intellectual culture in the interaction of the state, society and the education system.

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