

The main approaches to the formation of the control action in younger schoolchildren in the process of teaching mathematics

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Abstract: In this article we are talking about one of the topical issues at the same time - this is the question of the formation of control skills in the teacher as an essential component in the general context of personality formation.

Keywords: primary school teachers, control, respondent, information and communication technologies, professional competence, questionnaire, pedagogical supervision, conversation.

Primary school age is of great importance in the development of a child, because a child, in school conditions at this age, passes the initial stage of personality formation. The age of the child, which falls on the period of his education in the lower grades of school, is characterized by significant biological and social changes: the nervous system is improving, the functions of the cerebral cortex are strengthening, the psyche is rapidly developing.

The preschool period preceding primary school age leaves a certain imprint on the child. Starting school, younger students are characterized by instability of perception and disorganization. But, at the same time, schoolchildren in this period are inquisitive, eager to acquire new knowledge and skills. So, a junior high student may make mistakes in educational activities, but will show an enviable curiosity about the events happening around him and everything new.

The first stage of school ends with the fact that the child's perception becomes more complicated, becomes more analyzing, differentiating, and takes on an organized character.

The learning process in primary school is characterized by the need to develop a culture of attention among students. Because they still have it involuntarily, not fully stable, limited in volume. The thinking of younger schoolchildren develops from the emotional-figurative to the abstract-logical. As K.D. Ushinsky notes: "The child thinks in forms, colors, sounds, sensations in general." With this in mind, he recommended that teachers build educational activities at the beginning of school education. Continuing his reflections on the peculiarities of primary school age, L.S. Vygotsky noted that the child at the very beginning of learning has different functions of perception and memory, but the function of intelligence is relatively weak. Therefore. The role of the teacher during this period is especially great. Since with different organization of the learning process, changes in the content of teaching methods, methods of organizing cognitive activity, it is possible to obtain completely different characteristics of students' thinking.

Primary school age gives unlimited opportunities for the formation of certain qualities in students. A significant influence on the formation of the younger's personality is exerted by his relationships with others, communication with them, new types of activities. The possibility of forming qualities in a student at this age is predetermined by still unformed character traits: schoolchildren at this age are malleable. They are suggestible, trusting and prone to imitation. In addition, the authority of the teacher is very important for younger students.

At the same time, a special role is assigned to the formation of the control skill at primary school age, since it develops the habit of the student to make the right decisions independently, without using outside help.

The formation of the control skill is carried out by the teacher at all stages of the educational process, in all lessons, at various stages of the lesson and during a variety of activities. The methods of forming the control skill in elementary school students are used by the teacher and in math lessons.

The traditional program of teaching mathematics at school today is largely criticized. According to many teachers and psychologists, the modern program lacks the basic principles and concepts of mathematical science, it does not ensure the proper development of mathematical thinking of students, does not have continuity and integrity in relation to primary, higher, secondary school. To date, the primary role in teaching mathematics is given to the mathematical side, while according to opponents of the traditional program, attention should also be paid to theoretical-cognitive and logical-psychological aspects.

The task of the educational process in the study of mathematics in elementary school is to form students' understanding of the concept of a real number. The starting point of such an understanding is the students' mastery of the concept of magnitude and the study of its general properties [3, p.179].

✦ The analysis of scientific literature has shown that the stages of development of the control skill are:

✦ – independence of the control action and independence from the main educational action, orientation to external supports, samples;

✦ – gradual integration with the main educational activity;

✦ – combining the control action with the main educational action; – control begins to outpace the action itself, to anticipate it.

✦ Generalized correction is characterized by the presence of a student's general ideas about the implementation of correction. A specific correction, on the contrary, implies an indication of a specific error. The time of receiving information about the error is the basis for dividing the correction into immediate and delayed. The immediate correction is related in time to such information. Delayed correction and error information are separated by a certain period of time.

✦ The formation of computational skills is one of the most important

✦ primary school tasks because. That their presence is necessary when studying arithmetic operations. The essence of the computational technique can be revealed thanks to a specific example. Let it be necessary to add two numbers: 3 and 8. The reception of calculations in this case will consist of a number of operations:

✦ ▪ replacing the number 8 with the sum of convenient terms 4 and 4;

✦ ▪ addition of the summand 4 to the number 3;

✦ ▪ addition of the summand 4 to the result of the second operation (number 7).

✦ In this case, the application of specific actions and their order are determined by the theoretical basis of the method – the application of the property of adding a sum to the number: replacing the number 8 with the sum of convenient terms, then adding each term to the number in turn. Other knowledge is also applied. So, when replacing the power of 8 with the sum of terms, knowledge of the composition of the number of the first ten was used.

✦ Therefore, we can say that the calculation method consists of a series of sequential actions, the execution of which leads to finding the result of the required arithmetic action on these numbers.

✦ The presence of a student's computational skill is an indicator of a high level of mastery of computational techniques. In the lower grades of school, in order to obtain the result of an arithmetic action, it is advisable to use theoretical foundations of different contents, which will lead to different methods of calculation. For example, an equation of type 12×6 can be solved in the following ways:

✦ $12 \times 6 = 12 + 12 + 12 + 12 + 12 + 12 = 72;$

✦ $12 \times 6 = (10 + 2) \times 6 = 10 \times 6 + 2 \times 6 = 72;$ ▪ $12 \times 6 = 12 \times (2 \times 3) = (12 \times 2) \times 3 = 72.$

In the first case, the solution of the example is based on understanding the specific meaning of the multiplication action. To solve the example in the second way, the method of multiplying the sum by a number is used. The third solution to the given example uses the property of multiplying a number by a product. At the same time, the nature of the constituent methods of calculation is different. A large number of actions that make up the calculation technique are themselves arithmetic actions. They play a big role in the process of mastering computational techniques. In this connection, arithmetic operations can be considered the main actions. For example, for the case of 12×4 , the main operations will be: $10 \times 4 = 40$, $2 \times 4 = 8$, $40 + 8 = 48$. Other operations are auxiliary.

The operations that make up the reception and their number are predetermined by the choice of the theoretical basis of computational reception. The following example can be given: when adding the numbers 35 and 48, the property of adding the sum to the number can act as a theoretical basis, then the reception will include three actions:

- replacing the number 35 with the sum of the numbers 30 and 5;
- addition of the summand 30 to the number 48;
- addition of the summand 5 to the result obtained.

In the event that the theoretical basis is chosen for the property of adding the sum to the sum, then there will be five actions:

- replacing the number 35 with the sum of the bit terms 30 and 5;
- replacing the number 48 with the sum of the digit terms 40 and 8;
- addition of numbers 5 and 8;
- addition of numbers 40 and 30;
- addition of the obtained results 70 and 13.

In addition, the number of actions depends on the numbers on which arithmetic operations are performed and may decrease as the technique is mastered.

Practical data show that not all students can solve the problem correctly, which means they cannot control the correctness of their own algorithm for solving the problem. Only a conscious assimilation of the process of working on a task forms control skills.

At the same time, the quality of assimilation of the material covered is important. The broader the basis for solving problems, the more solid the knowledge, which is predetermined by the need to determine the type of task, and then choose an action when solving it. Students should be able to distinguish between such concepts as "more by...", "more in...", "less by...", "less in...", "as much", "as much", "how much in total", "how much in total" and "how many times", know and understand the meaning of the actions of addition, subtraction, multiplication and division. At the same time, students should also be able to explain them. The teacher needs to achieve the meaningfulness of performing certain actions of the student, which excludes the possibility of acting on a guess, thoughtlessly.

Before the teacher familiarizes the student with the content of the task, he must set a goal. According to S. E. sarevoy: "text tasks can be used for various purposes: to prepare for the introduction of new concepts (in particular arithmetic operations), to familiarize with new

concepts, to deepen and expand the mathematical knowledge and skills being formed, to form computational skills, to teach methods and techniques for solving problems at different stages this training, for many other purposes" [45, p.12].

The understanding of the problem, the separation of the known from the unknown, the distribution of the problem into its component logical parts is helped by illustrating (recording the conditions of the problem, drawing up a diagram or drawing (table, figure).

The ability to clarify the plan of solving the problem, to determine with the help of which arithmetic actions it will be solved and why it is so (the meaningfulness of the solution) helps to divide the composite problem into its simple ones.

The actual solution of the problem consists in choosing a solution method in the form of a task entry:

- by actions with an explanation;
- by actions without explanation;
- expression;
- a solution with a plan.

In the methodology of teaching mathematics, checking the solution of an arithmetic problem is understood as checking the solution of a problem. Practice shows the effectiveness of the use of additional (creative) tasks for the formation of control:

- on the solved problem;
- work with tasks that do not include an explicit and complete solution; - selection of data for the task.

All this helps the student to better understand the problem, comprehend it, choose the right way to solve it, while controlling himself at the same time.

In the learning process, the teacher should take into account that different students have different levels of mental and mental characteristics. At the same time, the task of the teacher will teach everyone to solve problems and independently control their actions. Therefore, when organizing work with the whole class, it is necessary to take into account the individual characteristics of students. For students with a low level of mastery of educational skills, it is advisable to assume cards with auxiliary questions, where brief data and a solution plan are already recorded. Those students who have a high level of mastery of educational skills can be offered additional tasks with an already solved task.

A large number of methods and techniques that encourage students to control are aimed at forming an adequate retrospective and prospective self-assessment. Here are examples of techniques that include self-regulation mechanisms:

- mutual control, mutual verification, mutual evaluation in pairs, groups;
- independent selection of tasks according to the level of difficulty;
- comparison of an individual response option with a group and a reference one (checking the strength and confidence in one's own knowledge);
- carbon copy work (one copy for the teacher, the other for the student; they check and evaluate both, then compare their options);
- without errors, but with a mark (the checked works are returned to the students only with a mark; the task of the students is to understand why the mark is what it is, to find errors that led to a decrease in the score);
- without a mark, but with errors (in the verified work, the teacher indicates only errors, the task of the students is to put a mark adequate to these errors);
- without marks and without errors (the verified works of students are issued without signs of teacher evaluation, he leaves all his notes only in his workbook; the student is invited to look at his own work again, correct the errors found and put the appropriate mark);

- students' comments on the questions for the test work on the degree of their intelligibility-incomprehensibility, attractiveness – unattractiveness. The teacher pays special attention to those issues that are characterized as incomprehensible and uninteresting at the same time;
- "clean slate" - initially, everything that needs to be remembered is written on the blackboard, then at each step of the work a part of the material is erased, and the students verbally restore the erased;
- comb (students on a scheme similar to a comb independently assess the level of activity, correctness);
- reflexive questions that encourage the student to comprehend lesson results;
- contract at the beginning of the quarter with an application for the final mark.

A modern lesson should ensure the assimilation of the basics of science, the development of skills and abilities specific to each subject, develop emotional sensitivity, motivate self-acquisition of knowledge and their use in theoretical and practical tasks.

Primary school students should master the techniques of academic work, be independent in choosing the method of acquiring knowledge, and therefore be able to use educational and reference literature, visual materials, master techniques that help to perceive educational material.

One of the important parameters of the control of primary school students in mathematics lessons is the level of generalization of reality, the development of which requires obtaining a full-fledged mental action. The formation of the control skill of primary school students in mathematics lessons should begin even before the study of numbers, figures, solving examples, because an important parameter of control is the level of generalization of reality. Students may be offered the following tasks:

- identification of differences at first glance in the same picture (Which objects are drawn on the top picture?. Check if all the objects are drawn in the picture below, complete the drawing);
- finding identical objects (find the same ball and color it, find two identical mittens, color them);
- search for irregularities in the drawn picture (for example, an apple plus a leaf equals a bitten apple);

Only after that it is possible to introduce tasks with numbers into the educational activity:

- check if the same numbers are crossed out on the card and on the sample;

– find a number among the many depicted in a mess.

Verification with a sample is the most common method of forming a control action. However, it is necessary to have a certain level of mastering the educational material before the formation of the control skill. Therefore, a teacher in a math lesson, before proceeding to the formation of a control skill in younger students of the control skill, must ensure the assimilation of a pattern of action. Then the patterns of actions will be perceived by students organically, not as random, but as necessary and mandatory.

Therefore, the presence of control among students in math lessons does not detract from and does not reduce the role of the teacher in educational activities, but on the contrary, strengthens it. The role of the teacher is to systematize and analyze the student's mistakes, the reasons for their occurrence and the adoption of tactical and unobtrusive measures to prevent them.

As you can see, the reconciliation with the sample, being one of the methods of forming the control skill of elementary school students in math lessons, consists in getting an answer, checking the result of calculations with the answer given in the textbook. When using the "checking with a sample" technique, the conformity of the result obtained with the task condition is not established. In this connection, such a method of forming a control skill as "checking with a sample" in itself is not effective for achieving the goal of forming a control skill in students.

Including scientifically analyzed the development of small business and business, and the legal basis, at this time financially support small business and business, the latter is amended and the rules for this branch of national legislation are added.

Now studying scientific heritage, socio-political activities and acquaintance youth charity of our above-stated ancestors is considered one of the main urgent objectives of the modern intellectuals. Conclusions. So, being a continuous process, the formation of control among elementary school students is carried out at all stages of training under the strict supervision of a teacher. The formation of the control skill is carried out with the help of special techniques that should be used when teaching children according to the system of D. B. Elkonin - V. V. Davydov. In accordance with this system of developing learning, "the action of control in the process of solving educational tasks should be given special importance. It is it that characterizes all educational activities as an arbitrary process controlled by the child himself. The arbitrariness of educational activity is determined not so much by the intention to do something and the desire of the student, as by the control over the performance of actions in accordance with the sample" [7, p.63].

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