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SPECIFIC FEATURES OF THE PROBLEM APPROACH TO TEACHING PRIMARY SCHOOL STUDENTS

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ABSTRACT

The article reflects the psychological and pedagogical foundations of a problem-based approach to teaching younger schoolchildren; the theory and practice of problem-based learning; the features of the use of problematic elements in primary classes are highlighted in detail. As the experience and research of leading scientists show, problem-based learning is focused on activating the thinking of students and should be built taking into account the understanding of its psychological nature. Based on the results of experiential learning, methods for creating and resolving problem situations at various stages of knowledge acquisition, a typology of problematic tasks and assignments are substantiated; ways of designing and introducing them into the educational process. Considered are such important issues related to the problem-based approach to learning as categories of problem-based learning; features of the problematic approach to teaching younger students.

Keywords: Problem Approach, Problem Situation, Problem Problem, Techniques for Creating Problem Situations, Mathematics

GENÇ ÖĞRENCİLERİN EĞİTİMİNE YÖNELİK SORUNLU YAKLAŞIMIN SPESİFİK ÖZELLİKLERİ

ÖZET

Makale, daha genç öğrencilere öğretmeye yönelik sorunlu yaklaşımın psikolojik ve pedagojik temellerini yansıtıyor; probleme dayalı öğrenme teorileri ve uygulamaları; İlköğretim sınıflarında problematik unsurların kullanımının özellikleri ayrıntılı olarak vurgulanmıştır. Önde gelen bilim adamlarının deneyim ve araştırmalarının gösterdiği gibi, probleme dayalı öğrenme, öğrencilerin düşüncelerini harekete geçirmeye odaklanır ve psikolojik doğasının anlaşılması dikkate alınarak inşa edilmelidir. Deneyimsel öğrenmenin sonuçlarına dayanarak, bilgi edinmenin çeşitli aşamalarında problem durumları yaratma ve çözme yöntemleri, problemli görevler ve ödevlerin bir tipolojisi doğrulanır; bunları tasarlamanın ve eğitim sürecine sokmanın yolları. Probleme dayalı öğrenme kategorileri olarak öğrenmeye probleme dayalı yaklaşımla ilgili önemli konular ele alınır; Daha genç öğrencilere öğretmek için problematik yaklaşımın özellikleri.

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1. INTRODUCTION

One of the core ways to activate the cognitive activity of students in modern didactics is problem-based learning.

Theory and practice have proved that the knowledge acquired in the process of independent active cognitive activity of the students themselves has a significant advantage compared to the knowledge obtained from any source in a ready-made form. They develop more fully and more quickly into the beliefs of students and become an instrument of their thinking and practical activity.

Therefore, problem-based study is becoming more widespread, as it solves the primary task of society - the formation of a creative personality.

It should be noted that although the issues of a problem-based approach to learning have been developed mainly in relation to the senior and middle school levels, however, the possibility of using problem-based learning methods init is not disputed by anyone in the elementary grades, but on the contrary, in the didactic literature this issue is given very important importance. The main objectives of this study are to deepen and expand the knowledge of teachers on the theory of the problem approach to teaching younger schoolchildren, acquired by them during the study of pedagogy courses and private methods, the formation of skills and abilities, the creation of problematic situations using a system of problematic issues, tasks and assignments.

2. METHOD

The democratic teacher F.A.Disterveg argued that only the teaching method that activates the cognitive activity of the student is good, and the one that orients him only to memorize the studied material is bad. Disterveg's statements that "a bad teacher presents the truth, a good one teaches to find it" have not lost relevance to this day. "Development and education," wrote F.A. Disterverg, "cannot be given or communicated to any person. Anyone who wants to join them must achieve this by his own activity, by his own strength, by his own exertion [1.118]. This principle in the teaching of F.A.Disterveg is decisive in the development of a system and methods of teaching.

S.I. Shokhor-Trotsky made a valuable contribution to the methodology of teaching arithmetic[2]. He built the entire course of mathematics on a system of appropriately selected problems (in his terminology, the "method of expedient problems"). The formulation of such tasks, Shokhor-Trotsky argued, pursues one common goal - ensuring the independence of students, developing their intelligence and abilities, encouraging genuine activity and interest in the conscious assimilation of the material.

The methodological views of S.I. Shokhor-Trotsky in many ways anticipated modern attitudes. His "method of expedient tasks" recommends going from selected tasks to generalizations in definitions and theorems so that students understand "why and why".

Modern teachers with good reason consider S.I. Shokhor-Trotsky one of the founders of problem-based learning.

Primary school education is now primarily aimed at the development of students. This does not reduce the role of skills and abilities, but they are not an end in themselves, but serve as a consequence of the mental development of students. Consequently, from a school of skills, it becomes a school of development.The importance of problem-based learning is also determined by its role in solving the issues of managing the cognitive activity of students.The existing objective contradictions between theory and practice make it possible to effectively implement a problem-based approach to learning.

What are the main criteria to determine the progress of a student in his development?

Answering this question, N.A. Menchinskaya points out: "Firstly, it is very indicative of the growth of students' curiosity, the emergence of their cognitive interests - not only to the content of knowledge (the desire to expand and deepen them), but also to the methods of obtaining them, to the methods of working with educational material.

Secondly, an important indicator is the increase in the rate of assimilation of new educational material, which manifests itself in an easier and faster transition of students from the old topic to the new one, in the expansion of those sections in which the student can independently acquire knowledge.. It is characteristic that with an increase in the rate of assimilation, the teacher begins to lack material in textbooks and problem books.

Thirdly, the ratio of different categories of students in the classroom is changing: the number of students actively assimilating educational material is increasing, and, accordingly, the number of those whose characteristic feature was the desire to avoid active mental work is decreasing"[3.108].

The change in the goals of primary education has led to the development of the content of primary school subjects corresponding to these goals.

Many scientists are engaged in various aspects of problem-based learning both in our country (M.I.Makhmutov[4], A.M. Matyushkin[5], I.Ya.Lerner[6], M.I.Moro[7], A.M.Pyshkalo[8], etc.) and abroad (V.Okon[9], E.Fleming [10] (Poland), etc.

M.I.Moro, A.M.Matyushkin[11], A.M.Pyshkalo, V.P. Strezikozin[12], T.I.Shamova[13], and others made a great contribution to the development of the problem of activating the cognitive activity of younger schoolchildren.

There are also many psychological and didactic works that reveal the essence, role and significance of problem-based learning in the educational process.

According to M.I.Makhmutov, the creation of a chain of problematic situations and the management of students' activities for the independent solution of educational problems is the essence of the process of problem-solving [4.289].

I.Ya.Lerner sees the essence of problem-based learning in that.that it involves students to varying degrees and in different forms in the process of finding and solving objectively new problems for them.

V.D.Strezikozin continues his reflections in the article "What is the essence of "problem-based learning"? "The basis of problem-based learning is the active cognitive search of students in the assimilation and application of knowledge, which is designed to promote the development of their mental activity, its independence. The starting point of such a search is the educational or cognitive task - problem proposed by the teacher" [12.57].

So, the main direction in education from the point of view of problem-based learning is the cultivation of students' cognitive independence, ability, first of all, when they solve educational problems, tasks, in the process of teaching them techniques (methods) of independent educational activity.

This interpretation is dictated by both theoretical considerations, deepening understanding of the essence and function of learning, and the requirements of public practice.

The center of gravity in the learning process is transferred to students, they are put in such conditions when they themselves acquire knowledge under the guidance of a teacher, or, in other words, this implies such an organization of learning in which the process itself acts as a continuous setting of new and new problems for students with their gradual complication. With such training, the lesson as a whole can be devoted to solving one main problem: the problem. Other options are also possible. The educational material that is subject to study in one lesson can be divided into several consecutive problems that are solved one after the other, which is carried out systematization and generalization of knowledge acquired by students in the course of independent problem solving. One problem can be posed to students for a long time - for two, three, or even more lessons.

Thus, although problem-based learning is organized differently, it is always a process of actively seeking a way out of a contradiction. The search is possible because problem-based learning is based on the patterns of creative assimilation of knowledge and methods of activity, includes a specific combination of teaching techniques and skills, which are inherent in the main features of scientific search.

This search is possible, in particular, due to the fact that problem-based learning includes methods such as problem presentation, teacher conversation and independent work of students, which together assume heuristic and research methods of acquiring knowledge.

The results of many studies of the last decade conducted in schools, the main task of which was to develop psychological and pedagogical recommendations for improving the educational and pedagogical process, the development of cognitive abilities and the activation of mental activity of students, convince that one of the most important directions in this area is the modern theory of problem-based learning, as it allows you to create the most favorable conditions for the formation of such necessary qualities of students as cognitive interest, creative activity and independence.

The problematic nature of teaching younger students is completely natural. Therefore, in all cases when the material and the level of training of students allow, it is necessary to strive for the use of problematic elements in the lesson.

But, of course, A.Matyushkin is absolutely right when he claims that "until appropriate textbooks and methodological manuals are developed, the use of problem-based learning in school may not only not be beneficial, but even bring harm"[5.203].

In this regard, it is necessary not only to pay more attention to the problem approach, but as soon as possible, using the positive experience accumulated by the school, to develop appropriate textbooks and methodological guidelines on the use of elements of problem-based learning in school in general and in primary school in particular.

3. RESULTS

Is it possible to apply a problem-based approach to teaching in elementary grades?

Numerous studies indicate that this possibility is not questioned.

V.Okon emphasizes that in primary school classes, problematic teaching of the basics of sciences is possible "in a form appropriate for the thinking of schoolchildren"[9.90].

Answering the questions of primary school teachers about the necessity of problematic construction of lessons in primary school, V.P. Strezikozin writes: "Problem-based learning, of course, can be one of the important areas of improving the educational process, as it contributes to the purposefulness of children's cognitive activity, gives a creative character to their educational work and, ultimately, creates favorable conditions for successful learning and the development of students' intelligence" [12.63].

Statements are, in our opinion, of interest A.M.Matyushkina on the extent and nature of the use of problem-based learning in primary schools: "Primary school students do not yet know the methods of intellectual activity and do not have sufficient knowledge to conduct a discussion about the rules of grammar and mathematics or to engage in their research. At these initial stages of learning, the use of problem-based learning methods involves setting students appropriately selected problem tasks that cause problematic situations and organizing optimal conditions that ensure the creative assimilation of new knowledge and actions" [11.202].

As if echoing A.M.Matyushkin, V.P.Strezikozin writes:"This provision is especially important to keep in mind for a primary school teacher, where the content of the program material does not always allow a problematic approach to its study, and the age, life experience, knowledge of students significantly limits their opportunities for independent cognitive search"[12.58].

That is why some authors (V.P.Strezikozin[12], T.I.Shamova[13]) it is perfectly legitimate to speak about "elements of problemativeness" in relation to primary education.

In order to find out exactly which "problem elements" we are talking about, it is necessary to consider possible types of problem-based learning, its level. It should be noted that the question of the levels of problem-based learning in primary schools has not been sufficiently studied. The correct answer to this question will reveal the degree of applicability of problemativeness in teaching mathematics to younger schoolchildren.

M.N.Skatkin [14] identifies three main types of problem-based learning:

1. " Problematic presentation of knowledge. With this presentation, the teacher not only informs the students of certain provisions, "but, reasoning out loud," poses a problem and shows the process of solving it.

2. Involving students in the search at certain stages of presentation.In this case, the teacher puts forward a problem to the students, presents the educational material, but in the course of the presentation poses questions to the students that require them to be included in the process of searching for and independently solving a particular cognitive task.

3. The research method of obucheii. Realizing the problem posed, students themselves outline a search plan, build assumptions (hypothesis), consider a way to test it, conduct observations, experiments, record facts; compare, classify, generalize experiments, facts, prove, draw conclusions.

As we can see, the common thing that unites the three types of problem-based learning is learning by solving a problem, and distinguishing them is the degree of independence. Search activity of students. In the research method, independence reaches a higher level; cognitive activity of students by its nature and stages approaches the research work of a scientist.

In the process of problem presentation, the search is conducted by the teacher, giving the students a sample of scientifically evidence-based thinking, and the students only follow the course of his reasoning, the movement of thought aimed at solving the problem. When involving students in the search at certain stages of the presentation of knowledge, they perform only individual elements of the search under the guidance of a teacher.

M.N.Makhmutov [4] identifies five levels of problemativeness in the implementation of problem-based learning.

The first level is characterized by the fact that a problematic situation arises regardless of the teacher's methods of work, the attention of students is not directed to this problem, its difficulty is overcome by the teacher's explanation.

The second level is characterized by the teacher's deliberate creation of a problem situation, but the teacher himself formulates and solves the problem, students only learn the logic of the teacher's problem thinking.

The third level assumes that the teacher, creating a problematic situation, points students to the problem, involves their joint search for its solution.

The fourth level provides for students to independently solve the problem formulated by the teacher.

Finally, a higher, fifth level of problemativeness can be achieved when students independently come to conclusions and generalizations.

Relying on the research of psychologists and didactics on the age and cognitive capabilities of younger schoolchildren, as well as on the experience of working on new programs, V.P.Strezikozin came to the conclusion that "problematic presentation of knowledge and involvement of students in cognitive search at certain stages of knowledge presentation can be most used in primary school conditions [12.60]. M.I.Moro and A.M.Pyshkalo [7] believe that the solution of the problem in

Classes I-III can be carried out by the following methods (methods):

1. Presentation of knowledge by posing questions (problems) to students that activate independent thought when perceiving the teacher's explanation. Recently, this approach to presentation has sometimes been considered (see the first type of problem-based learning highlighted above by M.N.Skatkin) as an independent method, called the method of "problematic presentation" of knowledge by the teacher (I.Ya.Lerner, M.I. Skatkin, V.P.Strezikozin, etc.). M.I.Moro and A.M.Pyshkalo, it seems more correct to consider this not a new method, but only the development, improvement of the method of presentation of knowledge by the teacher, occurring under the influence of changes in general educational-educational purposes of training.

2. Heuristic conversation (i.e. training) is conducted so that students, answering the teacher's questions, come to new conclusions for them. The main difference between a heuristic conversation and a question-and-answer method of presentation is that, along with questions that require a simple reproduction of previously acquired knowledge, it involves the widespread use of questions that encourage and guide the independent solution of cognitive tasks available to students (outlined by the teacher).

In some recent didactic studies, heuristic conversation has been attributed to an independent, partially searchable or heuristic method (I.Ya.Lerner, M.N.Skatkin, A. V. Khutorskoy[15], I.S. Yakimanskaya[16], K. A. Arapov[17], E. V. Kovalevskaya[18],, L.V. Pilipets, E.V.Klimenko, N.S. Buslova[19], etc.).

In the opinion of M.I.Moro and A.M.Pyshkalo, the essence of the case does not change from this.

From what has been said above, it becomes obvious that the first two types of problem-based learning indicated by M.N.Skatkin and the corresponding first three levels of problemativeness, in which M.I.Makhmutov writes, or two methods (methods) of solving problems, according to M.I.Moro and A.M. Pyshkalo, are acceptable in primary classes.

It should be noted, however, that in the formation of some mathematical concepts, as M.I.Moro, A.M.Pyshkalo and V.P.Strezikozin point out, and especially in the lessons of applying knowledge on such an academic subject as mathematics, an independent search of students is quite possible.

4. DISCUSSION

And now let's turn to the specifics of the problem approach to teaching in primary school in general and mathematics in particular.

The analysis of psychological and pedagogical research and the best practices of teachers allowed us to determine the following specific features of the problem approach to teaching in primary classes.

Firstly, the signs of educational problems that arise in elementary grades need to be distinguished from those that arise in higher grades: the curriculum should represent a certain life situation. Experiencing difficulties is the starting point for the formation of a problem and hypothesis; this process usually ends with a solution, although there are also problems that can only be partially solved. Finally, a characteristic feature of educational problem situations is their dynamism, which consists in a natural transition from one situation to another, in the emergence of more and more new situations.

Secondly, the specificity of the content of the mathematics course as an academic subject, and its cognitive and educational significance lies in the closest connection of this science with life, in its sharp difference from other sciences (even natural). Therefore, it would be wrong to apply the conclusions obtained mainly from teaching history (I.Ya.Lerner), language (M.I.Makhmutov), and other humanitarian subjects to teaching mathematics.

Thirdly, the specificity of problem-based learning is manifested in methodological techniques that are typical only for mathematics lessons in elementary grades.

Fourth, there is a great emotional impact of the educational material on students.

Fifth, in the typology of problematic situations that arise only in a math lesson.

Sixth, when teaching elementary mathematics, it is not just about problem-based learning, but about preparing for it (even if the teacher presents the knowledge in a problematic way), since students must be prepared - psychologically, logically, mathematically - to perceive such a presentation.

Seventh, an important role in problem-based learning in elementary school is played by the element of entertainment, which should be associated with the study of the essence of the phenomenon and its diversity. Entertaining should be brought to the state of "a situation of difficulty".

Eighth, many problematic tasks are solved in elementary school, the purpose of which is to teach students to distinguish the nature of arithmetic operations with numbers, to form their calculation skills, as well as geometric representations.

One can talk about problemativeness when working on tasks in which the dependence between the values is given in a more or less difficult form and when solving them, students are required to reason, complex mental activity.

Ninth, it is necessary to point out some recommendations for creating problematic situations:

a) the student must clearly distinguish the circle of known knowledge from those that he lacks to solve the tasks, questions, tasks, i.e. he must "see" the unknown;

b) the teacher is obliged to design such a problem task, which naturally causes the need for new knowledge;

c) it is necessary to strictly take into account the individual psychological capabilities of each student individually and the class as a whole, without such consideration it is difficult to create a problematic situation and formulate an educational problem;

d) the creation of a problem situation can be carried out at any stage of the lesson (before explaining the new material, during its explanation, when repeating what has been studied), and this precludes the need for clear planning of the educational material in accordance with the intended purpose of the lesson;

e) as a means to create problematic situations, it is desirable that the words of the teacher, the material of the textbook (textbook), the results of observations of students, demonstration of laboratory work, technical means of teaching are used.

f) it is useful to remember that the creation of a problem situation is aimed at understanding and highlighting the educational problem.

The methodology of initial training in the implementation of problemativeness requires the teacher to pay attention to the following points:

a) creating a problematic situation by posing educational questions and tasks and correctly formulating the problem;

b) to establish the characteristic features and orientation of the problem situation;

c) determining the forms of work for the disclosure of educational content.

As we have seen, the specifics of mathematics as a subject also have an impact on the process of problem-based learning.

5. CONFIRMATIONS

The analysis of the above-listed techniques for creating problem situations, the experience of advanced teachers, as well as taking into account the content of the mathematics program allow us to outline the most characteristic methods for creating problem situations for teaching practice (Levenberg L.Sh., Ibragimov R. [20]).

Let's focus on the consideration of the main techniques, concretizing them with examples. Previously, we note that the form of realization of a particular problem situation is such didactic techniques as the formulation of a problem question, a problem problem, a practical or laboratory task.

Rception 1: Encouraging students to conduct observation, analysis, comparison, opposition in order to identify common and different in the observed objects and phenomena.

This technique is widely used in the formation of the concept of a number, a geometric figure, representations of units of measurement of quantities and some other concepts. Here are some examples.

I. Familiarization with the number 3

First-graders are asked to carefully consider the three sets of different products presented in the figure, and to establish the features of their similarities and differences. The upper picture shows, for example, acorns, on the middle one - koloboks, on the lower one-birds. Similarity is the number of items.

Then you can invite students to consider three groups of one-sided items (for example, apples) that differ in the number of items. And again, children are able to identify similarities to differences.Comparing the totality of subjects this time, students are convinced that the sign of difference is the number of elements in each set.

Based on the consideration of these and a number of other tasks, students are led to the conclusion that the number itself means a certain number of any subjects.

Reception 2: The creation of such new conditions for students that require the transformation of the methods of action known to them.

When setting such a task, a contradiction arises because in the experience of children there were no connections between the task situation new to them and the methods of action known to them.

To overcome it, it is necessary to realize independently that the methods of action known to them are legitimate for new conditions, i.e. students must realize the possibility of transferring actions. Here are some examples.

Example 1. After students learn how to calculate the perimeter of a rectangle, you can ask them to find the perimeters of a square, isosceles and equilateral triangles (without introducing related terms). When performing such tasks, students should, by transferring existing knowledge to new conditions, independently cope with the performance of a problematic task: make expressions for calculating the perimeter of a square, isosceles and equilateral triangles.

Reception 3: Setting practical tasks for students that require the search for new solutions, new approaches to solving a familiar problem.

To familiarize second grade students with a new counting unit - a hundred - they may be offered the following task: to calculate in a convenient way the total number of buttons in 10 boxes, each with 100 buttons. Here it is obviously impossible to use the accounting technique known to children, since they have to count only units and tens within 100. A problematic situation arises: how do I count the total number of buttons? Students should analyze the condition, compare it with their knowledge of counting methods (counting in units and tens) and on this basis make a suggestion about the possibility of counting in hundreds as well as in simple units.

Reception 4: The use of life situations that arise when students independently perform practical tasks, and their analysis in order to formulate the problem.

Familiarization of grade 2 students with a new measure of length- a millimeter - we begin by showing that the introduction of a new unit of measurement, smaller than a centimeter, is dictated by practical necessity. For this purpose, we propose to measure segments drawn in advance on sheets of paper, for example, with a length of 5 cm 8 mm and 6 cm 2 mm. The segments are drawn one under the other, and it is well known that they are not the same, nevertheless, the length in centimeters will be expressed by the same number - 6 cm (students are not familiar with the millimeter yet). Hence the conclusion that for more accurate measurements, a smaller measure than a centimeter is needed. It is obvious that after carrying out such work, students have a cognitive interest, a desire to solve the problem that has arisen.

Reception 5. Involvement of a number of facts related to the studied material in order to find a rational way to calculate or solve a new problem problem.

In order for students to get visual representations of the centimeter and methodological literature, we recommend that children, under the guidance of a teacher, make several models of the centimeter. With the help of the centimeter model, students should learn to solve two problems: 1) measure a given segment, 2) build (draw) a segment of a given length.

In the future, when solving the two tasks mentioned above, instead of a centimeter, it is recommended to switch to using a ruler model, which is made by students from a sheet of paper in a cage. The divisions of the centimeter scale of such a ruler are not recommended to be indicated by numbers. This is advisable both from the point of view of combining the processes of counting and measurement, and in the interests of better understanding by students of the correspondence between the length of the segment and the number. In order to bring them to the realization of the expediency of measuring the length of a segment using a ruler (so far without figures), in our experience we used the technique of creating a problem situation associated with finding a rational way of action. The first exercises related to measuring the length of a segment were performed by students using a ruler without digitization, and by using a centimeter model. This allowed them to see in practice the advantage of using a ruler, as well as to make a natural transition to measurement using a ruler and a digitized scale. Moreover, in this case, the same method of creating a problematic situation is advisable, since students should make sure in practice that measuring with a ruler with a digitized scale is much faster and more convenient than with a ruler without digitization.

Reception 6: Using tasks and tasks with missing or external data.

To solve the problem, you need to find the missing data, which leads to a problematic situation that can be resolved only if students understand the new material,

The task condition includes extra information and a requirement to find what you are looking for. To transform the initial situation, it is necessary to select the information necessary for this. But the students cannot do this right away, because they do not know the principles of its selection, in connection with which a problematic situation arises. In order to overcome this difficulty, it is necessary to analyze the condition of the task and, on this basis, establish the principles for selecting the required information that makes up. software knowledge.

So, to familiarize students with the unit of length measurement - a decimeter - the teacher suggests that children measure the width of the student's desk (teacher's desk, etc.). For this purpose, they are given strips of different lengths, for example, 9 cm, 10 cm and 13 cm. Students are faced with the need to choose one of the strips. But they don't know what size strip to give preference to. A problematic situation arises, the resolution of which gives them the opportunity to learn the connection between the metric system of measures and the decimal number system.

Reception 7: A problematic situation can also be created by a question posed to the condition of a specific task of a new type for students.

Example. Work on the combined law of multiplication can begin with solving a text problem in various ways, which is problematic in this case. For example, we offer a task with the following content: "Cages with birds were brought to the pet store. The cells were placed in three rows, 5 cells in each. There are 2 birds in each cage. How many birds are there in cages"?
Let's agree to depict a cage in the form of a rectangle, and a bird in the form of a triangle. A graphic illustration, visualizing the relationship between the data and the desired value, will help to grasp the meaning of the problem situation, and then find possible solutions.

the 1st method. Let's find out how many birds are in cages in the same row. There are 2 birds in one cage, and 5 cells in a row. So, there are 5 * 2 (pt.) in them. The cells are arranged in three rows, so. total will be (5*2)*3 (pt.).

Solution; (5*2)'3 =10* 3 =30 (pt)

2nd way. First, let's find out how many cells there are. There are 5 of them in one row, and there are 3 such rows, so there are only 5 * 3 (cl.). There are 2 birds in each cell, so there will be (5*3)*2 (pt.) in total.

Solution: (5*3)*2 = 15 * 2 = 30 (fri.).

the 3rd method. Let's find out how many birds are in cages in the same row. There are 2 birds in one cell, and 3 cells in the column, so there are 2 *3 (pt.) in them. The cells are located in five columns, so there will be (2*3)*5 (pt.) in total.

Solution: (2*3)*5 = 6*5=30 (fri,).

We compare the ways of solving the problem and formulate the corresponding rule. The formulation of such tasks, wrote S.I. Shokhor-Trotsky, pursues one common goal - to ensure the independence of students, the development of their intelligence and abilities, the awakening of genuine activity and interest in the conscious assimilation of the material. As we can see, the methodological views of S.I. Shokhor-Trotsky were ahead of his era and in many ways anticipated modern attitudes.

Reception 8. The clash of students with practical tasks that encourage children to analyze the facts of the discrepancy between the existing knowledge system and the requirements that are presented to them when solving new tasks.

So, in preparation for the study of the topic "Meter", a teacher can ask students the following question: "If we need to buy a path for a room, how do we know how long it should be?" - "To do this, you need to measure the length of the room." "How do we measure the distance from one wall to the other?" - the teacher asks.

One of the students will suggest measuring the length of the class. The teacher calls the student and invites him to measure the length of the classroom in steps. Then the same task is performed by two more students (it is advisable to call students of different heights, with different step lengths). Students get a different number of steps, say 12,11, 9. A legitimate question arises: "How exactly to measure the length of the room?" Thus, the task of practical content set for students leads them to realize the need to study such a measure of length as a meter, and thus the cognitive need of students is formulated.

The teacher informs the students that in order to learn how to measure the length and width of the room, the height of the classroom, etc., you need to be able to use a new measure of length - a meter, When familiarizing students with the concept of "meter", they not only demonstrate a meter ruler and show how to measure it, but, most importantly, teach them to find themselves the length and width of the classroom, boards, doors, etc. Meaningful in this case are exercises such as: measure a cord (tape, etc.) 3 m, 4 m long, etc. with a piece of paper of a meter model; find the length of the class on the skirting board, laying meter strips along its length and making a chalk mark after each meter, etc .

After the problem situation is created with the help of one or another technique, they begin to resolve the problem.

The study of the experience of advanced teachers, as well as the research conducted by us, show that the main conditions under which primary school students successfully cope with solving the problems posed are the following:

Reception 1. Reliance on the student's sensory experience, on his direct perception, which helps to detect a particular mathematical regularity.

Consider a fragment of the lesson on "Adding a number to the sum". The main purpose of the lesson is to introduce students to various ways of adding a number to the sum. It's written on the board. expression (5+3) + 1). You need to find the value of this expression in three ways. The students from the previous lessons have already learned how to find the meanings of such expressions in one way: scan to calculate the sum and add a number to the result. But then they become a difficulty, which they are not able to solve. Then the teacher builds a similar problem situation on a subject-sensory basis. He puts 5 pencils in one glass, 3 in the other, and puts another 1 pencil on the table next to it. And offers to find the total number of 'pencils' in various ways.. This formulation of the problem is understandable, and students, under the guidance of a teacher, find possible ways to add a number to the sum.

Reception 2. Logically correct implementation of the transition from acquired knowledge to new knowledge.

Example. Multiplication of a two-digit number by a one-digit number. The following examples are offered for the solution:

7*5, 63:9 , 8*4, 9*8 , 12*8

Students will not be able to solve the last example, since they are not yet familiar with the technique of multiplying a two-digit number by a one-digit number. A problematic situation has been created. One of the students will suggest using an already known method based on. based on the knowledge of a specific plan of the action of the mind:

12*8 = 12+12+12+12+12+12+12+12 .

The teacher suggests finding a more rational approach to solving using multiplication. In particular, to represent the number 12 as the sum of any two terms and then find the values of the expressions obtained using the property of multiplying the sum by the number. Students can offer several options:

(7+5)*8 = 7*8 + 5*8 = 56+40 = 96

(8+4)*8 = 8*8 + 4*8 = 54+32 =96

(10+2)*8 = 10*8 + 2*8 = 80+16 = 96 etc.

Comparing the possible ways of representing the number 12 as the sum of two terms, students are convinced that this method leads to an easier, rational method of calculation.

Thus, relying on the knowledge that the students already possessed, the teacher brings the students to the solution of the problem.

CONCLUSION

Success in the formation of personality and the development of students' thinking abilities is achieved mainly in the classroom, when the teacher is left alone with his pupils. His ability to "fill a vessel and light a torch", his ability to organize their systematic independent cognitive activity depends on the level of knowledge of students, the degree of their interest in learning.

Problemativeness in teaching is a special kind of interdependent activity of teachers and students, determined by a system of problematic situations. Problemativeness is characterized by a system of teaching techniques and methods reinterpreted from the point of view of the achievements of modern didactics, psychology and pedagogical practice. Mastering the techniques and methods of a problem-based approach to learning is an important component of the general pedagogical and methodological training of a future teacher.

The peculiarity of considering all issues of the problem approach to learning is their focus on improving the quality of students' knowledge and their interest in learning.

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