Sys Rev Pharm 2020;11(10):698-705
A multifaceted review journal in the field of pharmacy

Formation of Learning Research Skills Through Solving Arithmetic Problems

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ABSTRACT

Annotation. Having taught students to master the ability to solve textual problems, the teacher will have a significant impact on the development, training, and education of students, prepare their brains for receiving more complex information. A schoolboy who knows how to solve various mathematical problems plans his activity better, predicts a situation, sets out his thoughts more consistently and more precisely, knows how to justify his position better. The student from the first days of classes at school meets the challenge. At first, until the end of schooling, the mathematical task invariably helps the student to develop the correct mathematical concepts, to more deeply clarify the various aspects of the interrelationships in his life, and makes it possible to apply the theoretical concepts under study. Text tasks are traditionally difficult material for a significant part of schoolchildren. Thus, the teacher achieves the goal.

Keywords: Methods., Learning., Students., Techniques., Solutions., Textual., Arithmetic., Problems.

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INTRODUCTION

The ability to solve problems is one of the main indicators of the level of mathematical development, the depth of development of educational material. The student from the first days of classes at school meets the challenge. At first, until the end of schooling, the mathematical task invariably helps the student to develop the correct mathematical concepts, to more deeply clarify the various aspects of the interrelationships in his life, and makes it possible to apply the theoretical concepts under study. Text tasks are traditionally difficult material for a significant part of schoolchildren. However, in the school course of mathematics, he attached great importance, since such tasks contribute to the development of logical thinking, speech and other qualities of students' productive activities.

How to teach students how to solve a textual problem? This question is central to the methodology of learning how to solve problems. To answer this question, many practical techniques have been proposed in the literature that facilitates the search for a way to solve the problem. However, the theoretical positions of the relative finding of a solution to the problem remain little developed.

Features of the text of the problem can determine the course of the thinking process in its solution. How to guide students on these features? Knowledge of the answers to them constitute the theoretical and methodological provisions on the basis of which you can build a specific teaching method; They will help to determine the methodological techniques of finding ways to solve the problem, including solutions in various ways.

Word problems are an important means of teaching mathematics. With their help, students gain experience in working with magnitudes, comprehend relationships between them, and gain experience in applying mathematics to solving practical (or possible) problems.

The use of arithmetic methods for solving problems develops ingenuity and ingenuity, the ability to pose questions, answer them, that is, develops a natural language, prepares schoolchildren for further learning.

The purpose of the study: the method of working on the textual problem, to identify new approaches to solving textual arithmetic problems.

Objectives of the study:

1. To identify the role of word problems in the learning process;
2. To study the method of work on the textual task;
3. Analysis of non-traditional approaches in the method of working on a textual arithmetic problem.

The object of study: methods for solving textual arithmetic problems.

The subject of research: the solution of textual arithmetic problems.

Research lies in the fact that in the process of learning the solution of textual problems for movement, it is necessary to use a system of exercises for the formation of a generalized method of solution, taking into account the principles of individualization and differentiation.

In this regard, it is important that students are prepared for future or near-future challenges, faced with real-life or real problems in their study environment, and find an appropriate solution.

We assume that new approaches, forms, areas of work on the task more successfully allow you to organize the process of solving text problems.

Arithmetic methods for solving textual problems allow us to develop the ability to analyze problem situations, build a solution plan taking into account interrelations between known and unknown values (taking into account the type of task), interpret the result of each action within the framework of the problem condition, verify the correctness of the solution by compiling and solving the inverse problem, that is, to form and develop important general educational skills (Zankov,L.V. 1999).

Arithmetic methods for solving textual problems teach children the first abstractions, help educate a logical culture, can help create a favorable emotional background for learning, develop an aesthetic sense for schoolchildren to solve a problem (a beautiful solution), and study mathematics, arousing interest first in the process of

finding a solution to the problem, and then to the subject being studied (Rhem, J. 1999).

The use of historical tasks and a variety of old (arithmetic) ways to solve them not only enrich the experience of students' mental activity but also allow them to master the important cultural and historical heritage of mankind related to finding solutions to problems (Wilson, P.S. 1993). This is an important internal (associated with the subject), and not external (associated with marks, promotions, etc.) an incentive to search for solutions to problems and study mathematics.

The initial mathematical knowledge is assimilated by children in a definite system adapted to their understanding, in which the individual positions are logically connected with one another, derive one from the other. With the conscious assimilation of mathematical knowledge, students use the basic operations of thinking in an accessible form for them: analysis and synthesis, comparison, abstraction and concretization, generalization; students make inductive conclusions, conduct deductive reasoning. The conscious mastering of mathematical knowledge by students develops the mathematical thinking of students. Mastery of mental operations, in turn, helps students to master new knowledge more successfully.

We reviewed interrelated materials that cover the subjective educational system of Kazakhstan and effective teaching methods related to the understanding of the personal development of students (National Report on the Results of the International Educational Program 2009, Kazakhstan, 2010; about the specifics of teaching the fundamentals of sciences in general education organizations in the Republic of Kazakhstan in 2014 - 2015 academic year; On the implementation of the National Action Plan for the development of functional literacy ofschoolchildren for 2012 - 2018, 2012; Ponomarev, Kenzhebekova2016; Ponomarenko, Zholdasbekov,2016;Ponomarenko, Esaliev, Kenzhebekova,2016; K.Moldabek, Kenzhebekova etc, 2016).

MATERIALS AND METHODS

All these studies undoubtedly contribute to the improvement of methods of forming methods of mental activity in the process of solving problems, improving the quality of students' knowledge of mathematics, the development of their logical thinking. Advanced teachers in the practice of their work has become much more likely to apply various heuristics, schemes, guidelines, guidelines at all stages of the formation of mental and practical the activity of schoolchildren in problem-solving. However, in the mass practice of teaching in schools of the Republic, there is still an extremely low level of formation of skills and abilities to solve text problems for the overwhelming majority of junior schoolchildren. Thus, a contradiction arose between the state of the theory and the practical needs of the implementation of the main goal of education - the formation of learning activities, in particular, such actions as the ability to solve text problems in mathematics.

While appreciating the scientific importance of the existing work on teaching younger students to independently solve textually problems in mathematics, it is necessary, however, to note that a number of aspects of the problem under study need further development. This applies primarily to teaching schoolchildren how to solve text problems, where, without deep proficiency in students' method of the comprehensive analysis of the conditions of the problem, its solution is difficult. The results of our many years of observation show that many schoolchildren have difficulties precisely in solving text problems. The main reason, in our opinion, is that the process of teaching schoolchildren (especially at a younger age) to independently solve textual problems in the practice of teaching in the schools of the Republic has not been sufficiently studied and covered in scientific and methodological literature (Walker, J. T. & Lofton S. P. 2003). Many methodological developments underestimate the role of generalized methods for solving text problems in teaching, there is no specially developed methodology for their use in the educational process.

Thus, the relevance of the study is that the solution of word problems is one of the main difficulties for schoolchildren in the study of mathematics. The latter is connected, in our opinion, with the fact that the method of teaching the independent solution of such problems indicates mainly the solution algorithms, but does not specifically teach working with the text of the problem.

In the teaching of mathematics, purposeful work on the analysis of the text of problems were practically not carried out: the didactic conditions of work with the text of the problem was little studied in the process of solving it; age and individual characteristics of schoolchildren were not revealed when learning to analyze problem texts. In this regard, it became necessary to develop such methodological techniques that would help overcome these drawbacks and make it possible for students to systematically from the necessary skills and skills for independent solving text-based mathematical problems. These circumstances led to the choice of the topic of our study.

The problem of the study is to establish the psychological didactic features of the process of solving text problems by younger students and justify on this basis ways to improve the teaching of solving text problems in the course of mathematics of elementary grades.

Our research is aimed at studying the features of the educational activities of younger students when working with the text of the task, depending on the form of its expression. Therefore, the goal of our research is to identify the main thinking skills that students form in the process of solving textual problems and to analyze their individual characteristics that are manifested when working with text tasks. Based on the results of these studies, we propose to develop a system of guidelines for teaching younger students to independently solve text-based problems.

The object of the research is the process of teaching students to solve text-based mathematical problems.

The subject of research is the analysis of individual characteristics, the development of mathematical thinking of younger students manifested in the work on the text of educational tasks that differ in the form of their expression.

The hypothesis of the study lies in the assumption that the formation of generalized methods of mental activity for solving text problems among students will contribute to the effective development of their mathematical thinking, the formation of skills and abilities to solve educational problems, since the generalized methods for solving text problems allow students to be equipped with a comprehensive method for analyzing the problem (analysis through synthesis).

In accordance with the stated goal, the following research tasks were identified to test the hypothesis;

1. To analyze the state of teaching students to solve text-based problems, determine the causes of difficulties experienced by younger students in the process of solving text-based problems, especially when analyzing the conditions of the problem in the process of finding a solution;
2. Identify ways to solve textual problems that students use when solving them independently in the context of existing learning;
3. To analyze the mental activity of schoolchildren in the process of solving text problems in the course of mathematics of elementary grades, to determine the individual characteristics of students manifested in the process of solving them (when reforming its verbal and visual elements);
4. A common way to analyze the content and solve text-based problems and test its effectiveness in students' independent work;

Develop a system of tasks for independent work in teaching students to solve text problems in the course of mathematics of elementary grades, taking into account the modern requirements for the mathematical preparation of schoolchildren, and check its effectiveness.

The methodological basis for the dissertation research was the doctrine of the social personality, the movement of knowledge from the individual through the particular to the general, the need to consider any pedagogical phenomenon in development, to establish its genetic basis and to comprehend essentially common connections, to resolve the contradictions between the schoolchildren's needs for mastering the generalized techniques for solving textual problems and the possibilities of their assimilation.

The basis of the study was the theoretical position of (S.L. Rubinstein1998) that the objective content of the task is revealed to the subject through transformations (re-formations) of the initial data through their active "scooping" in the process of solving the problem.

Research methods. Various methods were used to observe the process of solving text problems by elementary school students in order to isolate typical difficulties, mistakes and a set of the actual methods they use to transform the conditions of the problem. Analyzed a large number of methodical literature and didactic materials in order to highlight the requirements that are imposed by the teacher on the lessons of mathematics when learning how to solve text problems. The advanced experience of teachers and their own experience in teaching mathematics in high school and the pedagogical institute were studied and summarized. Different experimental techniques were used in the conditions of both individual and group (class) training; experimental programs were developed for the formation of a task for the younger schoolchildren to transform the task under the conditions of its special modeling.

Used ascertaining, training and control experiment. The data obtained with its help were supplemented and verified by interviewing teachers and students, using specially developed mathematical methods of data processing.

If you carefully analyze the content of the school course of mathematics, you can see that it mainly consists of theoretical substantiation of the ways of solving various types of problems. Therefore, it is natural that problem-solving is given great attention and considerable study time.

Modern studies of teachers - methodologists (L.G.Peterson 2012, A.N. Leontiev1972, M.I. Moro1991, G.G.Kochetkova1996, N.B.Istomina 2001, K.I. Neshkov, A.M. Pyshkalo 1973, etc.) are devoted to teaching methods for solving mathematical problems from the standpoint of the realization of learning activities in it. They define the purpose and functions of the tasks, aimed at the formation and development of elementary and logical thinking, spatial concepts, active mathematical computation, learning algorithms for solving text problems, the formation of self-control and self-evaluation of younger students.

Problem-solving is used for different educational purposes: to form students 'motivation and interest in learning activities, to illustrate and concretize the studied educational material, to develop students' special skills and abilities, to monitor and evaluate the results of their academic work, etc.

For example, motion problems play an important role and occupy a prominent place in the process of forming mathematical and physical representations. With their help, younger schoolchildren get an idea of the values and their measurements, the dependencies between them, the actions and properties of actions on numbers, etc. Mastering the skills of solving these tasks at the initial and secondary levels of training are the basis for mastering the concepts of functional dependence, in particular, solving problems indirect and inverse proportionality ensures mastering the ability to solve further a large class of economic, biological, physical and other tasks describing real phenomena of the world.

The state of mathematical development of students is most clearly characterized by their ability to solve problems. Tasks are the primary means of sharpening the thoughts of each student (Okereke, S. C. 2006). Of course, this is not about training exercises, but about word problems, the search for solutions to which is an important component of mathematical creativity accessible to children.

First of all, they should take into account that students can learn how to solve problems only by solving them. "If you want to learn how to swim, then feel free to enter the water, and if you want to learn how to solve problems, then solve them," writes Zinchenkoin the book "*Psychological basis of pedagogics*".

The solution of any rather difficult task requires from the student hard work, will and perseverance, which are most pronounced when the children are interested in the task. An interesting task is easier to solve, as it mobilizes mental energy. Therefore, the teacher must select such tasks so that students want to solve them.

Practice shows that schoolchildren perceive with interest the tasks of practical content, which allow showing the close interrelation of theory and practice. Students increase with an increase in how a theoretical problem arises from a practical task and how a purely theoretical problem can be given a practical form.

Tasks in the process of learning mathematics can serve the following didactic goals:

1) stimulate the study of mathematics;
2) perform introducing functions;
3) the ability to assimilate theoretical material (learning tasks);
4) to form the skills of solving basic typical tasks.
(training tasks);
5) to promote the development of intelligence, worldview, moral qualities (developmental tasks).

Proceeding from the didactic goals and the stage of mastering the material, the tasks are selected with the appropriate content and structure.

Speaking about the contents of the problem, we mean, firstly, its plot, which, in accordance with the goal can be either of an abstract-mathematical nature, or a concrete household, industrial, entertaining and secondly, that theoretical material (concepts, properties, formulas, rules, etc.), the assimilation of which will contribute to the task.

RESULTS

Solving problems, students acquire new mathematical knowledge, prepare for practical activities. Tasks contribute to the development of their logical thinking. Of great importance is the solution to problems in the education of the personality of students. Therefore, it is important that the teacher has a deep understanding of the text task, its structure, and is able to solve such tasks in various ways.

A textual task is a description of a certain situation in a natural language with the requirement to quantify a component of this situation, establish the presence or absence of a relationship between its components, or determine the type of relationship (Gallagher, S. A. 1997).

Problem-solving is a somewhat unusual job, namely mental work. And in order to learn any work, you must first thoroughly study the material on which you have to work, the tools with which this work is done (Okigbo, E. C. & Osuafor, A. M. 2008).

So, in order to learn how to solve problems, you need to figure out what they are, how they are structured, what constituent parts they consist of, what are the tools by which tasks are solved.

Each task is a unity of condition and purpose. If there is no one of these components, then there is no task. It is very important to keep in mind in order to analyze the text of the task in compliance with such unity. This means that the analysis of the condition of the task must be correlated with the question of the task and, conversely, the question of the task should be analyzed directionally with the condition. They can not be torn, as they are one.

The mathematical problem is a related laconic story in which the values of some quantities are entered and it is proposed to find other unknown values of the quantities that are dependent on the data and are associated with them by certain relations indicated in the condition (Madiyarov, N., Yessaliyev, A. A., Totikova, G. A. 2017). Any text task consists of two parts: conditions and requirements (question) (Lambros, A. 2002).The condition complies with information about objects and some values characterizing the object data, about known and unknown values of these values, about the relationship between them.

Task requirements are an indication of what needs to be found. It can be expressed by a sentence in an imperative or interrogative form ("Find the area of a triangle." Or "What is the area of a rectangle equal to?").

Consider the task: On a “Kirovets” tractor, a collective farm field can be plowed in 12 days, and on a Kazakhstan tractor - in 17 days. Both tractors were put for plowing. How many days will this field be plowed?

In the problem, there are five unknown values of quantities, one of which is in the requirement of the task. This value is called the desired value.

Sometimes tasks are formed in such a way that part of the condition or the whole condition is included in one sentence with the requirement of the task.

In real life, quite often there are a variety of task situations. Tasks formulated on their basis may contain redundant information, that is, one that is not needed to fulfill the task requirement.

On the basis of the task situations arising in life, tasks can also be formulated in which there is not enough information to fulfill the requirements. So in the task: “Find the length and width of a section of a rectangular shape, if it is known that the length is more than 3 meters wide” - there is not enough data to answer her question. To accomplish this task, it is necessary to supplement it with missing data.

The same task can be considered as a task with a sufficient amount of data depending on the existing and decisive values.

Considering the task in the narrow sense of this concept, it is possible to distinguish the following components in it:

1. Verbal presentation of the plot, which explicitly or in a veiled form indicates the functional relationship between the quantities, the numerical values of which are included in the task.
2. Numeric values or numeric data referred to in the text of the problem.
3. A task, usually formulated in the form of a question in which it is proposed to find out the unknown values of one or several quantities. These values are called sought.

Tasks and their solution occupies a very significant place in teaching schoolchildren both in time and in their influence on the mental development of a child.

Understanding the role of the task and its place in the education and upbringing of the student, the teacher must approach the selection of the task and the choice of solutions to reasonably and clearly know what the student should give work in solving the problem given to them.

The initial course of mathematics is revealed on the system of effectually selected problems. A significant place is occupied in this system of word problems. When considering the meaning of arithmetic actions, the relationship existing between actions, and the relationship between components and results of actions, the corresponding simple textual problems (problems solved by a single arithmetic operation) are used without fail. Textual tasks also serve as one of the most important means of familiarizing children with mathematical relationships, expressed by the words "to be so much more (less)", "to be so many times more (less)". They are also used to clarify the concept of a fraction (the task of finding a fraction of a quantity and the desired value of magnitude by a fraction). Textual problems help in the formation of a number of geometric concepts, as well as in the consideration of elements of algebra.

If we want to form the correct notion of addition among schoolchildren, it is necessary for the children to solve a sufficient number of simple tasks for finding the sum, practically performing each time the operation of combining sets without common elements. Speaking in the role of concrete material for the formation of knowledge, the tasks make it possible to connect theory with practice, learning with life. Problem-solving forms of students practical skills necessary for every person in everyday life. For example, calculate the cost of the purchase, calculate at what time it is necessary to go out so as not to be late for the train, etc.

Using tasks as a concrete basis for acquainting oneself with new knowledge and for applying already existing knowledge to students play an extremely important role in shaping the elements of the materialistic world view (Gallagher, S. A., Stephien, W. J., Sher, B. T. &Workman, D. (1999). Solving problems, the student is convinced that

many mathematical concepts are rooted in real life, in the practice of people.

Through problem-solving, children become acquainted with facts that are important in terms of cognition and education. Thus, the content of many tasks solved in primary classes reflects the work of students and adults, the achievements of our country in the field of the national economy, technology, science, and culture.

The process of solving problems with a certain methodology has a very positive effect on the mental development of schoolchildren since it requires the performance of mental operations: analysis and synthesis, concretization, and abstraction, comparison, generalization. Thus, in solving any problem, the student performs an analysis: separates the question from the condition highlights the data and the desired numbers; outlining the solution plan, he performs the synthesis, using the specification (mentally draws the condition of the problem), and then abstracting (distracting from the specific situation, chooses arithmetic operations); As a result of the repeated solution of problems of any type, the student summarizes the knowledge of the relationships between the data and the desired one in problems of this type, as a result of which a method of solving problems of this type is generalized.

Tasks perform a very important function in the initial course of mathematics - they are a useful means for developing students' logical thinking, the ability to analyze and synthesize, generalize, abstract and concretize, reveal the connections that exist between the phenomena under consideration.

Problem-solving - exercises that develop thinking. Moreover, the solution of problems contributes to the education of patients, perseverance will help to awaken interest in the process of finding the solution itself, makes it possible to experience deep satisfaction associated with a successful solution.

Mastering the fundamentals of mathematics is unthinkable without solving and analyzing the problem, which is one of the important links in the chain of knowledge of mathematics, this type of study not only activates the study of mathematics but also paves the way for a deep understanding of it (Tick, A. 2007). The work on understanding the course of solving a particular mathematical the problem gives impetus to the development of the child's thinking. Problem-solving cannot be considered an end in itself; they should be seen as a means for an in-depth study of theoretical positions and, at the same time, a means of developing thinking, a way of understanding the surrounding reality, a path to understanding the world.

In addition, we must not forget that solving problems brings up many positive qualities of character in students and develops them aesthetically.

All arithmetic problems according to the number of actions performed to solve them, are divided into simple and composite. The task for which you need to perform an arithmetic operation once is called a simple one. The task for which you need to perform several actions is called compound.

Simple tasks in the mathematics education system play an extremely important role. By solving simple problems, one of the central concepts of the initial course of mathematics is formed — the concept of arithmetic operations and a number of other concepts. The ability to solve simple tasks is a preparatory stage for students to master the ability to solve composite problems, since solving a composite problem is reduced to solving a number of simple tasks. When solving simple problems, the first acquaintance with the task and its component parts takes place.

In connection with the solution of simple problems, the student masters the basic techniques for working on the task.

At the first stage of the acquaintance of students with a simple task, the teacher simultaneously faces several rather difficult problems:

1) It is necessary that the secondary signals to certain concepts related to the task enter and strengthen the consciousness of the students.

2) Develop the ability to see in the task the given numbers and the desired number.

3) Teach to consciously choose actions and identify the components of these actions. Resolving these problems cannot be arranged in a specific sequence. In classes with students, quite often one has to achieve results, not one after the other but to go towards achieving several goals at the same time, gradually developing and expanding the achieved progress in several directions.

When familiarizing with tasks and solving them, specific terms cannot be avoided, but children should understand them in order to be aware of the meaning of the task. Work with children on the assimilation of terminology begins with the first days of classes at school and is conducted systematically throughout all the years of study.

A composite task includes a number of simple tasks that are interconnected in such a way that the sought-for ones of simple tasks serve as data of others. The solution of a composite problem is reduced to its dismemberment into a series of simple tasks and to their consistent solution. Thus, to solve a composite problem, it is necessary to establish a system of relations between the data and the desired one, in accordance with which to choose, and then perform arithmetic operations.

Consider the problem as an example: “8 girls were on duty at school, and 2 more boys. How many children were on duty at school? ”

This task includes 2 simple ones:

1. 8 girls were on duty at school, and 2 more boys. How many boys were on duty at school?

2. At school, 8 girls and 10 boys were on duty. How many children were on duty at school?

As you can see, the number that was sought in the first task was given in the second.

Sequential solution of these problems is the solution of the composite problem: 1) 8 + 2 = 10; 2) 8 + 10 = 18.

Recording the solution of a composite task by composing an expression on it allows the students to focus their attention on the logical side of the work on the task, to see the course of solving it as a whole. At the same time, students learn to write down a plan for solving a problem and save time.

Recording the solution of many composite problems and composing expressions on them are associated with the use of brackets. Brackets - a mathematical symbol used for the procedure. In brackets is the action that needs to be performed earlier.

In the solution of a compound problem, a substantially a new one appeared compared to the solution of a simple problem: not one a connection is established here, but several, in accordance with which arithmetic operations are developed. Therefore, special work is being done to familiarize students with a complex task, as well as to develop their skills to solve composite problems.

DISCUSSION

In the process of solving textual problems, students from the skills and abilities to model real objects and phenomena, translate real-life situations into a mathematical language. The system of selection of tasks, the definition of time and sequence of introduction of tasks of one kind or another provide favorable conditions for comparison, comparison, the opposition of tasks similar in one or another respect, as well as for consideration of reciprocal tasks. With this approach, children are trained from the very beginning to analyze the problem, establishing a connection between the data and the desired one, and consciously choose the right action to solve it. The solution of textual tasks is related to the formation of a number of skills: consciously reading and analyzing the content of the task (what is known and what is unknown, what can be learned from this condition and what you need to know to answer the question of the task); simulate the situation presented in the text; see different ways to solve the problem and consciously choose the most rational; draw up a plan of decision, justifying the choice of each arithmetic operation; write down the decision (first by action, and later forming an expression); make the necessary calculations; verbally give a complete answer to the question of the problem and check the correctness of its solution; independently makeup tasks.

It is impossible not to note the fact that often when solving problems, students also arouse interest in the very process of finding a solution, and when they reach the goal, children receive moral satisfaction (with proper organization of work on the task) (Roh, K. H. 2003). When solving problems, children receive new knowledge and systematize those obtained earlier.

Theoretical knowledge of the tasks and solutions students need in order to enable them to solve various tasks consciously and purposefully, and not only on the basis of imitation, by the analogy with previously solved problems. If a student has the necessary system of knowledge and skills to conduct a search for a solution to problems correctly and in a disciplined way, then all technical difficulties will be relegated to the background, and the learning and cognitive goal of solving problems will come to the first.

To solve a problem, it is necessary to consider it as an object for analysis, and its solution as an invention of a solution method. For this purpose, the basic principles of didactics should be applied: the principle of science - reflects the relationship with modern scientific knowledge. This principle embodies the selection of the material being studied, in the order and sequence of conducting scientific concepts in the educational process. The principle of science focuses the teacher on the involvement of students in the analysis of the results of their own observations and their independent study; the principle of systematically and consistency - gives a systemic nature of learning activities, theoretical knowledge, practical skills of students. This principle involves the assimilation of knowledge in a certain order, system. When solving problems using equations, the nature of the relationship between the elements of the problem condition may become more complex; the principle of the connection of training with practice - provides that the learning process stimulates students to use their knowledge in solving practical problems. For this purpose, analysis of examples and situations from real life is used, correlation of the task conditions with life situations, analysis of the task conditions; the principle of accessibility - requires taking into account the characteristics of the development of students, analysis of the material in terms of their real capabilities and such an organization of training so that they do not experience intellectual, moral, physical overloads. Accessibility should consist of teaching students new material, based on their knowledge, experience, and peculiarities of thinking; the principle of clarity - means that the effectiveness of training depends on the appropriate involvement of the senses in the perception and processing of educational material. In the learning process, visual aids are used: models, drawings, diagrams, etc. The types, the visibility that can be used to solve problems are experimental visibility (experiments, experiments); symbolic and graphical visibility (graphics, charts, etc.); internal clarity (images created by the speech of the teacher).

However, the use of visibility should be to the extent that it contributes to the formation of knowledge and skills, the development of thinking. So, when solving a problem, the younger student should move from the figurative representation of the processes described in it to their recording with the help of diagrams, graphs and operate with signs and symbols.

Taking into account age-related features is one of the fundamental pedagogical principles, therefore, to analyze the possibility of organizing a particular type of activity at a given age, it is necessary, first of all, to know the main features of this age.

Consider the features of the cognitive sphere of the younger student, which play a significant role in the formation of skills to solve text problems.

When a child enters school, under the influence of leading learning activities, the restructuring of all of his cognitive processes begins. The common characteristics of all cognitive processes of a child should be their arbitrariness, productivity, and stability.

In the field of perception, there is a transition from the involuntary perception of a preschooler child to the purposeful, arbitrary observation of an object subject to a specific task. The solution of word problems develops perception since the student needs to select from the text, only those data that are necessary for the solution. Research psychologists found that the perception of the problem is different for many younger students. A student capable of mathematics perceives both single elements of a task, and complexes of its interconnected elements, and the role of each element in a complex. The average student perceives only individual elements of the task. Therefore, when learning how to solve problems, it is necessary to specifically analyze with students the relationship and relationships of the elements of the problem. This will facilitate the choice of methods for processing the task conditions.

When solving problems, it is often necessary to access memory. Memory acquires a pronounced cognitive character, features of arbitrariness, becoming consciously regulated and mediated. Changes in the field of memory is connected with the fact that the child, firstly, begins to realize a special anemic task (the task of memorization), and secondly, there is an intensive formation of memorization techniques: from the most primitive methods (repetition, the attentive long-term examination of the material) in the older age, the child moves to the group, understanding the links of different parts of the material. In general, the younger student has a fairly good memory, especially for mechanical memory.

CONCLUSION

And yet, why is this material difficult for students? Separate instructions of teachers on problem-solving are quickly forgotten by students, they do not acquire the skills of solving text problems. Without a specific program of student activities, without algorithms, a system for finding a solution to a problem, it is difficult to organize the process of solving problems. Therefore, "accelerators" are necessary for acquiring solution skills: illustration, charts, tables, additional symbols, conventional symbols, arrows, which contribute to a more specific visual representation of the relationship between the parts of the problem, the relations between the quantities, the order of these relations. This allows students to stimulate the development of visual-effective thinking and on the basis of it in the future - figurative thinking. Finding a solution to a textual problem by compiling a table makes it possible to cover the relationship between the elements of the entire task.

Summing our article, we can say that the goal of our work has been fully achieved. The ability to solve problems using certain methodological techniques will allow younger students to more freely orient themselves in the simplest mathematical laws of the surrounding reality and to use their knowledge in the further study of the course of mathematics. In the process of studying the psychological and pedagogical literature, we found that the word problems included in the initial course of mathematics are designed to solve the triune the task of teaching mathematics: to promote the mastery of mathematical knowledge, the formation, and education of the personal qualities of younger students, the development of their mental processes. With the help of textual tasks, the teacher reveals the essence of theoretical principles, works out the ability to perform computational techniques, establishes interdisciplinary connections and demonstrates the application of mathematical knowledge and skills to solving life problems.

The undertaken research and the objective results obtained in it make it possible to draw the following conclusions:

-the decisive role in the organization of activities in the lesson of mathematics with the method of solving textual arithmetic problems is assigned to the activities of the teacher;

- when solving textual arithmetic problems, we consider it expedient to observe the phased introduction of work methods into teaching activities, taking into account their importance and relevance;

It is possible to identify the main reasons that cause students difficulties in finding a solution:

1. The inability to isolate the quantities referred to in the problem.
2. The inability to establish a functional relationship in mathematical symbols.
3. The inability to express this dependence in mathematical symbols.
4. Weak skills of the schematic and symbolic recording of the conditions conducive to the analysis of the problem, the expression of dependencies between the quantities included in the task.

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