

THE PROBLEM OF THE ORGANIZATION OF PRACTICE-ORIENTED TEACHING IN THE SCHOOL COURSE OF MATHEMATICS

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The universality of mathematical methods in the school system allows in formal concepts of algebra, of geometry and mathematical analysis at the level of general scientific methodology reflect the connection of theoretical material of various fields of knowledge with practice. Therefore, practice-transformative activity, as a manifestation of the functioning of the content of the course of mathematics in high school, determines the significance of mathematics in preparing students for continuing education in the process of professional development.

The study of the problems associated with the strengthening of the social function of the school course of mathematics at the senior level of education, with the education of students in the conviction of the importance and effectiveness of the knowledge gained, is the fundamental study of many domestic teachers, psychologists and methodologists. In particular, the role and importance of mathematics in the development of interdisciplinary connections and the formation of practical skills in students are considered in the works of M.B.Balk, B.V. Gnedenko, V.A. Guseva, F. V.Monakhov, A.G.Mordkovich, E.G.Plotnikova, R.S. Cherkasova, A.V. Usova, V.V.Firsova and others researchers. Aspects of the formation of professional skills among senior pupils, which are part of the educational and cognitive activity in the process of studying mathematics, are examined in studies by E.K.Breitigam, N.Ya. Vilenkina, G.V.Dorofeeva, V.A. Dalinger, O.B.Epischeva, L.G.Peterson.

The analysis of the works of these researchers from the standpoint of allocating funds to establish a substantive and methodological connection between the school course of mathematics and the professional component of education allows us to conclude that this connection is due to the applied focus (V.A. Dalinger, Yu.M.Kolyagin, V.V. Firsov and others.). At the same time, the main carrier of this orientation is practice-oriented (applied and practical) tasks (A.Azevich, E.V. Velichko, M.V. Krutikhina, V.A. Petrov, V.V.Pikan, N.A.Tereshin, A.N.Tikhonov, Yu.F.Fominykh, I.M. Shapiro and others.), one of the stages of the solution of which in the theory of the integration of didactic units (P.M.Erdniev) is the task.

The introduction of conceptual changes in education policy requires an understanding and concrete definition of the results of these studies from the standpoint of modern directions of its modernization. In addition, the practical introduction of any innovation generates a dialectical contradiction between the current socially-conditioned paradigm of building the process (including the educational process) and the levels of readiness of the subsystems of this process, ensuring its functionality. In particular, modern requirements for graduate schools, which are a subsystem of the educational process, are based in the aspect of applied focus not only on the general criteria of the scope and completeness of specific skills of the previous educational paradigm, but also on the individual characteristics of the subject preparing for future work.

The problem of organizing practice-oriented learning is not completely new, but nevertheless it is still relevant today, since modern education must orient the student towards solving the real problems that he will encounter in life. By practice-oriented tasks we will understand tasks, the material for the compilation of which is taken from the surrounding reality and is focused on the development of practical skills of students.

An important role in the system of preparing students for the application of acquired knowledge for practical purposes belongs to the study of the school course of mathematics, since the universality of mathematical methods allows to reflect the connection of theoretical material

with practice at the level of general scientific methodology.

A practice-oriented task is a textual task, which is not only didactic in nature, but also the reliability of the described situation, and the availability of its mathematical resolution by means of school mathematics. In practice-oriented tasks, an important understanding is the non-mathematical situation described in its plot. Students in this situation rely not only on mathematical knowledge, but also on life experience. If this understanding is absent or insufficient for a student, then the solution of the mathematical part of the problem leads to difficulty.

The inclusion of practice-oriented tasks in separate sections of the school mathematics course is one of the important directions in the development of school mathematics education. Currently, the school still continues to focus on learning, releasing a trained person into life, but nowadays, the information society asks for a learner person who is able to learn independently and is ready for real actions and decision making. This determines the importance of mathematics in the formation of students' ability to solve problems arising in the process of practical human activity.

By practice-oriented tasks we will understand mathematical tasks, the contents of which describe situations from surrounding reality related to the formation of practical skills of using mathematical knowledge and skills necessary in everyday life, including using materials of local history, elements of production processes. The solution of problems of this type is largely based on the construction of a model of a real situation described in a specific problem. It is the compilation of the model that requires a high level of mathematical preparation and is the result of training, which it is expedient to call general cultural. Important distinctive features of practice-oriented tasks are: the significance of the result obtained, which provides the student's cognitive motivation; which are not explicitly indicated in the text of the task; information and data in the task can be presented in various forms (figure, table, diagram, chart, graph, etc.), which will require object recognition; an indication (explicit or implicit) of the application of the result obtained in solving the problem.

Types of practice-oriented tasks:

- Analytical - is the definition and analysis of the goal, the choice and analysis of the conditions and methods of solution, means to achieve the goal;
- Organizational preparatory is the planning and organization of practice-oriented work of individual, group or collective creation of objects; analysis and study of the properties of objects of labor, the formation of concepts and the establishment of links between them.
- Evaluation-correction - is the formation of action assessment and correction of the process and results of activities, the search for ways to improve, analysis of activities [1].

Important distinctive features of practice-oriented tasks are [1]:

- significance: cognitive, professional, general cultural, social, the result obtained, which provides the cognitive motivation of the student;
- the condition of the problem is formulated as a plot, situation or problem, for solving which it is necessary to use knowledge from different sections of the main subject - mathematics, from another subject or from life, which are not explicitly indicated in the text of the task;
- information and data in the task can be presented in various forms: figure, table, diagram, chart, graph, etc.
- indication (explicit or implicit) of the scope of the result obtained in solving the problem [2].

One of the characteristics of practice-oriented tasks is their irregularity, i.e. In the structure of the task, some of its components are undefined. Another feature is the presence of varying degrees of rationality - there are several ways to solve the problem. Also, the problem has a rather voluminous statement of conditions in the presence of redundant or missing data.

Learning using practice-oriented tasks leads to a more solid assimilation of information, as associations arise with specific actions and events. The peculiarity of these tasks (unusual wording, communication with life, interdisciplinary communication) cause an increased interest of students, contribute to the development of curiosity, creative activity. Schoolchildren captures the

process of finding solutions to problems. They get the opportunity to develop logical and associative thinking to ensure the development of the student's personality: observation, the ability to perceive and process information, to draw conclusions figurative and analytical thinking; the ability to apply the knowledge to analyze the observed processes; development of creative abilities of students; disclosure of the role of mathematics in modern civilization; assistance to school graduates in determining the profile of their future activities.

The constant use of practice-oriented tasks in teaching mathematics at school will allow the student to consolidate and deepen the theoretical knowledge, to acquire skills and skills in the academic discipline, to be able to link the educational process with real life conditions, to show initiative and independence.

During school, each of the students, thanks to the efforts of teachers of mathematics, solves a huge number of different learning problems. But one day many of us ask ourselves a question: «Why do we spend so much time and effort on teaching children their solutions?». On the one hand, the ability to solve problems is one of the main indicators of the level of development of students, the depth of development of educational material. Therefore, any "exam" in mathematics, any test of knowledge contains as the main one - problem solving. And this goal, with varying success, is achieved, moreover, when teaching any of the programs in any educational system. In the need to learn how to solve problems, there is another "side" (besides the developing one) - the applied one. Party associated with the ability to "apply acquired knowledge and skills in real life situations", "applied" orientation of education[3].

The didactic goals of practice-oriented tasks:

- Consolidation and deepening of theoretical knowledge.
- Mastering the skills of the academic discipline.
- Formation of new skills.
- Approaching the educational process to the real life conditions.
- The study of new research methods.
- Mastering general educational skills and skills.
- Development of initiative and independence.

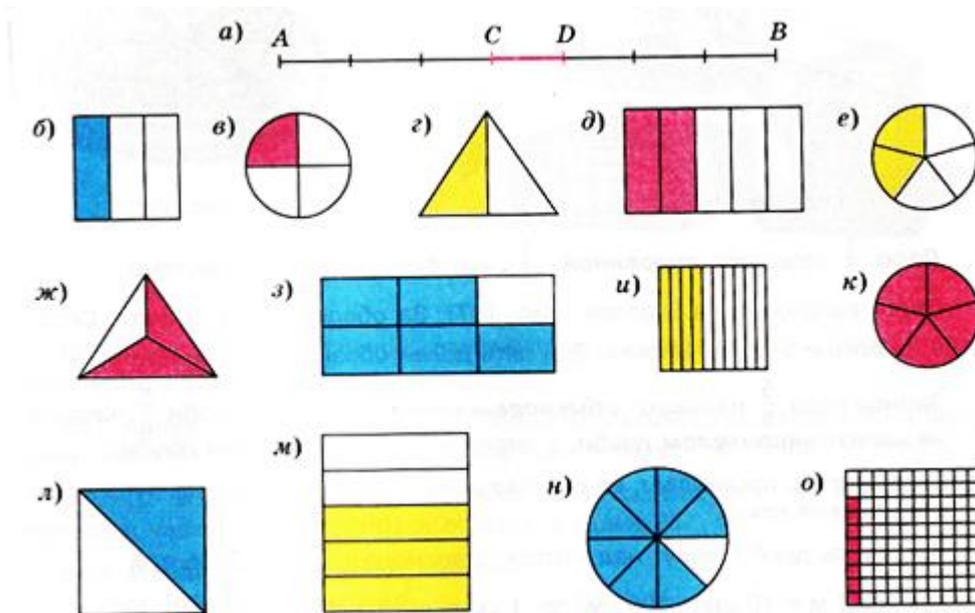
I will give examples of practice-oriented tasks that I use at different stages of the lesson:

Organizational-motivational stage. At the beginning of the lesson I use mainly such methods of activation, which provide the students to realize the need to learn new material or perform a specific task.

Oral work.

Oral work activates students' cognitive activity.

V class Subject: "Ordinary fractions". What part of the figure is painted over? [4].



V class The topic "Signs of divisibility».

Each package contains 3 kg of sugar. Could it be that in all packages 123 kg of sugar? 145 kg?

V class "Volume of a rectangular parallelepiped".

Task: Find the volume of the aquarium for fish, having the shape of a rectangular parallelepiped. To complete this task, students should measure the length, width, and height of the aquarium. Calculate by the formula of the volume of a rectangular parallelepiped.

Lessons using practice-oriented tasks contribute to a more solid assimilation of information, as they evoke associations with concrete actions and events by students. The peculiarity of these tasks is an unusual formulation, connection with life, interdisciplinary connections. These tasks increase student interest in the subject; develops their cognitive activity.

Practice-oriented tasks emphasizing the connection of mathematics with life and other sciences are the key to success in the development of the personality of students.

V class Subject "Natural numbers»

1. In the school canteen eats 1045 people. Each year relies 15 g of oil per day. How many packs of oil for 180 g will be needed for 1 day?

2. In one package there are 4 times more candies than in the other, and there are 950 g in total. How many grams of candies are in each package?

3. In one tank of gasoline less than the other, 9 times, or 960 liters. How much gasoline in each tank?[4].

From which it can be concluded that the role of practical tasks is enormous. They reveal all the diversity of the practical application of mathematical knowledge gained in the classroom; consolidate and deepen this knowledge in practice; develop logical, cognitive thinking; teach

children to make their own decisions and see the significance of learning mathematics in general.

Class VI Theme: "Rational Numbers» [5].

The table shows the air temperature from February 1 to February 5, 2018. Find the average air temperature these days.

02.02
03.02
04.02
05.02
-10
-4
-1
+2
+3

Mathematical dictations. For mathematical dictations, you can use reference books on local history, history, geography and Internet resources. Dictation allows for interdisciplinary connections with the subjects of history and geography». Such tasks help to raise the self-esteem of students who have difficulty in studying mathematics, but are interested in the humanities and natural sciences.

Class VI Subject: "Interest." Task: Eldorado stores held a New Year sale of household appliances. So the old price of the TV was 200,000 tenge, and the new one became 180000 tenge. For how many percent the goods went down?

The stage of learning new material.

When studying a new material, I use the technique of creating a problem situation.

VI class. The theme "Decimal Fractions».

The patient is prescribed a medicine that you need to drink 0.5 g 3 times a day for 8 days. In one pack of 10 tablets of medicine at 0.25 g. What is the smallest number of packages enough for the entire course of treatment?

The stage of application (consolidation) of the knowledge gained.

VI class. Theme "Interest". I propose various tasks:

1) In the library, 12% of all books are dictionaries. How many books in the library, if the dictionaries in it 900?

2) The electrician from the coil of wire cut off first 30% and then another 60% of the remainder. After that, 42 m of wire remained in the coil. How many meters of wire was in the bundle originally?

Output control. At this stage, I use such types of work as tests and mathematical dictations. For the compilation of test tasks, you can use the tasks of centralized testing.

The stage of determining homework. Students receive practice-oriented tasks. For the development of cognitive activity, I propose to create practice-oriented tasks on the topic of the

lesson.

Before studying a new topic, you can offer a practical task that initially seems simple to students, and the answer to which they will give immediately. But the answers received will be different, because of which a dispute will arise. Active discussions during the dispute will enthrall students, they will want to know the right decision and the answer that they can get only by studying a new topic.

VI class. The theme is "Interest and proportions».

1. The notebook costs 4 tenge. How much will the notebook cost after the price drop by 20%?
2. 400 kg of apples were brought to the store. On the first day, they sold 15%, and on the second day, 0.5 remained. How many apples are left in the store?
3. To prepare asphalt, 43.06% of crushed stone, 40.19% crushed sand, 4.78% natural sand, 4.31% bitumen, 7.66% mineral powder are taken. How much should you take each substance to weld 12 tons of asphalt?
4. To make muffins for every 100 grams of dough, take 30 grams of raisins. How many raisins should be taken for 1.5 kg of dough.
5. The family collected 17 kg of apples. How much will fresh juice, if the juice is 80% by weight of all apples?
6. Bought 15 kg of pears. They decided to spend 40% of all the pears on the compote, and the rest went for jam. How many kg of sugar you need to buy for jam, if for 1 kg of fresh pears you need 800 g of sugar?
7. To repair the apartment bought 23 rolls of wallpaper. How many packs of wallpaper glue you need to buy, if two packs of glue is designed for 8 rolls?
8. In the fall, the family consumes 300 kWh of electricity. In winter, consumption increases by 20%, and in spring decreased by 40%. What was the consumption of electricity? [5].

Each component of the practice-oriented task is subject to the fact that this task should organize the student's activity, and not the reproduction of information or individual actions.

The development of schoolchildren skills in solving practice-oriented problems in the process of teaching mathematics should be considered as one of the methods for developing their mathematical competence. Such an approach to learning allows the school graduate to solve problems arising in life and in professional activities.

The use of practice-oriented tasks in the educational process provides students with mastery of a number of universal educational activities: the ability to work with information, select and select the most important, build their own solutions and justify them, work in pairs and in groups. Observations on the activities of students indicate that the frequent use of practice-oriented tasks provides an increase in students' interest in learning activities, the formation of positive motivation in the classroom. In the future, I set myself the goal to continue work on the compilation and use of practice-oriented tasks in a mathematics class at a primary school to ensure stable results in the study of mathematics.

Tasks

Summer kilogram of strawberries costs 1100 tenge[4,5].

1. Mom bought 3 kg of 200 g of strawberries. How much change should she receive from

5000 tenge?

2. Every day the price of strawberries falls by 10%, how much will mom pay for the same purchase in 3 days?

3. Grandma bought strawberries for 2750 tenge, laid it in baskets of 500 grams for each grandson. How many grandchildren have a grandmother ?

Ball pen costs 150 tenge.

1. How much will a buyer pay for 7 ballpoint pens and 7 notebooks at a price of 60 tenge?

2. By September 1, the price of stationery increased by 50%. Will Roman be able to buy 10 pens for 2500 tenge for the Day of Knowledge?

3. What is the largest number of such pens you can buy for 2500 tenge after the price increase by 25%?

In a pack of paper 250 sheets of A4.

1. Will there be enough one pack for printing examinations for 4 classes in the amount of 95 people, if the control one consists of 3 sheets?

2. In a week, 700 sheets are consumed in the computer science office. What is the least amount of paper packs you need to buy at the office for 8 weeks?

3. On Monday, they spent 25 sheets, on the next day they spent 10 sheets more than the previous one. What day of the week will a pack of paper end?

T-shirt cost 4000 tenge.

1. For a school team of fans of 24 people bought t-shirts and a logo for 650 tenge. How much did this purchase cost the school?

2. After reducing the price, it began to cost 3400 tenge. By what percentage was the price of a t-shirt reduced?

3. Paying by card, you can get a discount of 20%. 1/3 of the school team of fans paid with a card to buy T-shirts, and the rest in cash. How much paid for the form of the whole team?

A train ticket for an adult costs 4,200 tenge. The cost of a student ticket is 50% of the ticket price for an adult. A group of 20 children is entitled to one room for a companion.

1. How much will a family of 2 adults and one child pay?

2. The group consists of 18 schoolchildren and 3 adults. How much are tenge tickets for the whole group?

3. How much should I pay if there are 45 children and 3 accompanying travelers on the trip?

The patient is prescribed a medicine that you need to drink half a tablet 2 times a day for 21 days. The drug is available in packs of 8 tablets.

1. What is the smallest number of packages enough for the entire course of treatment?

2. The cost of one package is 930 tenge. How much to pay for the purchase?

The cost of one package is 930 tenge. How much to pay for the purchase. How many buses are required to transport everyone from camp to town?

10. The retail price of the textbook is 2000 tenge, it is 20% higher than the wholesale price. Wholesale price from 10000 tenge.

1. At what price will textbooks be sold if mom buys textbooks to her sons and four classmates?

2. What is the largest number of such textbooks available at wholesale price of 46,000 tenge?

5 class students bought a book at a retail price. How many students are in a class, if the total amount is 34,000 tenge [6].

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