DIDACTIC GAMES IN TEACHING MATHEMATICS

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ABSTRACT

This article focuses on the usage of didactic games in teaching of mathematics in schools. Entertaining elements of mathematics lessons favor increasing interest to the subject as well as the development of logical thinking. A lesson containing elements of the game is a form of interaction between the teacher and the students. Through the system of game actions, educational opportunities are realized inherent in the content of educational material. Play is creativity, play is labor.

KEYWORDS: *Didactics, Technology, Crosswords, Screen Tools, Entertaining Texts, Oral Methods, Math Quizzes, Thinking.*

INTRODUCTION

The school course of mathematics is acquiring an increasingly important role in the system of general education of students. The math teacher has to solve problems every day how to make the most productive use of every minute of the lesson. It is necessary to look for effective ways to solve this problem. At each lesson, the teacher faces a number of tasks: how to bring all the necessary information to the consciousness of each student, how to achieve the assimilation of theoretical and practical material, how to form and maintain students' interest in the study of mathematics. This task is one of the most difficult. After all, mathematics is a science that requires a lot of mental stress, the development of logical thinking and creative abilities. Therefore, to arouse students' interest in mathematics, to keep them active throughout the lesson, it is useful for the teacher not to miss an opportunity to make the lesson more entertaining. The elements of entertainment are also conducive to the development of students' creativity. The growth of interest in knowledge, the activity of students in the classroom, the formation of

positive motives for learning, an increase in the effectiveness of the learning process is facilitated by the use of didactic games, fairy tales, crosswords, mathematical quizzes, tests, elements of historicism, tables, posters, as well as the use of tasks - drawings, mathematical dictations, on-screen teaching aids, handouts, signal cards, various types of frontal polling, etc. etc. Computer technologies can play a special role the formation of positive motives for learning, an increase in the effectiveness of the learning process is facilitated by the use of didactic games, fairy tales, crosswords, mathematical quizzes, tests, elements of historicism, tables, posters, as well as the use of tasks - drawings, mathematical dictations, on-screen teaching aids, handouts, signal cards, various types of frontal survey, etc. etc. Computer technologies can play a special role the formation of positive motives for learning, an increase in the effectiveness of the learning process is facilitated by the use of didactic games, fairy tales, crosswords, mathematical quizzes, tests, elements of historicism, tables, posters, as well as the use of tasks - drawings, mathematical dictations, on-screen teaching aids, handouts, signal cards, various types of frontal survey, etc. etc. Computer technologies can play a special role...

In order for teaching to be effective, it is necessary to use in a complex all the variety of techniques and teaching methods, which we tried to do when developing lessons on the topic "Quadrangles".

About didactic games. An important role is given by us to didactic games in mathematics lessons - a modern and recognized method of teaching and upbringing...

We use the following considerations. A lesson containing elements of the game is a form of interaction between the teacher and the students. Through the system of game actions, educational opportunities are realized inherent in the content of educational material. Play is creativity, play is labor. During the game, students develop attention, a desire for knowledge. Carried away, children do not notice that they are learning: they learn, remember new things, orient themselves in unusual situations, replenish their stock of ideas, concepts, and develop imagination. Even the most passive students are included in the game, making every effort not to let down their playmates. Children tend to be alert, focused and disciplined during play.

We have developed games "The third extra", "Who - who lives in the little house", "Silence".

The game "The third extra" is convenient to use when consolidating the studied material. Students are offered three figures (quadrangles), two of which have common properties (at least one), and the third figure does not have this property, therefore it turns out to be "superfluous". The student's task is to determine the "extra" figure. The use of such a game does not lead to simple memorization of the textbook material, but to the development of students' ability to analyze facts and think logically. This game can be used to study other topics in geometry and other subjects.

Information about the quality of assimilation of theoretical material can be obtained by using the game "Who - who lives in the little house". And to quickly receive feedback from all classes - the game "Silence" using signal cards (red, yellow, green), it helps the teacher to save time in the lesson, discipline students and at the same time receive information about the assimilation of the material by all students in the class. For example, when questioning, if a student at a desk agrees with the answer of the responding student, then he raises a green card, and if not, a red one. Thus, each student has the opportunity to "speak out". (Let's agree that the green card

corresponds to the statements "yes", "true"; red - "no", "not true"; yellow - "there is an addition"). This game can be used not only for interviewing students, but also for oral exercises.

Crosswords... The use of crosswords helps not only to arouse students' interest in mathematics, but also contributes to the development of their creative abilities, develops ingenuity. It is often difficult for a teacher to achieve this. so that students thoughtfully repeat this or that material and, especially, their active participation during the participation of repetition in the lesson. And here crosswords can help the teacher. In order to compose or solve a crossword puzzle, a student must work with a textbook, learn to highlight the main thing in definitions, concepts, theorems.

Screen tools. The mathematics teacher has at his disposal a lot of teaching methods and means, including on-screen ones. Along with tables, handout cards can be considered the most promising slides - specially prepared separate frames for demonstration using a computer.

Entertaining texts. Sometimes, to enhance the impression on an important topic, you can tell or invite students to write a fairy tale. This is exactly the case presented to us in the first lesson, where the definition of a quadrangle is introduced. We decided to introduce students to the classification of quadrangles using a fairy tale.

Elements of historicism. The use of elements of historicism in teaching mathematics is also a very effective and efficient tool. The history of mathematics shows that mathematics by its origin is not the product of "pure reason", but originated from the practical needs of man and was formed as a result of the mental and practical activities of people for many centuries. It is necessary to reveal to students that mathematical concepts change and develop on the basis of practice, i.e. to reveal the dialectical path of development of mathematics. Therefore, we decided to include a historical minute in the lessons, during which we acquaint students with the history of the origin of the concept in question.

Testing... One of the modern methods of testing students' knowledge is testing. We directly use tests in the development of lessons and therefore the control work on the topic was carried out using tests.

Oral methods. Oral work in the lesson also has great educational value, developing the mental activity of students, it brings revitalizing variety to the course of the lesson. The use of oral exercises in the lesson allows you to productively and economically put the work on deepening and consolidating knowledge. We included in the lessons oral work with a table - an assignment, oral work on ready-made drawings in the form of a frontal survey, a mathematical quiz.

An ordinary survey does not arouse proper interest among students, therefore, during the frontal survey, we also use special exercises that require students to be able to apply definitions, theorems in various situations, and the ability to quickly navigate in the conditions of a problem.

The task table allows you to quickly and efficiently carry out work to consolidate the material under study, organize a repetition of the passed. The work carried out using this table, activates the attention of students, is at the same time a change in the types of activities in the lesson[1]...

Also, ready-made drawings, figures drawn in bright colors on a poster and used during oral work are good at concentrating the attention of students. They help to highlight equal, proportional elements (the teacher and students agree to indicate equal elements in one color with a smooth line, and proportional elements with a dotted line). In addition, such exercises educate students

aesthetically, which arouses interest in the subject. Psychologists noted that when depicting diagrams, drawings, drawings, figures and their elements in different colors, it is best to use no more than three colors at the same time. Usually, the main elements are depicted in red, and minor ones, for example, in green and blue.

Math quizzes... Attention, observation, intelligence of students also develop math quizzes. Conducting quizzes enriches and enlivens the lesson. We conduct a math quiz in one of the lessons, where we use practical tasks on the topic "Quadrangles". Solving these problems, students analyze facts, see the relationship between science and practice. The proposed tasks are brought to the students by clearly reading the text of the exercise once or twice. The participants of the quiz are warned that a personal-team championship is being played. To identify the winner of the quiz, a certain number of points is assigned for solving each problem, determined by the degree of difficulty of the proposed problem. The winning team is determined by the total of the points scored.

About tasks... We also paid much attention to solving problems. Problem solving is used to solve educational goals: to form motivation and interest in the educational activities of students, to illustrate and concretize the material studied, to develop special skills and abilities in students, to monitor and evaluate the results of their educational work, etc. Repetition is also carried out through a system of tasks - the systematic and purposeful formation of those operations that make up the solution process. Geometric calculation problems are characterized by the following operations: identification of the relationship (relationship) between the elements of a certain figure; direct search for the sought-after from relations containing one unknown; the selection of an auxiliary task (subtask), which consists in finding some unknown; drawing up an equation or systems of equations.

One example that contributes to the development of students' thinking is the method of auxiliary tasks. Its essence is as follows: a given task, if it encounters difficulties for a student, is initially replaced by an auxiliary task (tasks) prepared in advance by the teacher, which in some elements of the solution is similar to the main task, or is part of the main task, or the solution to one of them follows from solutions are different. An auxiliary problem is offered to students before solving a complex problem or in the middle of a solution, but the students are not told that it is an auxiliary problem. Then the main task is solved. Using the example of one lesson on the topic "rectangle", we will try to show the use of dialectical games in teaching mathematics.

The purpose of the lesson: repeat the concept of "rectangle" with the students, familiarize with the new definition and study its properties.

Equipment: computer, projector.

The lesson uses a didactic game.

During the classes:

1. Conducting a lesson in the form of a didactic game.

Teacher: Today in the lesson, guys, we will play. The game will consist of several stages, which I will introduce you to during the lesson. Let's break up into three teams (each row is a team). Each of the teams will earn points for themselves at each stage.

Stage I - updating basic knowledge.

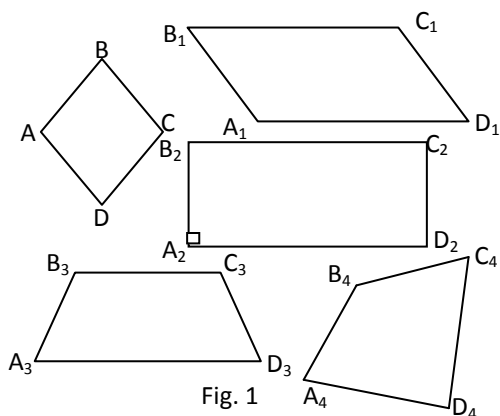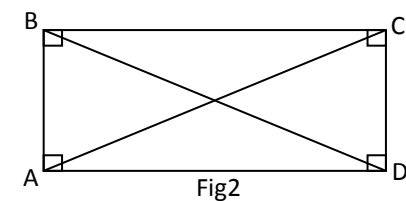Now we will choose the captains of the teams as follows: you must reproduce in notebooks for

Fig. 1

independent work the reference notes based on the material of the previous lesson on the topic: "The rhombus and its properties." Writing key notes will take 4-5 minutes. The captain of each team will be the one who plays the keynote first. If the team does not have time to complete the work in 5 minutes, then it loses 2 points for every extra minute; if she completes the task in less than 5 minutes, she will receive 2 points for each saved minute. I'll keep an eye on this. Those who need advice can raise their hand and the captain will advise him. But each consultation deprives the team of 2 points. The number of consultations in all teams and the scores will be written on the board. (Notebooks of teams are reviewed by the teacher during consultations and independent work of students,

Stage II - consultation.

Guys, now each team should hold a consultation on the issues written on the board. It is allowed to use the textbook during the consultation. The consultation takes

Fig2

5-6 minutes.

Questions:

1. What quadrangle is called a parallelogram?

2.   What is a rhombus?

3.   Formulate the properties and attributes of a parallelogram.

4.   Formulate the properties of the rhombus.

5.   Which straight lines are called perpendicular?

6.   Formulate a criterion for parallelism of straight lines and a consequence of it.

7.   Formulate the property of the angles formed at the intersection of parallel secant lines and the consequences from it.

8.   Formulate a criterion for equality of right-angled triangles.

9.   Stage III - learning new material.

The following pictures and questions are projected onto the screen using an overhead scope.

1. Select rectangles from among the quadrangles proposed in Fig. 1.

2. Can it be argued that a rectangle is a parallelogram?

3. What can you say about the degree of each corner of the rectangle?

4. Give the definition of a rectangle.

5. Prove that rectangle $A_2B_2C_2D_2$ has sides C_2D_2 and A_2B_2; A_2D_2 and B_2C_2 are parallel.

6. In fig. 2 name all right-angled triangles.

7. Find Equal Rectangular triangles and justify their equality.

8. What conclusion can be drawn about the diagonals of the rectangle?

9.Formulate properties that apply to both the parallelogram and rectangle and rectangle-only properties.

Teacher: Now, one by one, the team captains will call their rivals to answer the questions presented to you on the screen. Each team will answer three questions, 9 questions in total. 10-12 minutes are allotted for the study of new material.

Stage II - drawing up a reference outline.

So, guys, you and I considered a rectangle as a particular type of a parallelogram, got acquainted with its properties. Now you read the tutorial material we've covered. (Students read the "Rectangle"). Now close the textbooks and write a pivotal synopsis in your workbooks. At this stage of the lesson, we will take up to 8 minutes. Again, as in the first stage, the team will receive points for a job well done. When drawing up a synopsis, you can use this drawing.

Stage V - problem solving.

Each team must solve a problem.

The tasks for the three teams are written on the board.

1. Prove that if a parallelogram has all angles, then it is a rectangle.

2. Prove that if a parallelogram has equal diagonals, then it is a rectangle.

5. Prove that if the parallelogram has at least one corner of a straight line, then it is a rectangle.

Weak students are called in to answer these tasks. Each team gets points for solving the problem.

Stage VI - summing up the results of the game.

Today in the lesson during the game, we guys got acquainted with a new type of quadrangle - a rectangle, as a particular type of parallelogram, which has all its properties. In addition, we have expanded the property that applies only to the rectangle: the diagonals of the rectangle are equal. When solving problems, we got acquainted with the features of a rectangle, i.e. those of its properties that make it possible to establish that the parallelogram is a rectangle:

If in a parallelogram: 1) the diagonals are equal; or 2) all angles are equal; or 5) at least one corner of a straight line.

Here the winning team is named, individual students are given a grade in the magazine.

The usage of didactic games in mathematics lessons will allow students to show interest in the subject under study, and also contribute to the development of logical thinking and increase the activity of students in general education schools.

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