

EDUCATIONAL SIGNIFICANCE OF TEACHING MATHEMATICS IN GENERAL SECONDARY EDUCATION AND VOCATIONAL SCHOOLS

¹Abdullayeva Feruza Saidakhmatovna, ²Faizullayev Sherali Mavrutalievich, ³Khurramov
is the son of Aziz Husnidin

^{1,2,3}Assistant teachers of Tashkent University of Information Technologies named after
Muhammad al-Khorazmi

<https://doi.org/10.5281/zenodo.10845092>

Abstract. *In this article, through teaching mathematics, students are able to understand their place and act in the way of development of the country. It contains detailed information and recommendations about how the teacher can work on himself, contribute to the development of science in the field of mathematics, expand his ideas and concepts related to equations and theorems.*

Keywords: *economic problem, diagram, geometry, abstraction, quadratic equation, theorem, coordinate system, circle.*

INTRODUCTION

Based on the Law "On Education" and the "National Program of Personnel Training", it is important to fundamentally update and improve the education system and apply advanced pedagogical technology and scientific achievements to the educational process. It is an important task for the teacher to bring up a mature generation that meets the requirements of the times through the education system [1].

Creating conditions and effective mechanisms for the harmonious development and well-being of a person in all aspects, the realization of personal interests, outdated changing patterns of thinking and social behavior is the main goal and driving force of the reforms implemented in the republic. A perfect system of personnel training based on the rich intellectual heritage of the people and universal values, on the basis of the achievements of modern culture, economy, science, technology, and technology is an important condition for the development of Uzbekistan.

LITERATURE ANALYSIS AND METHODOLOGY

In order to correctly explain mathematics and work with the student, it is important to approach the mathematical rules dialectically in reading the material. For example, when studying geometry, one should not start from the first statement, i.e. a point has no dimension, a line has no thickness, etc. It is necessary to prepare a little with the students. That is, it is necessary to teach what a point is, to explain that a line and other mathematical concepts are formed as a result of human practice. For example, changes in measurements in nature. The fact that the thickness of the thread is unimportant in the measurement is directly visible in human education. From this came the abstract concept of length without width, defined by Euclid. Later, he began to measure by hammering a peg into the ground, the thinner the paper, the more accurate it was calculated. In this regard, based on abstraction, the concept of a point where measurements do not exist in a natural way was formed. In the VI grade, it is useful if the teacher tells the students how geometry was formed in ancient Egypt and Assyria (1). In general, the teacher should focus on life issues in order to develop mathematical thinking at convenient times. For example, astronomical calculations required sea travel. This is reflected in the development of trigonometry.

Changing the patterns of thinking and social behavior is the main goal and driving force of the reforms implemented in the republic. A perfect system of personnel training based on the rich intellectual heritage of the people and universal values, on the basis of the achievements of modern culture, economy, science, technology, and technology is an important condition for the development of Uzbekistan.

Such conversations help students to develop mathematical thinking, creative abilities in many cases and at the same time their growth.

During the European "Renaissance" in the 15th - 16th centuries, in 1592-1670, Jan Amos Comenius expressed the opinion that "Knowledge cannot be forced on children" in his work "The Great Didactics". During this period Johann Friedrich Gerbard pedagogy introduced the concept of "educative education" and admits that there is no education without education [2].

RESULTS

Before studying geometric figures, it is necessary to know whether the student has an understanding about it or not. For example, when learning triangles, they learn how to build several triangles, under what conditions a triangle can be made.

First of all, it is necessary to take into account the age of students. It is necessary to study the relationship between general theories and specific judgments. It is advisable for the teacher to keep in mind that any small rules are important. Here are some examples.

The sequence of numbers 1,8,22,43,... has such a feature that the difference of two adjacent terms is 7,14,21,...arithmetic progression. The term of the given sequence is equal to 35351?

Solution: $1, 8, 22, 43, \dots$ So, $8=7+1, 22=1+7+14, 43=1+7+14+21$ harvest
 $\begin{matrix} & 7 & 14 & 21 \\ & \downarrow & \downarrow & \downarrow \\ 1 & 8 & 22 & 43 \end{matrix}$

will be. It seems that, $8 = 1 + S_1, 22 = 1 + S_2, 43 = 1 + S_3, \dots$

$$35351 = 1 + S_n, \quad \text{here } S_n = \frac{a_1 + a_n}{2} \cdot n = \frac{2a_1 + (n-1)d}{2} \cdot n$$

$n=100$ results. The numerical sequence is one-many. Based on this, it will be 101.

It is necessary to show the student that the theorem helps to study the phenomenon and avoid many of the considered cases, saving time. For example, any polygons can be created from experience by discussing sum-of-angles theories. The 5th - 12th centuries are the period of decline of mathematical knowledge. During this period, the Roman emperors Feodosia and Justin, under the influence of pro-Slavic preachers, passed a law banning mathematical knowledge. "Bad Mathematicians and the like" - the legal article says: "indeed the discussion of mathematical art is properly forbidden". It is necessary to tell the student about Alexander's management of the school. It is possible to talk about the killing of the representative of the Hypothetical school by many fanatics.

As part of the study of mathematical knowledge, it is necessary to look at questions about numerical mysticism.

In mathematics lessons, the educational goal is of great importance in the problems and exercises.

The great issues of that time, which are seen now, make a strong impression on the students. Therefore, it is necessary to give exercises on the issue of comparison of surface measurement and road measurement in countries. By solving these problems, the student deepens his knowledge about his country. It is useful for students to draw the static data of various sectors of the national

economy with diagrams. Obviously, it would be too burdensome to ask the student to do all the calculations. These should be handed over to all students in the group when drawing. Students learn which countries have the largest land area by drawing diagrams.

Information for drawing diagrams can be found in economic data and newspapers.

Here are a few examples.

1. According to the total number of observed farms in Uzbekistan in 2016 and 2017, biogas installations increased by 2.2% and 2.7%. Solar photovoltaic devices remained at 1.4%.

It is very important to show students the changes after independence in this way. In this case, the teacher is required to give very precise numbers, which prevents excessive conversations. It is important to note that facts about numbers are always reliable.

2. The number of academic lyceums in Uzbekistan was 46 in 2000, 144 in 2016, the number of vocational colleges was 241 in 2000, and by 2016 it was 1422.

3. The number of people living in the city of Tashkent: 2142.3 thousand in 2000. 2309.3 thousand in 2012, 2464.90 thousand in 2018.

Find the average of these.

It is important that we talk about the lives and works of great mathematicians in mathematics lessons and in circles. Always talking to students about their scientific work and life made them proud. For example, L. Euler (1707-1783), N. I. Lobachevsky (1793-1856), V. Ya. Bunyokovskiy (1804-1889), M. V. Ostrogradsky (1801-1861), P. L. Chebishiv (1821-1894), A. A. Markov (1856-1922), S.V. Kobalevsky (1850-1891), A.N. Krylov (1863-1945) and young mathematicians Yu.V. Linnika, A.I. Malsiva and others.

It is very important to develop teamwork skills in mathematics. In mathematics, it is very important to distribute a work to the team. If one person cannot solve a difficult problem, it can be solved with the help of many. In this case, the student takes responsibility for solving a part of the problem given to him. The correct distribution of work corresponds to working under high control.

We will give examples. Let's assume that it is required to find the length and surface area of a circle around us (radius is not important). All students in the class should be divided into groups of 3-4 people, 20 circles with diameters of 1, 1.5, 2,...cm should be taken and ready.

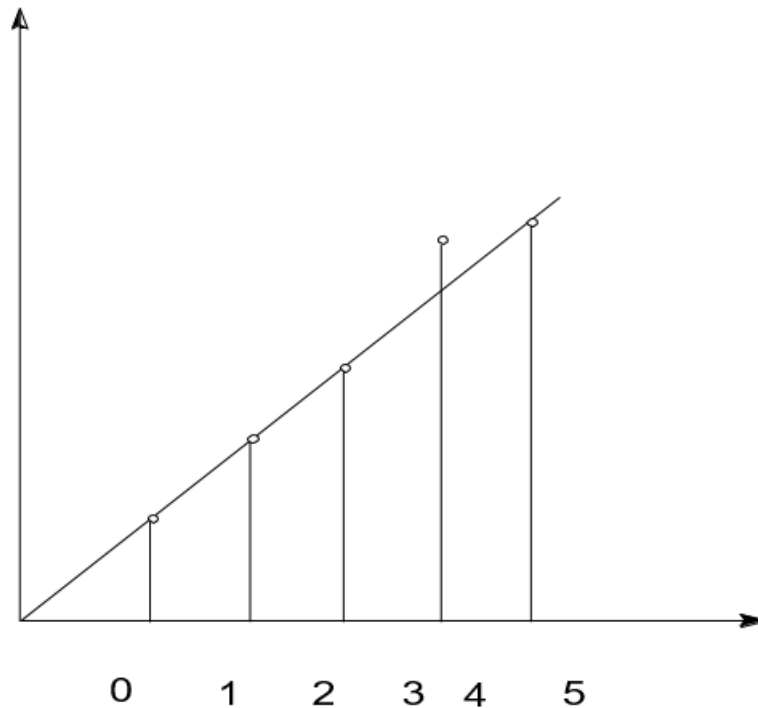
If it is difficult to make circles with different diameters, then it is possible to make them with the same diameter.

Each group is told to measure the diameters and lengths of 4 circles. Each student is asked to measure the diameters and lengths of at least 2 circles.

Every time he measures, he remembers the following card.

The teacher easily checks whether the calculation of lengths is correct or not. The length and diameter of the circle should be approximately 3.1.

It is necessary to indicate the time of completion of the work. At this time, a coordinate system was drawn on a large piece of paper on the blackboard. The length of the diameter is shown on the OX axis, and the length of the circle on the OY axis. Each line marks a point on the given paper. The length of each circle depends on the diameter. Then you need to connect each of the found points. In this case, a straight line representing the connection between the diameter and the length of the circle is formed. Errors are clearly visible through this straight line. Next, an understanding of the number π will be given.



Assistance to enterprises. In many cases, schools help businesses. In agriculture, in managing the house, always keep track of the accounts in the books. Weak or different accounts - general aspects should be taken into account or used in difficult times. It is also possible to ask the class to make a table. It is necessary to stick it on hard cardboard and pay attention to the interesting side. If it makes the work of the foreman and the water meter easier. Of course, he should show the workers how to use the table.

Example: Milk fat level was created for each region. Taking into account the level of fat content, milk is brought to the preparation department.

It is always necessary to solve the following example. The fat level of milk is set at 3.8%. The collective farm sold 223 l milk with 3.5% fat. How many liters of normal oil did he sell?
 Fat in 223 l milk: $35 \cdot 223 \text{ g}$ x l in milk with 3.8% fat, then fat is $3.8 \cdot x \text{ g}$ as follows $3.8 \cdot x = 35 \cdot 223$ $x = 205.5 \text{ l}$

The following follows from the above: It is necessary to multiply the percentage of fat content of the given milk by 1 and divide it by the amount of fat. In this case, several such problems are solved in class.

Cultivate self-confidence. We note that students often compare the solution of their solved problems with the answer in the book.

If their solutions coincide with the answer, they believe in themselves. For example, if the solution is not in the book or if there is a practical problem, they do not believe in themselves. This is because the students do not believe in their own strength, their own account books and thoughts. If the student is still not clear, the answer to the question is needed. At the same time, it is useful to refine the solution. If he does not do this, the student will develop excessive self-confidence and self-esteem. Pupils always distinguish the useful answer to the problem and believe that their answers are correct. This situation appears if the problem is solved in several ways. If the answer is the same, it means that it is the answer to this question. It is useful to make sure that the answer is correct based on experience.

DISCUSSION

Sometimes the solution of the problem can be done with the help of measurement. For example, when calculating the surface of a flat shape, we need to determine the scale drawing and calculate the approximate surface using a palette. Evaluation of the result plays a key role in the formation of confidence. First of all, it is necessary to determine the possible values before evaluating the calculation.

Find the approximate value of the example below.

$$\frac{4}{5} \cdot 3,75 - 4 \frac{4}{11} \cdot 4,125 + 6 \cdot 0,9$$

$$2 \frac{2}{7} \cdot 1,5$$

We round the numbers.

$$\frac{13 \cdot 4 - 4 \cdot 4}{2 \cdot 1,5} + \frac{6 \cdot 1}{3} = \frac{52 - 16}{3} + 3 = \frac{36}{3} + 3 \approx 15$$

The last solution will be around 15.

Let's give another example. Solve the equation.

$$3x^2 + 11,22x - 9,8 = 0$$

We round the coefficients.

$$3x^2 + 11x - 10 = 0 \text{ or } x^2 + 4x - 3 = 0$$

The roots of the last equation are:

$$x = \frac{-4 \pm \sqrt{16+12}}{2} = \frac{-4 \pm 5}{2} \text{ from this } x_1 = -\frac{1}{2}; x_2 = -\frac{9}{2}$$

The solutions of the required equation are -4.5 and 0.5, with an accuracy of 0.01.

Students calculate with a certain accuracy without spending much time. It is necessary to show the student that approximate solutions to the problem cannot be its exact solution.

It is necessary to teach students to work taking into account the time. When each teacher gives an example for control work or independent performance, the students do not have time and ask to add a few minutes. They should know not only how to correctly solve a given problem in life, but also how to respond in a short time. Therefore, when the teacher gives an exercise, the first one should be given 10 minutes, the second one 15 minutes, and the third one 6 minutes.

After completing the first three, it is better to give the fourth or fifth exercise. Working quickly to solve the problem leads to the creation of a bad solution. In order for this situation not to happen, the teacher should check how the student solved the given example and then give him an example for reinforcement. For strong students, it is necessary to prepare a strengthening problem on the card in advance. Students should know that the time spent on grading their work is important. Therefore, it is necessary for the teacher to know from his experience the time spent on each issue.

Planning. Work planning is important in everyone's life.

Mathematics forms students' ability to plan. Unfortunately, they do not pay attention to this at school. Students blindly approach the solution of a problem or example. When solving a problem, they begin to do it without asking questions about what to do or how to do it.

Children in junior grades should be taught the following:

- 1) First of all, think about the issue, clarify what should be found.
- 2) Make a solution plan, it is necessary to determine whether all the given ones participate in the solution or are redundant.
- 3) Determine how to solve the problem.

Before solving the problem, the student should create a sequence and then start need.

Sufficient attention in drawing up a theorem proof and problem solution plan focus, otherwise the student will not get used to consciously perform the proof of the problem or theorem.

Rational method of solution. When teaching mathematics, it is necessary to demand rational methods of problem solving from the student. Therefore, the solution or proof should be presented simply and beautifully. After solving the example, we will apply this situation.

Let us remind you that mathematics has its own beauty. For students who understand this, mathematics will not be an empty science. It is necessary to show the student that mathematical creativity opens up high possibilities. That is, the wider the use of the solutions or the proof of the theorem, the more interesting the student will be. This leads to the highest quality of mastering what is given. It is necessary to show how to perform the tasks given in class V in different ways. For example: $224 \cdot 25$ (divide the product by 4 and multiply the resulting number by 100).

Different methods of solution are interesting mainly in algebra and geometry.

Example 1: *Solve the equation.*

$$\frac{x^2 + x - 5}{x} + \frac{3x}{x^2 + x - 5} + 4 = 0$$

There is another simple way:

$$\frac{x^2 + x - 5}{x} = t \text{ or } \frac{x}{x^2 + x - 5} = z$$

Then a quadratic equation is formed.

$$x^2 + x - 5$$

$$t^2 + 3t + 4 = 0 \text{ or } 3z^2 + 4z + 1 = 0$$

This is the solution of Eq $t_1 = -3, t_2 = -1$ in this

$$x^2 + 4x - 5 = 0; x_1 = -5, x_2 = 1;$$

$$x^2 + 2x - 5 = 0; x_3 = -1 + \sqrt{6}, x_4 = -1 - \sqrt{6};$$

M.M.Usmanov "Examples and problems from mathematics" collection, part I, pages 37-38.

CONCLUSION

Students should look at both cases, compare them and understand the connections between them.

Increase accuracy. Even a small carelessness in mathematics leads to mistakes. This will have to be revisited to find the error. It is necessary to fight so that there is no irresponsibility and carelessness at work. The student should be required to complete the problem exactly in the

notebook as on the blackboard, all the numbers should be written in the same size, beautifully and clearly. Numbers with the same name should be written in proportion to each other.

He should pay attention to keeping the notebook. The student must use the notebook in an orderly and correct manner, strictly adhere to the form of notes, frame formulas and underline at the end of the solution.

Drafts (drafts) in which calculations are written are the first manifestation of carelessness. In these drafts, the student expresses what kind of questions, deletes calculations, writes in an irregular manner, and in the end does not understand what he has written. The draft represents how the given work is treated. We do not support the draft system, but drafts and erasers should be used in the same order.

We suggest writing all calculations in the following order. We divide the page of the notebook in two, on one side we write all the intermediate entries and the end, and on the other side we write the calculations. Large calculations can be written as follows: we bring the main calculations to the left and the intermediate calculations to the left.

We remind you that if any calculation is given incorrectly, the student should discard it and do it again, it is not possible to paint.

The reader should know that it is not his fault that he was abandoned. The grade will be reduced for carelessness.

In small classes, drawing tools (ruler, angle, circle) should be used for drawing on the blackboard. In large classes, drawings can be required to be drawn by hand, mainly in astrometry drawings. Pupils should be able to quickly and accurately draw sketches.

REFERENCES

- National Program of Personnel Training of the Republic of Uzbekistan / Harmoniously developed generation is the basis of development of Uzbekistan. - T .: "O'zbekiston", 1997, page 5.
- M.Tajiyev, K.Mamadaliyev "Designing the process of teaching mathematics" - //textbook. - T .: "Science and technology", 2014, pages 18-19.
- MM Usmanov Collection "Examples and problems in mathematics" Part I pages 37-38.
- MP Perova Methods of teaching mathematics in a correctional school: textbook: Higher school, 2005.423 p.