USING PROBLEM-BASED LEARNING TECHNOLOGY IN MATHEMATICS LESSONS

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Annotation: *This article presents the issues of using problem-based learning technology in geometry lessons for high school students and making it interesting for students.*

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The Law of the Republic of Uzbekistan "On Education" set lofty goals, such as the development of intellectual and scientific forces that form a comprehensively developed person who understands his responsibility to the family, society, and the state.

To fulfill the Law on Education, teachers have to fulfill a number of tasks. Today, mathematics teachers are also required to organize classes using advanced pedagogical technologies and modern teaching methods based on the requirements of the State Educational Standard. Organizing lessons using advanced pedagogical technologies and non-traditional methods further increases students' interest in this subject. Another important aspect of organizing such lessons is that students become active participants, not just listeners, in the lesson. Advanced pedagogical technologies increase the

effectiveness of the educational process. I consider it desirable to introduce more problem-based learning in mathematics lessons, because problem-based learning forms the process of independent thinking in students. It increases students' interest and need for knowledge. Independent mastery of knowledge, its free use in practice, forms skills and qualifications. Every teacher should remember that the lesson is the main form of the educational process. The main requirement of today is to teach students to think independently, speak freely, solve problems independently, be creative, and create an atmosphere of mutual understanding between the teacher and the student.

One of the factors that creates a friendly atmosphere in the pedagogical process is problem-based learning. The following activities are promoted in these lessons:

-the problem always increases the student's interest in a particular activity;

-the student's engagement in dialogue during the lesson helps to acquire a communicative culture;

-it allows the student to demonstrate his talents, interests, knowledge and identity;

-a creative atmosphere is created among students, they have creative and independent activity in solving problems;

-during problem solving, competition and rivalry arise;

-knowledge, skills and abilities on the subject are developed.

In problem-based education, the following functions are performed through lessons:

– Education and upbringing.
– Personality development.
– Orientation of students to creative activities.
– Control and analysis of knowledge.

– Interaction with other subjects.

– Development of free and independent thinking skills.

– Orientation to their chosen professions.

– Improving students' communication and speech culture.

– Creating a friendly environment.

– Students' acquisition of knowledge in problem-based education lessons should comply with the following requirements:

– Problem-based education should be aimed at solving the educational, educational and developmental goals and objectives of the topic in the lesson;

– It should be linked to important practical problems and can be solved during the lesson or given as homework as independent work;

– The principles of raising a harmonious generation should correspond to the rules of oriental morality;

– the problem must have a logical sequence;

– the principles of education must be followed and little time must be spent.

The following types of problem-based education can be cited;

1. A problem on the topic.

2. A problem in solving an example and a problem.

3. A problem in constructing a geometric figure.

4. A problem in proving.

5. A problem that arises when studying historical issues.

The development of independent Uzbekistan cannot be imagined without young people who have deep and well-founded knowledge, have developed scientific thinking, are enterprising and business-minded. Educating these young people, revealing their intellectual potential, abilities, and talents is the most important task of us teachers.

Today, a teacher must have deep knowledge of his subject and constantly research it. I try to conduct each lesson interestingly and in accordance with the requirements of the time. My goal is to provide strong students with broad and meaningful knowledge, and weaker students with the ability to master the knowledge based on the requirements of the DTS.

Geometry, a part of mathematics, has its own unique characteristics. In the process of studying this science, namely, proving theorems, correctly and beautifully structured reasoning, studying the diverse aspects of geometric shapes, and forming symmetrical concepts, it educates students with a delicate taste, a need for beauty, and understanding. Teaching the contributions of our great scholars Al-Khwarizmi, Abu Nasr Farobi, Ahmad Ferghani, Ghiyosiddin Al Koshi, Omar Khayyam, Mirzo Ulugbek to mathematics, educates them in the spirit of patriotism and national pride.

As we know, in the 8th grade Geometry subject, the topic “Rectangles” is studied. Rectangles include; right-angled rectangles, rectangles with different sides, trapezoids, right-angled trapezoids, isosceles trapezoids, parallelograms, rhombuses, and squares.

After completing the topics of rectangles, we will ask the students the following problem questions in the reinforcement lesson: draw a rhombus, try to come up with a definition for it that is different from the following definition given in the topic.

Definition: A parallelogram with equal sides is called a rhombus.

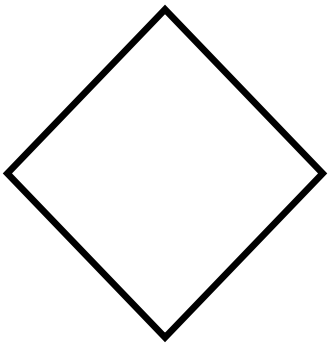


Figure 1. Rhombus.

The origin of the term rhombus is explained in different ways. It is a Greek word, and rhombus means “a rotating body”, “a circle”. In geometry, this term comes from the similarity of the cross-section of a circle to a rhombus. In Arabic, the term “specific” is used for a rhombus.

Abu Rayhan Beruni, a Central Asian scholar, also gave a detailed definition of a rhombus. In his work “A Book of Informative Information on the Art of Astronomy”, he asks the question “What are the types of rectangles?” and answers as follows: the first of them is a square, all its sides are equal, all its angles are right angles, and its diagonals, that is, the lines connecting the opposite angles, are equal to each other. The second is a right rectangle, which is longer than a square, all its angles are right angles, and its opposite sides are different, and only its opposite sides and diagonals are equal. The third is a rhombus, its four sides are equal, but its diagonals are different, and its angles are not right angles. The fourth is a rhomboid, its diagonals are different, but only two opposite sides are equal. Quadrilaterals that are different from these shapes are called trapezoids.

Students express their opinions during the lesson.

Currently, one of the “urgent issues for improving the effectiveness of teaching mathematics” is to increase students’ independent and free thinking skills through problem-based learning, to connect the topic to other subjects, and to develop their interest in the subject being taught.

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