

METHODS OF USING INNOVATIVE TECHNOLOGIES IN TEACHING QUANTITIES IN PRIMARY GRADES

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Annotation. The use of interactive methods and logical problems in teaching elementary school students basic quantities helps students quickly master abstract concepts and develop their thinking. This article provides information on the importance of innovative technologies in improving the logical thinking of elementary school students and using quantities.

Keywords: elementary education, basic quantities, logical thinking, innovative technologies, STEAM, gamification, multimedia, interactive education, mathematical competence, project-based education.

The main goal of the reforms being implemented in the education system today is to educate a young generation that is comprehensively developed, independent-thinking and has modern knowledge. Primary education is of particular importance in implementing this task. Because the student's success in subsequent stages of education depends on the knowledge, skills and competencies formed in the primary grades.

Mathematics is one of the main components of primary education, which serves to form logical thinking, analysis, generalization and problem-solving skills in students. In particular, teaching the concepts of basic quantities is one of the important sections of the mathematics course. Quantities such as length, mass, time, capacity, area and price are directly related to the daily life of students, and their mastery is necessary for practical activities.

In recent years, much attention has been paid in pedagogical science to the issues of organizing education based on a competency-based approach, introducing innovative pedagogical technologies, and developing students' creative and logical thinking. In this regard, the use of innovative technologies in teaching basic quantities

not only contributes to the effective acquisition of knowledge, but also to the development of students' intellectual potential.

The purpose of this article is to identify opportunities for developing logical thinking in teaching basic quantities in primary grades and to analyze the pedagogical effectiveness of the use of innovative technologies.

Literature review. Scientific research on the methodology of teaching mathematics in primary grades shows that the use of practical activities, observation and comparison methods is important in the process of forming mathematical concepts in students.

Russian pedagogical scientist Lev Vygotsky emphasizes in his research that a child's cognitive activity develops in the process of social environment and collaborative activity. According to his theory of the "zone of proximal development", students effectively master complex concepts with the help of adults or peers. This approach indicates the need to use group work and practical exercises in studying basic quantities.

Swiss psychologist Jean Piaget substantiated the gradual development of children's thinking. According to the scientist, children of primary school age are at the stage of concrete actions, and they effectively master knowledge through practical activities and visual aids. Therefore, working with objects, using measurement and experimental methods are important in forming concepts of quantities.

Uzbek methodologists Jumaboy Yuldoshev and Usmon Tolipov studied the issues of introducing pedagogical technologies into the educational process and substantiated the importance of innovative methods in increasing student activity. In their scientific works, interactive methods are considered an important tool for developing students' independent thinking and creativity.

M.A. Moro and M.I. Moreva, who conducted research on mathematics teaching methods, paid special attention to the principle of demonstration in the formation of the concept of quantities in primary grades. In their opinion, students master the concepts of length, mass, and capacity faster and more thoroughly by working with real objects.

In recent years, the effectiveness of an integrated approach has been particularly noted in scientific research on STEAM educational technology. Researchers emphasize that STEAM technology develops students' skills in solving problem situations, critical thinking, and creative approaches. This technology allows you to connect mathematics with everyday life and other subjects.

Also, according to the results of research on gamification and multimedia technologies, the use of game elements and visual aids increases students' interest in the lesson, improves the efficiency of knowledge acquisition, and activates logical thinking.

The analyzed scientific sources show that the issue of using innovative technologies in teaching basic quantities in primary grades is an urgent scientific and practical problem, and these technologies are an effective tool for developing students' mathematical competencies. However, there is a need to further improve the methodology for teaching the concept of quantities in an integrated manner with logical thinking in this area.

Methods. Nowadays, the use of innovative technologies in the educational process increases students' interest in learning. The following innovative technologies are effective in teaching basic quantities:

Interactive presentations. Teaching quantities through animated slides prepared using PowerPoint, Canva and other programs attracts students' attention.

STEAM technology. The STEAM approach involves integrated teaching of science, technology, engineering, art and mathematics. For example, students build a bridge from different materials and measure its length and mass.

Gamification. Students master quantities in an interesting way through mathematical games, quizzes and online platforms.

Multimedia tools. The concepts of time, mass and capacity can be explained in a visual way using video, animation and virtual laboratories.

QR-code tasks. Students scan a QR code and complete practical tasks. This method develops independent thinking and digital competencies.

In the process of forming mathematical knowledge in primary education, teaching the concepts of basic quantities - length, mass, time, capacity, area and price

- plays an important role. These concepts, along with developing students' mathematical literacy, form their logical thinking, analysis, problem-solving and independent decision-making skills. The use of innovative technologies in the modern educational process is an effective tool for achieving these goals. STEAM technology is considered one of the most effective innovative approaches to teaching basic quantities. This technology involves teaching science, technology, engineering, art and mathematics in an integrated manner. When using STEAM technology, the teacher first defines a practical problem or task. For example, when studying the topic of length, students are given the task of making a bridge from cardboard and paper. Students are divided into groups, develop a bridge project, measure its length and compare the results. In the case of mass, they connect knowledge with practical activities by weighing various objects, and in the case of capacity, they conduct experiments by pouring water into containers of different sizes. During such activities, students acquire the skills of observation, comparison, analysis, and drawing conclusions.

Results and discussions. Interactive presentation technology also has wide possibilities in teaching quantities in primary grades. To use this technology, the teacher prepares animated slides in PowerPoint, Canva or other presentation programs. During the lesson, students are shown pictures of various objects and given tasks to compare their length, mass or capacity. For example, an image of a pencil of three different lengths is shown on the screen and asked to determine which one is longer. On the topic of time, the movement of the hourglasses is observed through an animated clock model and students are taught to determine the time. This technology increases the visibility of the lesson and helps to easily and interestingly master the topic. Gamification or game technology is one of the effective methods that is suitable for the age characteristics of primary school students. When using this technology, the lesson process is organized on the basis of various didactic games. For example, the topic of quantities is reinforced through games such as "Who can find it the fastest?", "Mathematical relay race", "Buyer and seller", "Mystery box". The teacher gives students tasks, and during the game they solve the problem and achieve the result. When studying prices and monetary units, students play the roles of buyers and

sellers and calculate the total cost of products. This method increases students' interest in the lesson and serves to consolidate knowledge. The use of multimedia technologies is also important in teaching basic quantities. Multimedia tools include videos, animations, audio materials and virtual laboratories. The teacher selects video materials appropriate to the topic and shows them during the lesson. For example, when teaching the concept of time, videos about the Earth's rotation around the Sun or the change of seasons are shown. In the topic of capacity, the concepts of liters and milliliters are explained using animations. Since complex concepts are presented visually through multimedia tools, students' imagination expands and their level of understanding of the subject increases.

QR code technology, one of the elements of digital education, is also effective in organizing modern lessons. When using this technology, the teacher prepares tasks, problems, or additional information in the form of a QR code. Students scan the QR code using a tablet or mobile device and independently complete the tasks. For example, practical problems such as “A container holds 2 liters of water. There is currently 750 milliliters of water in it. How much more water can be poured?” are presented via QR code. This approach develops students' competencies in independent learning and the use of information technologies.

Brainstorming technology serves to develop students' free and creative thinking. When using this method, the teacher poses a problematic question or situation. For example, questions such as “Why did people feel the need to measure time?”, “What is the reason for measuring water in liters and fabric in meters?” are asked. Students freely express their thoughts and discuss different answers. Then a general conclusion is drawn. This technology develops students' logical thinking, speech culture, and the ability to approach the problem from different perspectives.

Cluster technology is used to systematize knowledge and identify connections between concepts. During the lesson, the concept of “Basic quantities” is written on the board or electronic presentation center, and networks such as length, mass, time, capacity are drawn from it. Under each network, appropriate units of measurement and practical examples are placed. Students fill in the cluster together. This process

develops their analytical thinking and allows them to master knowledge as a holistic system.

Project-based learning technology directs students to conduct independent research. When using this technology, the teacher selects a specific problem or topic and gives students a project assignment. For example, projects such as “Our family’s water consumption for a week”, “Determining the length of objects in the classroom”, “Distribution of time for a day” can be organized. Students collect information, conduct observations, make calculations and present the results in the form of tables or diagrams. As a result, they develop the skills of independent research, data analysis and drawing practical conclusions. Teaching basic quantities in primary grades is an important component of mathematics education and is of particular importance in the formation of mathematical concepts, the development of logical thinking and the formation of practical skills in students. The results of the study showed that length, mass, time, capacity,

The use of innovative pedagogical technologies in the process of teaching quantities such as area and price serves to activate students' cognitive activity and to deeply and consciously master the subject.

Conclusion. As a result of the analysis of scientific and pedagogical literature, it was found that the educational process, organized taking into account the age and psychological characteristics of students, allows for the effective development of logical thinking. In particular, it was observed that classes organized on the basis of STEAM technology, gamification, multimedia tools, interactive presentations, QR-code technology, cluster and project-based educational methods are highly effective in developing students' competencies in independent thinking, problem solving, analysis and drawing conclusions.

Also, lessons organized on the basis of innovative technologies increase students' interest in mathematics, create the opportunity to connect theoretical knowledge with practical activities, and encourage active participation in the educational process. As a result, students' mathematical literacy, logical thinking and creative approach develop.

Thus, the purposeful and systematic use of innovative technologies in teaching basic quantities in primary grades is one of the important factors in improving the quality of education. In the future, one of the urgent tasks will be to more widely introduce these technologies into educational practice, adapt them to the requirements of the national education system, and improve them methodologically.

References

1. Temirovna, O. L. (2025). FORMS OF ORGANIZING MATHEMATICAL EXHIBITIONS IN PRIMARY EDUCATION. *Confrencea*, 5(1), 21-25.
2. Sugdiyana, O. L. T. T. (2025). METHODOLOGY FOR ORGANIZING MATHEMATICS EXHIBITIONS IN PRIMARY EDUCATION. *Journal of Modern Educational Achievements*, 5(5), 72-78.
3. Temirovna, O. L. (2023). DEVELOPMENT OF CREATIVE THINKING OF CHILDREN IN SOLVING NON-STANDARD PROBLEMS. *Journal of Modern Educational Achievements*, 10(1), 294-300.
4. Temirovna, L. O. L. (2023). METHODS FOR SOLVING CRITICAL PROBLEMS IN MATHEMATICS LESSONS. *Confrencea*, 12(12), 236-240.
5. Chorievna, R. L., & Tolibovna, T. Z. (2025). METHODOLOGY FOR USING STEAM TECHNOLOGY IN PRIMARY EDUCATION. *MODERN SCIENCE*, 2181, 3906.
6. Rajabova Lobar Choriyeвна. IJODIY FIKRLASHDA STEAM YONDASHUVIDAN FOYDALANISHNING AHAMIYATI. (2024). *Amerika fanlararo tadqiqotlar va ishlanmalar jurnali* , 28 , 10-15.
<https://ajird.journalspark.org/index.php/ajird/article/view/1096>
7. Choriyeвна, R. L. (2024). Methods of Developing Research Skills in Primary School Students Based on Steam Education. *Excellencia: International Multi-disciplinary Journal of Education* (2994-9521), 2(4), 295-299.
8. RAJABOVA, L. C., OCHILOVA, L. T., & SAIDOVA, G. E. (2024). METHODS FOR THE FORMATION OF ECONOMIC KNOWLEDGE OF PRIMARY EDUCATION STUDENTS BASED ON STEAM EDUCATION. *NANOTECHNOLOGY*, 177-181.