

METHODOLOGY FOR LEARNING AND CONSOLIDATING GEOMETRIC KNOWLEDGE USING TABLES IN PRIMARY GRADES

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Abstract

This article discusses several methods that help primary school students improve their ability to master simple geometric shapes and formulas using tables. The research work presents a step-by-step approach to calculating the perimeter and area of rectangles, triangles, polygons, as well as the surface area and volume of simple spatial shapes such as cubes, parallelepipeds, and prisms. The presented methods are important in developing students' logical thinking skills and developing the ability to systematically solve complex problems in the imagination.

Keywords: Elementary school, geometric shapes, table, simple spatial shapes, geometric formulas.

Introduction

In the rapidly developing 21st century, every progressive nation recognizes that the younger generation represents the architects and creators of the future. Therefore, countries across the world are investing heavily in improving the quality of education, modernizing learning environments, and creating systems that nurture intellectually capable, creative, and socially responsible young citizens. Uzbekistan is no exception. Understanding that the long-term development of the country depends on the knowledge, skills, and values of today's youth, the government has been implementing large-scale reforms to ensure that the educational process meets modern global standards.

Under the leadership of President Shavkat Mirziyoyev, substantial transformations have taken place in all sectors of the education system. Every year new decisions, legal documents, and strategic programs are adopted to address emerging needs and to strengthen the foundations of national education. Updated school curricula, modernized textbooks, and international cooperation with leading foreign experts are now key components of educational policy. These new-generation textbooks, created with the participation of international specialists, play a vital role in improving the quality of teaching by integrating global best practices, scientific approaches, and innovative pedagogical strategies. As a result, the education system of Uzbekistan is gradually becoming more competitive, transparent, and focused on developing practical skills among students.

Since 2017, the reforms implemented in Uzbekistan have aimed not only at economic transformation but also at forming a society capable of competing with developed countries in



science, technology, and social progress. To instill patriotism, responsibility, and a strong desire for knowledge in the hearts of young people, comprehensive efforts are being made at all levels of the education system—schools, academic lyceums, vocational institutions, and universities. Modern classrooms equipped with digital technologies, STEM laboratories, electronic learning platforms, and multimedia resources are being introduced to support interactive and student-centered learning. Such opportunities allow learners to demonstrate their unique abilities, engage in creative and critical thinking, and apply knowledge in real-life contexts.

Innovative teaching methods—such as project-based learning, competency-based assessment, digital simulations, and collaborative learning—are increasingly being integrated into the educational process. These methods help develop essential 21st-century skills, including problem-solving, communication, teamwork, and digital literacy. By fostering active participation and independent thinking, the education system aims to prepare students not only for exams but also for life-long learning and professional success. These efforts reflect the national goal of shaping a modern, knowledge-based economy driven by educated and skilled human capital.

It is also important to highlight the growing attention given to the social protection, professional development, and public recognition of teachers—the individuals who shape the future of society. Recognizing that no education reform can be successful without motivated, knowledgeable, and ethically mature teachers, the government is taking systematic measures to elevate the teaching profession. Salaries and benefits for teachers are being gradually increased, working conditions are improving, and opportunities for advanced training, retraining, and international internships are expanding.

Teacher training institutions are being modernized, and pedagogical universities are now introducing updated programs aligned with international standards. Innovative teacher training modules focus on digital pedagogy, inclusive education, formative assessment, and modern psychological approaches. Regular professional development courses ensure that teachers remain up to date with current educational trends and methodologies. Furthermore, motivational incentives—such as awards, grants, and recognition for outstanding educators—are helping increase the social prestige of teaching as a profession. These measures are essential because without spiritually mature, experienced, and committed teachers, the ambitious goals of educational reforms cannot be fully achieved.

In addition, significant attention is paid to strengthening the moral and ethical foundations of education. Schools and universities are encouraged to promote values such as honesty, respect, diligence, patriotism, and responsibility. Extracurricular activities, scientific competitions, cultural programs, and sports events are organized regularly to help students develop well-rounded personalities. By nurturing both intellectual and moral development, the education system aims to raise individuals who are not only knowledgeable but also capable of making meaningful contributions to the progress of their homeland.

Overall, the comprehensive reforms in Uzbekistan's education system demonstrate a strong commitment to building a bright and competitive future. The creation of modern learning environments, the introduction of innovative methods, the improvement of textbook quality, and the enhanced support for teachers collectively reflect the country's forward-looking vision.



These efforts are laying the foundation for a generation that will not only inherit the achievements of previous generations but will also contribute to scientific, technological, and cultural advancements on a global scale.

This research work is devoted to the scientific and theoretical substantiation of the methodology for mastering and consolidating geometric knowledge using tables in primary grades, and to verifying its pedagogical effectiveness. The theoretical basis of the study is based on an in-depth study of scientific and theoretical sources in the field of didactics, educational psychology and teaching methods. The studied literature provides a general analysis of the development of thinking of primary school students, their ability to perceive, systematize and apply knowledge in practice. The results of this analysis create a solid foundation for the pedagogical and psychological justification of the new methodological approach. The current teaching and learning manuals, textbooks and programs for teaching mathematics, in particular geometry, in primary grades are carefully analyzed. This analysis made it possible to identify traditional teaching methods, their strengths and weaknesses. Several serious problems arise in the mastering of knowledge in geometry by students in grades 2, 3 and 4. Since children of this age have not yet fully developed logical thinking, they face significant obstacles in understanding abstract geometric concepts. These difficulties are primarily related to the specific characteristics of the learning process and the stages of children's development.

One of the most common difficulties encountered by primary school students is the perception of the properties of geometric shapes as an abstract concept. This problem becomes even more acute when moving on to spatial shapes, that is, volumetric figures (cube, pyramid, cylinder). If insufficient attention is paid to the development of students' ability to form shapes in their thinking, they cannot imagine three-dimensional figures on a plane (for example, in a drawing). This situation creates significant difficulties in solving problems such as understanding the distribution of volumetric shapes, calculating their surface area, or dividing them into parts. As a result, the student may consider geometry problems difficult, lose interest in mathematics, and lose interest in this subject. It should be noted that the majority of students later encounter problems in everyday life precisely because their ability to imagine in the geometry and sterometry parts of mathematics is not well developed.

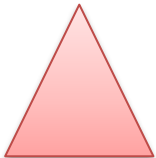
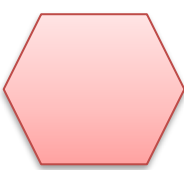
Despite the clear and simple mathematical concepts, elementary school students often confuse terms such as "perimeter" and "area", "diameter" and "radius". If each term is limited to a theoretical definition in textbooks and in the teacher's lesson planning, children will not be able to understand the subtle differences between these concepts. Especially when discussing spatial shapes, it is difficult to clearly distinguish between concepts such as volume and surface area, although they are related.

In some cases, the uniformity of teaching methods reduces the interest of students. Some children do not develop into knowledgeable students in the educational process conducted in the same way. They prefer to learn in a visual form, using various methodological games. If the teacher does not use various methods, for example, interactive games, tables, schemes and collective project work, children's motivation fades and they become bored and unable to concentrate during the lesson. To solve these problems, it is necessary to introduce a more creative approach and the principles of an individual approach into the teaching process.



The methodology of working with tables is a collection of the most effective methods aimed at increasing students' knowledge through a systematic comparison of knowledge, presenting information in a concise, understandable and simple form.

The “Term Box” method is very effective in memorizing concepts related to geometric shapes in primary grades and forms students' skills in teamwork and working with data. The teacher prepares a table and places geometric shapes on it, and students, as a team, need to divide the acquired knowledge into groups and place them in the correct position. This requires speed, accuracy, teamwork, and most importantly, knowledge from the teams. Presenting the table in a colorful way helps to increase students' interest in filling out the table.

Name of the shapes	Number of sides of the figure	Number of corners of the figure	Number of vertices of the shape	Formula for the perimeter of a shape
				
				
				
				
				

It is also very effective to use such tables to consolidate in memory the properties of simple spatial shapes, such as the number of edges, the number of sides, the sum of the lengths of the edges, the surface area, and the volume, from the 3rd grade. Before presenting the table, it is necessary to introduce some conditions, because we know that the lower surface of the prism can consist of any shapes. Or, presenting the table itself, you can also give the students the task of placing the concepts and formulas on colored cards and placing them correctly. As a result, it will be easier for students to be more active in the lesson and focus on the task.



Conclusion

The great scientist Galileo once stated: “The universe is a great mathematical book, whose alphabet consists of triangles, circles, and other geometric figures.” With this idea, Galileo emphasized that the laws governing nature and all forms of existence are grounded in geometric principles. He understood that geometry serves as a universal tool for interpreting these laws, enabling humans to perceive the structural order of the world.

For elementary school students, the study of geometric shapes and their distinctive properties plays a crucial role in developing fundamental cognitive skills. Through geometry, young learners begin to recognize patterns, relationships, and regularities present in their everyday environment. This process not only strengthens their logical and spatial reasoning but also fosters the ability to apply mathematical knowledge to real-life situations—such as understanding directions, estimating distances, or identifying symmetry in objects.

A systematic approach to learning geometric concepts through tables, charts, and structured visual representations further enhances this understanding. Tables help organize information clearly, allowing students to compare geometric figures, analyze their similarities and differences, and observe how measurements such as length, angle, and area relate to one another. When geometric knowledge is presented in a structured tabular form, it supports the development of scientific thinking by revealing the inherent harmony between shapes and their quantitative characteristics.

As a result, students begin to view geometry not merely as a collection of isolated formulas and theoretical definitions, but as a meaningful analytical tool that unlocks the underlying patterns of the natural world. This perspective encourages curiosity, strengthens problem-solving skills, and helps students appreciate the deep connection between mathematics and the structure of reality. Ultimately, such an approach cultivates a mindset in which geometry becomes a gateway to understanding the hidden order and beauty of the universe.

References

1. Clements, D. H., & Sarama, J. (2015). *Learning and Teaching Early Math: The Learning Trajectories Approach*. New York: Routledge.
2. Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally*. Pearson Education.
3. Battista, M. T. (2007). “The development of geometric and spatial thinking.” In *Handbook of Research on Mathematics Teaching and Learning* (pp. 843–907). Information Age Publishing.
4. Jones, K (2000). “The role of diagrams and tables in learning geometry.” *Educational Studies in Mathematics*, 44(1), 55–71.
5. Presmeg, N. C. (2006). “Visualization and geometry teaching.” In *ICMI Study Series: The Learning of Mathematics*. Springer.

