WAWASAN PENDIDIKAN

TEACHING SURFACE MEASUREMENT UNITS TO ELEMENTARY SCHOOL STUDENTS

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Abstract

Mathematics learning needs to be taught to elementary school children because they will encounter various mathematical problems in their daily lives. The aim of this research is to describe surface material mathematics learning in elementary school children in grades 1 and 2 in Uzbekistan. This research is phenomenological research where researchers describe real situations in the field and report them scientifically. The data collection method used is observation. The results of the research show that teaching surface material mathematics in grades 1 and 2 of elementary schools in Uzbekistan is carried out using the drill/drilling method where the teacher gives students various problems about various types of surfaces. The conclusion obtained from this research is that the drilling method is able to make teachers successful in teaching surface material to students in grades 1 and 2 in elementary schools in Uzbekistan.

Keyword: Figure face, figure, surface, comparison, cell

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INTRODUCTION

Mathematics learning needs to be taught to students in elementary schools because this has several advantages, including: (1) Foundational Skills: Math is the basis for many other subjects and skills. Basic arithmetic, number sense, and problem-solving abilities are foundational for more advanced concepts in math and science (Atta, 2015). (2) Critical Thinking: Math teaches students how to think logically and solve problems. These skills are not only valuable in academic settings but also in everyday life and future careers (Ball, 2014). (3) Real-World Applications: Math is used in many real-world situations, from budgeting and shopping to understanding data and technology.

Early exposure helps students become adept at handling these tasks (Blazar, 2015). (4) Cognitive Development: Math helps develop cognitive abilities such as pattern recognition, spatial reasoning, and abstract thinking. These skills support overall cognitive development and can enhance abilities in other areas (Bungao-Abarquez, 2020). (5) Building Confidence: Mastery of math concepts can boost a child's confidence and encourage a positive attitude toward learning. Overcoming challenges in math can be particularly empowering (Nurlaily, 2019). (6) Career Opportunities: Many careers require a solid understanding of mathematics. Early exposure helps students recognize and prepare for opportunities in fields that rely on mathematical skills (Polly, 2017). (7) Encouraging Curiosity: Math encourages curiosity and exploration. Engaging with math problems and concepts can stimulate a child's interest in learning and discovering new things (Ponce, 2017). (8) Problem-Solving Skills: Learning math involves solving problems, which fosters resilience and persistence (Schoenfeld, 2016). These problem-solving skills are valuable in many aspects of life. By providing a strong foundation in mathematics early on, educators help students develop the skills and confidence needed to succeed academically and personally.

Mathematics learning in elementary schools is suitable to be taught using the drilling method which involves repetitive practice and reinforcement of mathematical concepts, can offer several benefits for elementary school students: (1) Reinforcement of Basics: Drilling helps reinforce foundational skills like addition, subtraction, multiplication, and division. This repetition ensures that these basic operations become second nature, making more complex concepts easier to understand later on (Harits, 2019). (2) Improved Fluency: Regular practice through drilling helps students achieve fluency in basic math facts. This means they can perform calculations quickly and accurately, which is crucial for more advanced problem-solving (Jana, 2021). (3) Increased Confidence: Mastery through repetitive practice can boost students' confidence in their math abilities. When students feel more competent, they are more likely to engage with and enjoy math activities (Kuiper, 2014). (4) Memory Retention: Repetition helps reinforce mathematical facts and procedures in long-term memory. This makes it easier for students to recall and apply these facts when needed (Kurniawan, 2019). (5) Error Detection: Through drilling, students can identify and correct mistakes more easily. Repeated exposure to math problems allows them to recognize patterns and understand where they might be going wrong (Lehtinen, 2017). (6) Structured Learning: Drilling provides a structured approach to learning. It breaks down complex concepts into smaller, manageable parts, making it easier for students to grasp and master them (Peddycord-Liu, 2018). (7) Preparation for Advanced Concepts: Mastery of basic math skills through drilling provides a solid foundation for learning

more advanced concepts. For example, knowing multiplication tables well can make learning long division and fractions easier (Rathakrishnan, 2018). (8) Assessment and Feedback: Drilling allows teachers to assess students' progress regularly and provide immediate feedback (Sudirman, 2023).

This helps in identifying areas where students might need additional support. However, it's important to balance drilling with other teaching methods to maintain student engagement and ensure a deep understanding of mathematical concepts. Incorporating activities that encourage problem-solving, critical thinking, and real-world applications can complement the drilling method and create a more well-rounded math education. This research aims to describe the drilling method used by elementary school teachers in Uzbekistan to teach surface material mathematics in grades 1 and 2.

METHOD

This research is phenomenological research where researchers describe real situations in the field and report them scientifically (Vagle, 2018; van Manen, 2021; Wilson, 2015; Adams, 2017). The data collection method used is observation. Researchers conducted observations in grades 1 and 2 in elementary schools in Uzbekistan and then described the results of the observations in detail.

When writing this article, researchers analyzed several literatures, studied the methods of teaching surface measurement units to elementary school students, and wrote it simply and fluently in a language understandable to students. When writing an article, using the method of comparison, students of the first and second grades are given exercises to count the cells in a figure, make figures according to the given shape, cut out figures, and compare figures by putting them on top of each other.

DISCUSSION AND RESULTS

As a result of the analysis of the literature, methods of teaching surface measurement units have been developed for elementary school students with different approaches depending on their worldview. In this article, with the help of various experiments, students will acquire a new way of comparing faces in practice when they solve this problem graphically.

Pupils should pay special attention to practical exercises in studying nature. It is very important to teach the units of surface measurement in the formation of concepts of comparison between bodies in practical situations. In this article, the comparative method of teaching surface measurement units to elementary school students is studied.

Students of the 1st and 2nd grades are given exercises related to counting the cells in the figure, making the figures according to the given shape, cutting out the figures, and comparing the figures by putting them on top of each other. By the fourth grade, this knowledge is strengthened through various examples and problems (Abdullayeva, 2010).

The topic of the faces of the figures should be studied based on the plan shown in the textbook.

The teacher teaches the students about the faces of the figures in the following order.

Before forming general ideas about the face of the figure, it is important to summarize the information collected by students about the comparison of cross sections, "larger", "smaller", "equal" relationships with respect to the sections and the lengths of the sections. This activity allows students to develop clear ideas about comparing polygons, comparing cross sections, and comparing objects by their faces (Bikboyeva, 1996).

Special importance should be attached to practical exercises in the formation of the concept of the figure's face. Completion of these exercises is a direct preparation for learning the subject.

For example, students can be given such a practical task: "draw the following figures on checkered paper", cut out. Then compare these figures
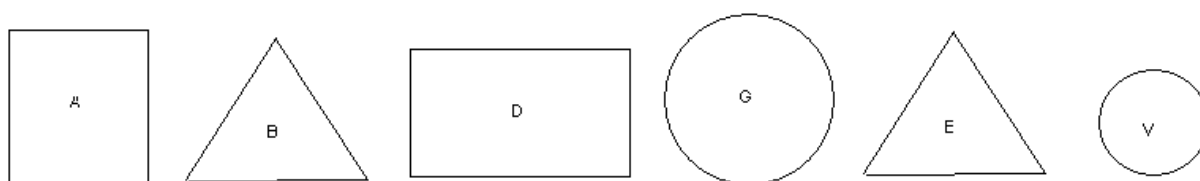
when completing the task, students first draw figures A, B, D, G, E, V, and then cut them out. After that, the students start comparing the figures (Shoimov, 2024). For example, they put a triangle (figure B) on a square (figure A) and find out that the triangle is completely inside the square. The teacher sits completely in the triangular square. In this case, we say that the face of this triangle is smaller than the face of the square. After that, the teacher puts, for example, a circle on top of a rectangle and says: the circle fits completely into the rectangle. In this case, we say that the face of a rectangle is larger than the face of a circle. If we look at the triangles (figures B and E), they completely overlap. In this case, we say that their faces are equal (Jumayev, 2006).

By comparing the figures drawn on the board, students come to different conclusions. That is, some students say that the first rectangle is bigger than the second because it is longer. Other students, on the contrary, say that the second rectangle is bigger because it is higher (Abdullayeva, 2009).

After these thoughts of the students, the teacher suggests that they draw the figures on paper and cut them out. Then he puts the faces of the first and second figures on top and suggests a comparison. During the comparison of the figures, different questions arise to the students. That is, how and by what method can the faces of the first and second figures be compared.

Similar problems may arise in the comparison of the faces of the third and fourth figures. In this case, every third figure does not completely fit into the fourth figure. The fourth figure does not completely fit into the third figure.

Seeing such examples leads to the idea that it is necessary to measure their faces. In this case, the analogy of measuring cross-sections is appropriate.

For example, the length of the table cannot be compared with the height of the chair. Therefore, it is necessary to perform measurements first. That is, it is necessary to compare the length of the table and the height of the shelf, and only then the numbers obtained as a result of the measurement (Azizxodjayeva, 2003).

In order for students to independently find another way to compare the faces of figures (divide each figure into equal squares (cells) and find the number of squares (cells) formed in each of the compared figures), they can be given a practical work, that is, a problem. For example, one student draws four rows of six squares, and another student draws three rows of nine squares with a pencil. Which student covered more boxes and how many boxes?

Students have learned how to solve such problems arithmetically in the second grade, so they will find the solution without any difficulty. 9-6=3 squares. This issue can be resolved verbally. After that, it is suggested to solve the problem graphically. Students first draw a rectangle made up of four rectangular cells, each of which has six cells, and then a rectangle made up of three rectangular cells. they draw a rectangle, each of the next cell has nine cells (Akhmedov, 2003).
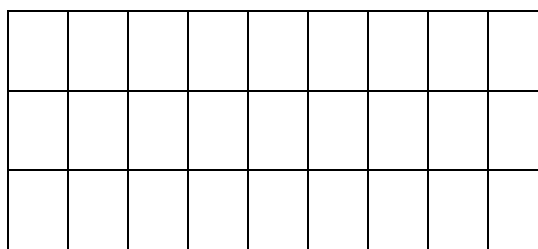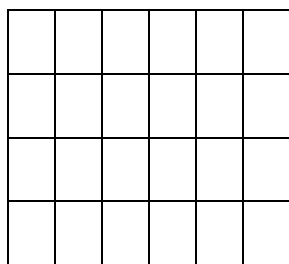
Students should count the cells in each of the figures and find out which one has the most cells and how many. Students will learn a new way of comparing faces when they solve this problem graphically (Abdullayeva, 2011).

CONCLUSION

The conclusion obtained from this research is that the drilling method is able to make teachers successful in teaching surface material to students in grades 1 and 2 in elementary schools in Uzbekistan. From the results of observations, researchers found that students were able to understand the material taught by the teacher when the teacher used the drilling method. In short, by using the method of comparing the faces of the figures, the students study the environment, analyze it and get ideas about the surface.

REFERENCES

Abdullayeva B.S., N.A.Xamedova M. Xusanova Methodological manual "Methodology of using pedagogical technologies in primary grade mathematics lessons" - Tashkent 2010, 135 pages

Abdullayeva B.S.,.O'rinboyeva L.O', Muhitdinova Sh.S, Ishankulova L.T.. Methodology of teaching geometrical materials to elementary school students. Educational-methodological guide intended for students of the 5141600-"primary education and educational work" bachelor's course of higher educational institutions of pedagogy - T.: OOO "Jahon - Print", 2011. - 90 pages.

Abdullayeva B.S., Xo'jamurodova Z., Umarova M., Proceedings of the republican scientific-practical conference on the topic "Relationship of mathematics and native language

sciences" "Ensuring interdisciplinary coherence in the process of general secondary and secondary special vocational education" T.N. Research Institute of Pedagogical Sciences of Uzbekistan named after Qori Niyozi, Tashkent, November 20-21, 2009, pages 241-243).

Adams, C., & van Manen, M. A. (2017). Teaching phenomenological research and writing. Qualitative Health Research, 27(6), 780-791.

Akhmedov M and others Mathematics 1, Tashkent.: Ozinkomsentr, 2003, p. 160.

Azizxodjayeva N.H "Pedagogical technology and pedagogical skills" - Tashkent.: TDPU, 2003, 174 pages.

Atta, M. A., Ayaz, M., & Nawaz, Q. (2015). Comparative study of inductive & deductive methods of teaching mathematics at elementary level. Gomal University Journal of Research [GUJR], 31(1), 20-28.

Ball, D. L. (2014). Teaching, with respect to mathematics and students. In Beyond classical pedagogy (pp. 11-22). Routledge.

Blazar, D. (2015). Effective teaching in elementary mathematics: Identifying classroom practices that support student achievement. Economics of Education Review, 48, 16-29.

Bungao-Abarquez, E. (2020). The use of manipulative in teaching elementary mathematics. International Journal of Linguistics, Literature and Translation, 3(11), 18-32.

Bikboyeva H. U. Methodology of teaching mathematics in primary grades. Tashkent. "Teacher" 1996. 510 pages. J

Harits, M. S., Sujadi, I., & Slamet, I. (2019, October). Technological, pedagogical, and content knowledge math teachers: To develop 21st century skills students. In Journal of physics: Conference series (Vol. 1321, No. 3, p. 032011). IOP Publishing.

Jana, P., & Adna, S. F. (2021). E-Learning During Pandemic Covid-19 Era Drill Versus Conventional Models. International Journal of Engineering Pedagogy, 11(3).

Kuiper, E., & de Pater-Sneep, M. (2014). Student perceptions of drill-and-practice mathematics software in primary education. Mathematics Education Research Journal, 26(2), 215-236.

Kurniawan, D. E., Dzikri, A., Widyastuti, H., Sembiring, E., & Manurung, R. T. (2019, March). Smart mathematics: a Kindergarten student learning media based on the drill and practice model. In Journal of Physics: Conference Series (Vol. 1175, No. 1, p. 012037). IOP Publishing.

Lehtinen, E., Hannula-Sormunen, M., McMullen, J., & Gruber, H. (2017). Cultivating mathematical skills: From drill-and-practice to deliberate practice. ZDM, 49, 625-636.

Nurlaily, V. A., Soegiyanto, H., & Usodo, B. (2019). Elementary School Teachers' Obstacles in the Implementation of Problem-Based Learning Model in Mathematics Learning. Journal on Mathematics Education, 10(2), 229-238.

Polly, D. (2017). Elementary school teachers' uses of mathematics curricular resources. Journal of Curriculum Studies, 49(2), 132-148.

Ponce, P., Molina, A., Hernández, L., Acha, E., Morales, B., & Huitron, C. (2017). Teaching math in elementary schools by LabVIEW and LEGO robots. In Advances in

Automation and Robotics Research in Latin America: Proceedings of the 1st Latin American Congress on Automation and Robotics, Panama City, Panama 2017 (pp. 255-270). Springer International Publishing.

Peddycord-Liu, Z., Harred, R., Karamarkovich, S., Barnes, T., Lynch, C., & Rutherford, T. (2018). Learning Curve Analysis in a Large-Scale, Drill-and-Practice Serious Math Game: Where Is Learning Support Needed?. In Artificial Intelligence in Education: 19th International Conference, AIED 2018, London, UK, June 27–30, 2018, Proceedings, Part I 19 (pp. 436-449). Springer International Publishing.

Rathakrishnan, M., Raman, A., Haniffa, M. A. B., Mariamdaran, S. D., & Haron, A. B. (2018). The drill and practice application in teaching science for lower secondary students. International Journal of Education, Psychology and Counseling, 3(7), 100-108.

Sudirman, S., & Zain, M. I. (2023). Application of The Drill Method to Improving Science Learning Outcomes. Jurnal Penelitian Pendidikan IPA, 9(4), 1886-1891.

Schoenfeld, A. H. (2016). Reflections on doing and teaching mathematics. In Mathematical thinking and problem solving (pp. 53-75). Routledge.

Shoimov B.S, Bozorov M.N. Determination of trigonometric functions using functional equations. "Jornal of new century innovations" https://www.newjournal.org/index.php/new/article/view/12395.

Umayev M. Laboratory training on the methodology of teaching mathematics in primary grades. Tashkent. "Generation of the New Century" 2006. 328 pages.

Vagle, M. D. (2018). Crafting phenomenological research. Routledge.

Van Manen, M., & van Manen, M. (2021). Doing phenomenological research and writing. Qualitative Health Research, 31(6), 1069-1082.

Wilson, A. (2015). A guide to phenomenological research. Nursing Standard (2014+), 29(34), 38.