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# THE IMPORTANCE OF A DIFFERENTIATED APPROACH IN DEVELOPING MATHEMATICAL THINKING AMONG PRIMARY SCHOOL STUDENTS

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**Аннотация**

В данной статье рассматривается роль и значение дифференцированного подхода в развитии математического мышления учащихся начальных классов. Дифференцированный подход позволяет организовать учебный процесс с учетом индивидуальных особенностей, уровня знаний, способностей и темпа усвоения учащихся. В статье анализируются способы развития таких мыслительных навыков, как логическое рассуждение, анализ, сравнение и обобщение. Также рассматривается эффективность дифференцированного подхода в формировании математического мышления и поддержке самостоятельного мышления учащихся. В результате доказывается, что данный подход способствует укреплению принципов индивидуального обучения в начальной школе и раскрытию потенциала каждогоученика.

**Annotation**

This article explores the role and importance of the differential approach in developing mathematical thinking among primary school students. The differential approach allows teachers to organize the educational process by taking into account students' individual characteristics, knowledge levels, abilities, and learning pace. The article discusses ways to develop logical reasoning, analysis, comparison, and generalization skills through this approach. It also analyzes the effectiveness of the differential approach in fostering mathematical thinking and supporting students' independent reasoning. As a result, this approach strengthens the principles of individualized teaching in primary education and helps each student fully realize their potential.

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**Keywords**

mathematical thinking, differentiated approach, primary education, individualized teaching, logical reasoning, creative approach, learner engagement, methodology, educational effectiveness.

**Introduction**

In the modern era, society and technology are evolving at an unprecedented pace. Such rapid development inevitably influences every aspect of human activity, particularly the field of education. The education system today requires continuous renewal and improvement, as emerging knowledge, advanced pedagogical approaches, and innovative technologies are essential for organizing an effective learning process.

In recent years, Uzbekistan has implemented a number of reforms aimed at improving the quality of education and aligning it with international standards. Notably, the Presidential Decree of the Republic of Uzbekistan issued by Shavkat Mirziyoyev on April 20, 2023, titled *"On measures to accelerate the comprehensive development of the education system through improving the quality of scientific, methodological, and research activities"*, marked a significant step toward the modernization of education. Based on this document, efforts have been undertaken to introduce innovative pedagogical technologies, apply effective teaching methods, and develop modern systems for assessing and monitoring educational quality.Today, substantial progress has been made in improving teaching methodologies, developing new textbooks, and creating educational and methodological resources. For instance, interactive textbooks, multimedia materials, and online learning platforms designed with reference to international best practices have enabled students to study subjects in a more engaging and comprehensible manner. Consequently, the learning process has become not only more effective but also more motivating for students.

Modern education, however, goes beyond the simple transmission of knowledge. It focuses on developing learners' creative and analytical thinking, independent problem-solving, and decision-making skills. In this regard, mathematics plays a crucial role, as it fosters logical reasoning, analytical ability, and the capacity to make sound judgments in everyday life.

In today's learning environment, it has become increasingly important to organize the educational process by considering the individual characteristics of each learner. Therefore, in teaching mathematics, the use of a **differentiated approach** holds particular significance. This approach allows the adaptation of lessons according to students' levels of knowledge, interests, intellectual capacities,

and independent learning skills. As a result, each learner's potential can be fully realized, knowledge is acquired more deeply and effectively, and the learning process becomes interactive and engaging.

This article explores the theoretical foundations of the differentiated approach, methods of its application in mathematics education, and practical recommendations for its effective implementation.

## The Role of Mathematical Thinking in Primary Education

Mathematical thinking is a fundamental component that shapes students' abilities to reason logically, analyze, compare, and generalize. Developing mathematical thinking at the primary school level is essential not only for mastering mathematics as a subject but also for enhancing students' capacity to solve real-life problems effectively. At this stage, learners begin to understand cause-and-effect relationships through the study of numbers, shapes, and sequences.

## Theoretical Foundations of the Differentiated Approach

The differentiated approach is based on the principle of taking into account the individual characteristics of each learner and designing suitable learning activities and tasks accordingly. This approach relies on several pedagogical principles:

-Adjusting instruction to students' levels of knowledge;

-Considering the speed and ability of thinking;

-Encouraging independent and creative activity;

-Gradually increasing the level of task complexity.

Research in pedagogy and psychology demonstrates that the differentiated approach is among the most effective strategies for developing students' mathematical thinking.

## Methods for Developing Mathematical Thinking through a Differentiated Approach

The implementation of the differentiated approach in mathematics education involves several methods:

**Tasks of varying difficulty** – using simple, moderate, and complex problems to progressively develop students' thinking skills;

**Group and individual work formats** – enabling collaboration as well as self-assessment through independent work;

**Practical activities and logical games** – stimulating cognitive abilities and increasing engagement;

**Problem-based tasks and exercises** – fostering independent solution-finding and analytical reasoning;

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**Pedagogical observation** – evaluating students' learning processes and providing personalized support.

Through the application of these methods, students enhance their learning efficiency, strengthen logical reasoning, and develop deeper mathematical thinking. In a primary school lesson on the topic of "Adding two-digit numbers," students often demonstrate different levels of readiness: some quickly grasp the new material, while others need more time and practice to master it. In such cases, the differentiated approach becomes an effective strategy.

The teacher designs the lesson in a way that accommodates these differences by assigning tasks of varying complexity. Students who are still reinforcing fundamental concepts work on simpler exercises such as 3 + 2 or 7 + 1, which help them consolidate basic rules. Those who show a higher level of understanding engage with moderately challenging problems like 12 + 9 or 15 + 7 that encourage independent work and critical thinking. Meanwhile, the more advanced learners handle complex tasks, such as adding numbers like 23 + 18 and representing the results through tables or diagrams. This not only stimulates their creativity but also helps them develop the ability to solve intricate problems independently.

As a result, every student learns according to their individual abilities, without feeling exhausted or discouraged. The differentiated approach tailors the learning process to the unique characteristics of each learner, promoting logical reasoning, analytical and generalization skills, and reinforcing mathematical thinking. Consequently, students remain motivated, feel more confident during lessons, and strengthen their knowledge with greater ease and enthusiasm.

## Conclusion

In conclusion, when introducing children to mathematics from the primary school level, we not only teach the basic subject content but also systematically develop their problem-solving skills. The cultivation of mathematical thinking is closely linked with the ability to express mathematical ideas clearly, accurately, and concisely.The differentiated approach plays a crucial role in developing mathematical thinking among primary school students. This approach allows teachers to consider each learner's individual abilities and to design tasks and learning activities tailored to their needs. At the same time, it effectively fosters students' logical reasoning, analytical skills, comparison, and generalization abilities.When applied, the differentiated approach encourages active participation, promotes independent and creative thinking, and strengthens students' knowledge. Therefore, implementing a differentiated approach in primary education is a vital strategy for enhancing educational effectiveness and ensuring that each student's potential is fully realized.

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