# PEDAGOGICAL OPPORTUNITIES OF MENTAL ARITHMETIC TECHNOLOGY IN DEVELOPING CREATIVE COMPETENCIES OF PRIMARY SCHOOL STUDENTS

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**Abstract:** *This article examines the pedagogical opportunities of mental arithmetic technology in developing creative competencies of primary school students. The study analyzes the impact of mental arithmetic on learners’ attention, memory, imagination, and problem-solving skills. A comparative analysis between traditional teaching methods and mental arithmetic-based instruction is conducted. In addition, the article reviews educational reforms, presidential decrees, and policy documents adopted in Uzbekistan that support the integration of innovative pedagogical technologies into primary education. The findings confirm that mental arithmetic significantly enhances students’ creative and cognitive development.*

**Keywords:** *creative competence, mental arithmetic, primary education, pedagogical technology, innovative learning.*

Modern education emphasizes the development of creative, independent, and competitive individuals. Primary education is critical for fostering students’ intellectual and creative potential. Implementing innovative pedagogical technologies at this stage ensures the formation of foundational skills that students will carry throughout their academic journey.In Uzbekistan, recent presidential decrees and policy decisions emphasize enhancing mathematics education, introducing innovative pedagogical technologies, and competency-based learning at the primary level. Mental arithmetic technology aligns with these strategic goals and offers a practical method for developing creative competencies among young learners.

Creative competence is recognized as the ability to generate original ideas, solve problems creatively, and apply knowledge innovatively. Studies indicate that creativity develops most effectively during early school years.Mental arithmetic has been identified as a cognitive training technology that stimulates both hemispheres of the brain. Prior research shows that mental arithmetic improves attention, memory, imagination, and logical thinking. Despite this, systematic research on its application for developing creative competencies in primary education is limited, particularly within Uzbekistan’s educational context.

The study employed the following methods:

- Analytical review of pedagogical and psychological literature;

• Comparative analysis of traditional teaching versus mental arithmetic-based instruction;
• Observation of learning activities in primary school classrooms;
• Analysis of statistical data, represented through figures (Figures 1 and 2).

The focus was on evaluating changes in students' creative competencies, including attention, memory, imagination, and problem-solving abilities.

The study demonstrated that mental arithmetic technology significantly improves primary students' creative competencies.

The results are illustrated in Figure 1, which shows improvement in attention, memory, imagination, and problem-solving skills.

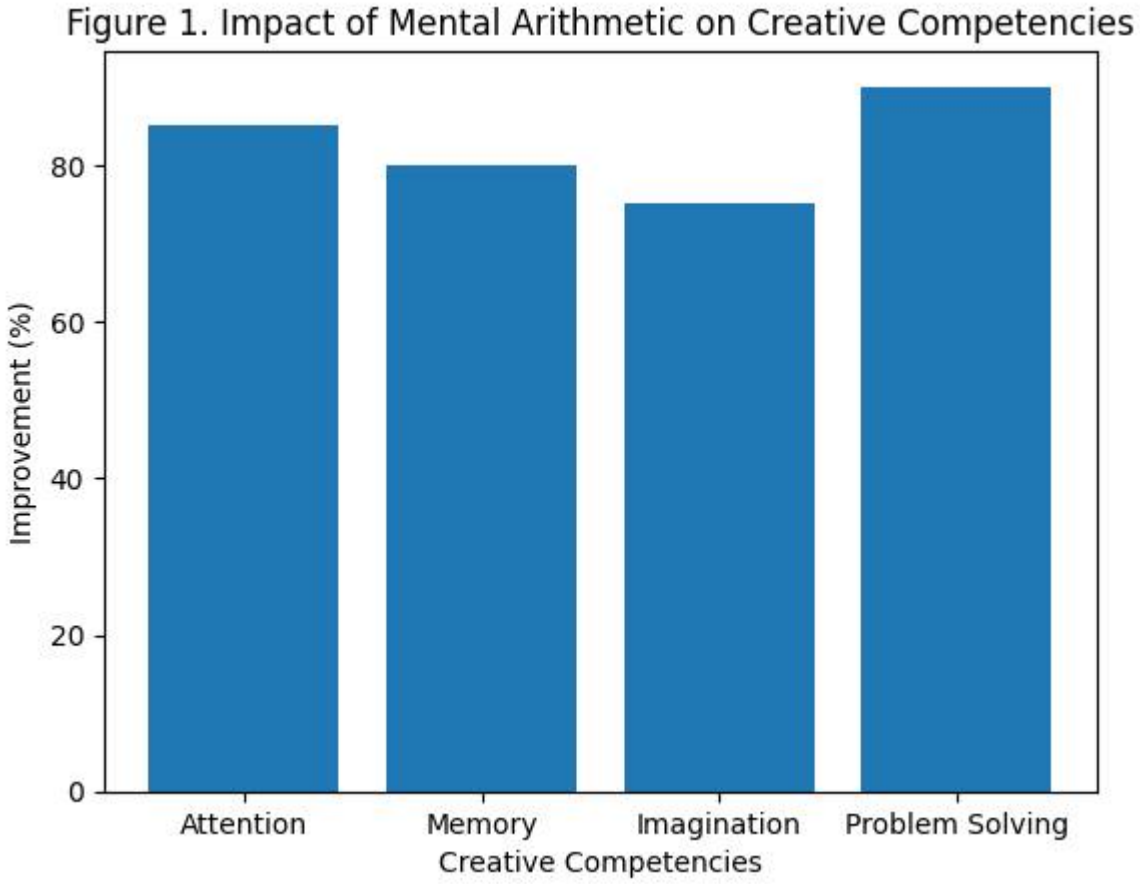


**Figure 1.** Impact of mental arithmetic technology on creative competencies of primary school students.

A comparative analysis of learning effectiveness between traditional teaching and mental arithmetic-based instruction is shown in Figure 2. Students exposed to mental arithmetic achieved higher educational outcomes compared to those taught via traditional methods.

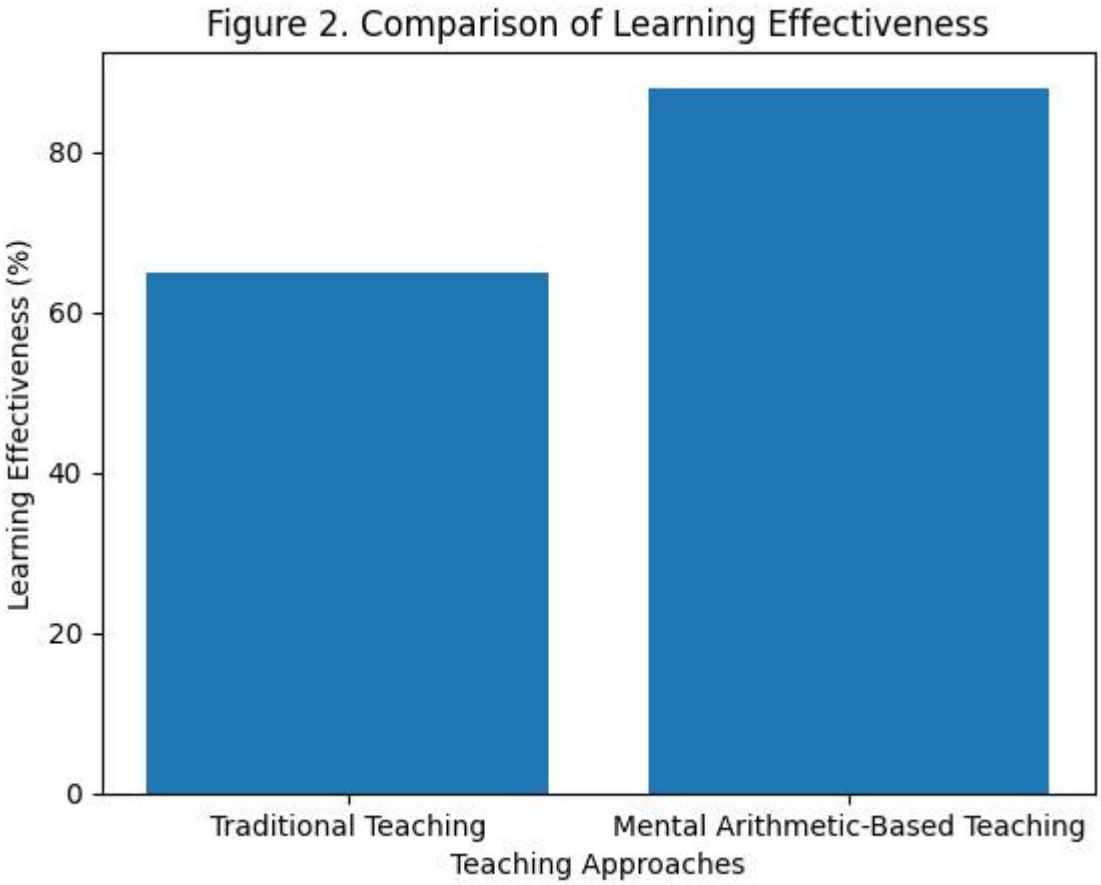


**Figure 2.** Comparison of learning effectiveness between traditional teaching and mental arithmetic-based instruction.

The findings confirm that mental arithmetic enhances not only mathematical skills but also overall cognitive and creative abilities. Visualization and mental calculation techniques encourage flexible thinking, faster processing, and innovative problem-solving skills.

These results align with international research emphasizing the role of cognitive training technologies in fostering creativity at an early age. The effectiveness is further supported by national educational reforms promoting competency-based learning in primary education

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**Educational Policy Context in Uzbekistan**

The integration of mental arithmetic technology corresponds with key educational policies and legal frameworks in Uzbekistan, including:

• The Law of the Republic of Uzbekistan “On Education” (2020);

• Presidential decrees aimed at improving mathematics education and introducing innovative teaching technologies;

• State programs promoting competency-based education in primary schools.

These documents provide a strong legal and methodological foundation for implementing mental arithmetic as an innovative pedagogical technology within the national education system.

**Conclusion**

Pedagogical potential for developing creative competencies in primary school students. Its systematic use enhances attention, memory, imagination, and problem-solving skills, improving overall learning effectiveness. Integrating mental arithmetic into primary education is recommended as a strategic approach to enhance educational quality and foster creativity.

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