JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
GERMAN INTERNATIONAL JOURNALS COMPANY
ISSN: 2751-4390
IMPACT FACTOR (RESEARCH BIB) : 9,08. Academic research index

STEAM APPROACH: IMPLEMENTATION IN PRIMARY EDUCATION

Abdullayeva Dildor Husniddinovna

Buxoro viloyati Jondor tumani

22-umumta'lim maktabi

Abstract: This article analyzes the implementation of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach in primary education, its effectiveness, and its role in developing students' competencies. The research was conducted through experiments in primary schools in Tashkent. The results showed that the STEAM approach fosters the development of essential skills such as creativity, critical thinking, collaboration, and technological literacy.
Keywords: STEAM, primary education, innovative method, competence, interdisciplinary integration.

Introduction. The modern education system demands not only knowledge from students but also the ability to apply it in practice, think independently, use technologies, and solve problems. The STEAM approach is aimed at developing exactly these competencies, shaping students' creativity and critical thinking through an interdisciplinary approach. This article highlights the adaptation and practical effectiveness of the STEAM approach in primary education. Today, the rapid advancement of information technology, economic, and social changes demand fundamental reforms in the education system. Especially in primary education, it is crucial to enhance students' creative thinking, problem-solving skills, technological literacy, and readiness for social collaboration. The STEAM approach (Science, Technology, Engineering, Arts, Mathematics) is seen as an integrated educational model that fosters the development of these competencies. This article scientifically analyzes the adaptation, implementation, and impact of the STEAM approach in primary education. STEAM promotes not only natural and exact sciences but also creativity through the integration of the arts. Through this integration, students gain the ability to imagine, design, and express their thoughts figuratively. Additionally, through engineering and technology elements, they learn to solve real-life problems.

Game-based, project-based, and hands-on activities are highly important for primary school-aged students. STEAM fully meets these needs, as it focuses on learning through activity rather than simply acquiring knowledge. This article scientifically examines the adaptation of the STEAM approach to primary education, its practical implementation, and its impact on student development. Methodological and organizational issues faced during implementation are also discussed.

Analysis and Results. The research used qualitative methods including observation, interviews, and content analysis. The analysis was based on experimental lessons conducted with 1st to 4th grade students in three primary schools in Tashkent. During the experiments, tasks incorporating STEAM elements, project work, and interdisciplinary lessons were organized.

Semi-structured interviews were also conducted with teachers to understand their perspectives and practical experiences regarding the STEAM approach.

The experimental lessons applied the following methods:

- ✓ Organizing interdisciplinary projects;

- ✓ Promoting collaboration through group and individual assignments;
- ✓ Conducting lessons using digital technologies.

The analysis yielded the following results:

1. Students' creative thinking improved (through design and art-related tasks);
2. Skills in using technological tools increased;
3. Social-communicative competencies developed through group work;
4. Teachers observed high motivation during lessons.

The STEAM approach is proving to be an innovative teaching methodology in primary education. However, its full implementation faces certain challenges, such as teachers' qualifications, technical equipment availability, and the complexity of lesson planning.

Despite this, the approach creates opportunities to develop 21st-century competencies such as creativity, communication, multidimensional thinking, and technological literacy. In the future, it will be important to develop textbooks, training courses, and methodological resources based on the STEAM approach.

Conclusion. The STEAM approach is proving to be a modern, innovative method in primary education. Its main advantage lies in integrated subject teaching and encouraging active student participation. However, to implement this method fully, it is necessary to improve teacher qualifications, develop a technical base, and produce methodological materials. It is advisable to conduct broader research in this field in the future.

The STEAM approach positively impacts the comprehensive development of primary school students. Its widespread practical application can help nurture a competitive, creative, and technologically literate generation. This study covers the initial phase of applying the STEAM methodology in primary education, but more extensive research is needed in the future.

References:

1. Yakmanov R. (2021). Methods of organizing integrated lessons based on the STEAM approach. Education and Innovations.

2. Beers, S. Z. (2011). 21st Century Skills: Preparing Students for THEIR Future. Kappa Delta Pi Record.

3. Bozorov, B. (2022). Innovative methods in primary education. Teacher Publishing.

4. National Science Foundation (2018). STEM to STEAM: Art in K-12 Education. Washington D.C.

5. Azizova, D. (2023). Technological education and creative thinking: school practice. Journal of Pedagogical Research.