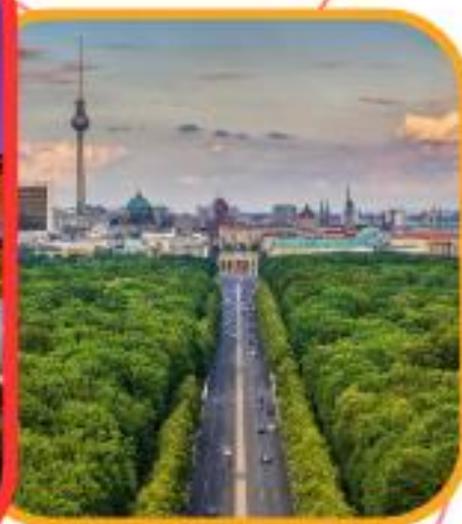




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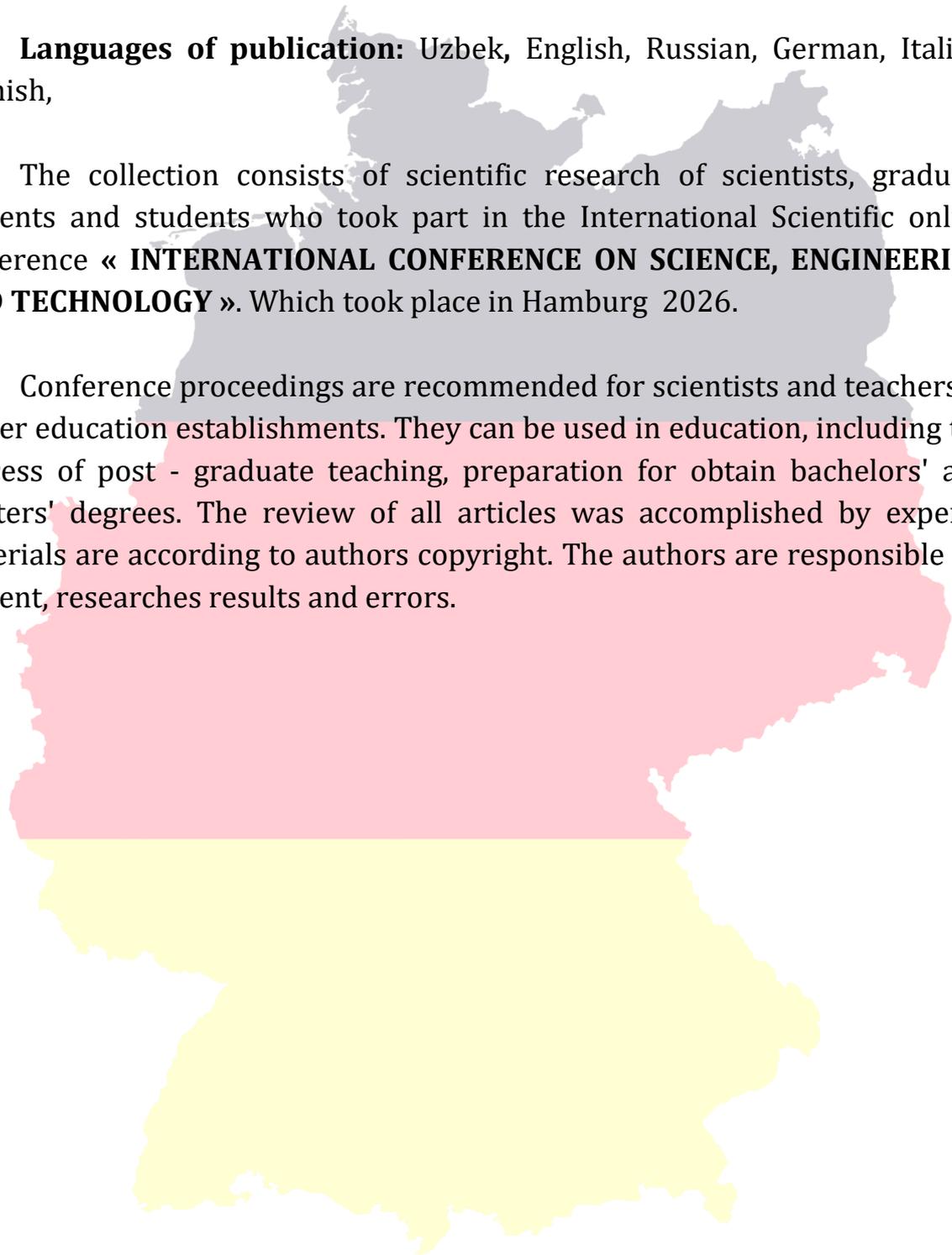


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USE OF STEAM METHOD IN PRIMARY CLASSES

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ABSTRACT. The STEAM (Science, Technology, Engineering, Arts, and Mathematics) method has emerged as a powerful pedagogical approach in primary education, promoting interdisciplinary learning and fostering essential 21st-century skills. This study investigates the implementation and impact of the STEAM method in primary classrooms, focusing on its potential to enhance student engagement, creativity, and academic achievement. By integrating diverse disciplines, the STEAM approach cultivates critical thinking, problem-solving, and collaboration skills while providing a holistic educational experience. The paper examines the compatibility of the STEAM method with primary education objectives, as well as the challenges and opportunities associated with its adoption. The findings underscore the value of the STEAM method in nurturing well-rounded learners equipped to navigate an increasingly complex and interconnected world.

Key words: method, critical thinking, problem solving, STEAM, teacher, parents.

INTRODUCTION. The 21st century has brought forth a rapidly changing world, characterized by advancements in technology, an interconnected global society, and an increasing demand for innovative and adaptive thinkers. To adequately prepare students for this dynamic landscape, educators must evolve and adapt their teaching methods to foster the essential skills required for success. One such pedagogical approach that has gained significant attention in recent years is the STEAM (Science, Technology, Engineering, Arts, and Mathematics) method. This interdisciplinary framework endeavors to integrate diverse subject areas, promoting creativity, critical thinking, and problem-solving skills in primary education.

LITERATURE REVIEW. The literature on the use of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) method in primary classes has grown significantly in recent years, with numerous studies exploring its benefits, challenges, and practical implications. This literature review synthesizes key findings and themes, providing a comprehensive understanding of the current state of research on the STEAM method in primary education.

Central to the STEAM method is the integration of different subject areas, fostering connections between disciplines that have traditionally been taught in isolation (Quigley & Herro, 2016). Researchers argue that an interdisciplinary



approach allows students to better understand the relationships between various fields, promoting a more holistic learning experience (Yakman, 2008). Moreover, the inclusion of the arts within the STEM framework encourages the development of creativity and innovation (Bequette & Bequette, 2012), skills that have become increasingly important in the 21st-century workforce (Partnership for 21st Century Learning, 2015).

The interdisciplinary approach is a key component of the STEAM method in primary classes. It involves integrating different subject areas into a cohesive learning experience that allows students to explore topics in a more comprehensive and meaningful way. By incorporating science, technology, engineering, arts, and math into a single project, students are able to see how each subject is related to the others and how they can work together to solve real-world problems.

For example, a STEAM project in a primary class might involve building a simple machine using engineering principles, measuring and analyzing the machine's performance using math skills, incorporating artistic design elements into the machine's appearance, and using technology to document the project's progress and results.

The interdisciplinary approach in STEAM education has several benefits. Firstly, it helps students to see how different subjects are connected and how they can work together to solve complex problems. This can help to promote a more holistic understanding of the world and encourage students to think critically and creatively about the issues they encounter.

METHODS. The purpose of this study is to explore the implementation and impact of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) method in primary classes. To achieve this, Data collection involved a combination of classroom observations, interviews, and comparison to gather comprehensive and triangulated data on the use of the STEAM method in primary classes. This design allowed for a comprehensive understanding of the various aspects of the STEAM method, including its benefits, challenges, and practical implications.

Participants: The participants in this study were selected from primary school № 24, located in Kokand city. Participants included two different classes (4th grade), four teachers and pupils' parents. During the term one of the classes was taught in typical class, others were in STEAM lessons. That gave to find out the difference of STEAM method from other approaches utilized in the classroom. The participants involved in the use of the STEAM method in primary classes include the following:

1. Students: Students are the primary participants in the STEAM method. They are the ones who engage in hands-on, project-based learning experiences that integrate science, technology, engineering, arts, and math. They are responsible for applying their knowledge and skills to solve real-world problems and develop innovative solutions.



2. Teachers: Teachers play a critical role in implementing the STEAM method in primary classes. They design and facilitate STEAM projects, provide guidance and support to students, and evaluate student learning and progress. Teachers are responsible for creating a learning environment that fosters collaboration, critical thinking, and creativity.

3. Parents: Parents play an important role in supporting their children's learning experiences with the STEAM method. They can provide encouragement and support for their children's participation in STEAM projects and activities. They can also offer feedback and insights into their children's experiences with the program.

Classroom observation was used for pupils in order to assess students' knowledge and their ability to apply STEAM skills to real-world situations. Before using this method in the lesson, observation work was carried out in both groups. The number of students, their activity in class, and their relationship with teachers were analyzed. It was estimated how students were ready for lessons organized using this method and how effective their teaching will be. In order to see better effect of this method, same level groups were chosen.

The interview method was conducted with parents and teachers. First, a group of 15 teachers were asked questions about this method and their opinions about teaching based on this method. Also, after the lessons based on this method, parents were interviewed to find out about the results of their children's learning.

The comparison method was conducted between two groups (traditional and STEAM method) after 1 month of observation. It helped to analyze and compare the results achieved by students in traditional lessons and lessons based on this method.

RESULTS. The results of these methods provide valuable insights into the implementation and impact of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) method in primary classes. Findings from the classroom observation, interviews, and comparison revealed the benefits and challenges associated with the STEAM approach, as well as its influence on student engagement, motivation, and learning outcomes.



Result of the interview among teachers about conducting STEAM method in classroom

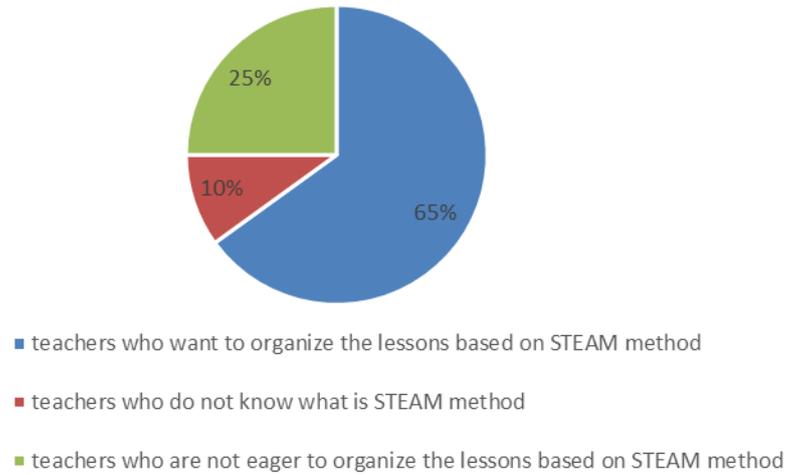


Figure 1: The results of interviews with teachers regarding the use of the steam method show a positive result.

Result of the interview among parents after lessons conducted STEAM method

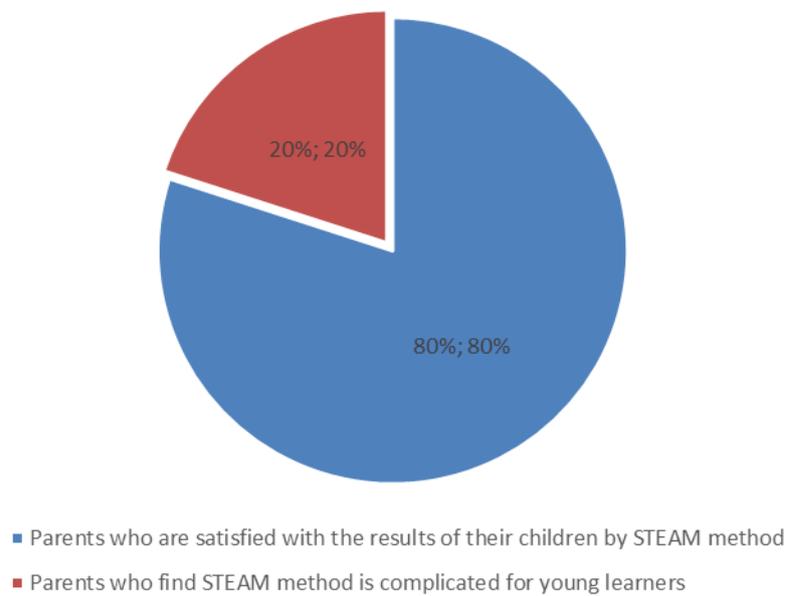


Figure 2: The results of interviews with parents regarding the use of the STEAM method show a high result.

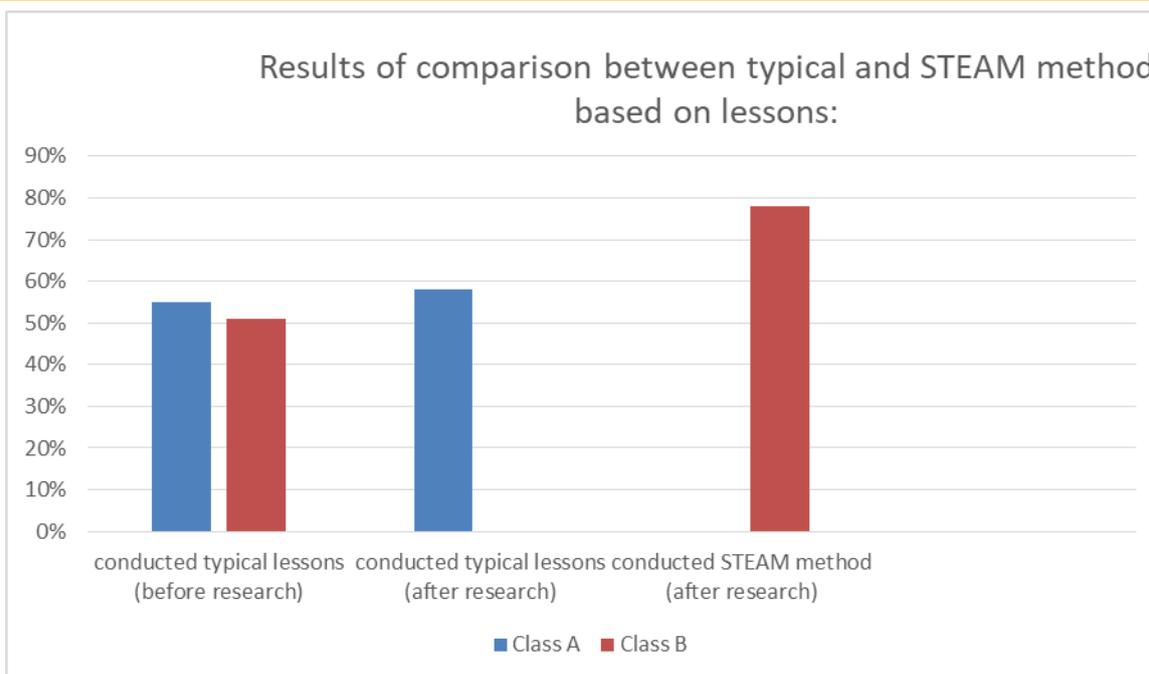


Figure 3: after using the STEAM method, the indicators increased dramatically **CONCLUSION.** In conclusion, the use of STEAM in primary classes can be a valuable tool for promoting critical thinking, creativity, and innovation. While there are challenges to implementing this method, the benefits can be significant for students in terms of their academic and career development. Therefore, it is important for schools to consider incorporating STEAM into their curriculum and provide the necessary support and resources for teachers to implement it effectively.

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