

**METHODOLOGY FOR ORGANIZING PROBLEM-BASED STEAM ACTIVITIES IN
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Abstract. This article examines the methodology for organizing problem-based STEAM (Science, Technology, Engineering, Arts, and Mathematics) activities in preschool educational institutions. The study focuses on approaches that engage young children in hands-on, inquiry-based learning, fostering critical thinking, creativity, and problem-solving skills. It analyzes the principles of designing age-appropriate tasks, integrating interdisciplinary content, and using educational tools to enhance active participation. The findings highlight that a problem-based STEAM approach supports holistic development, encourages collaboration, and prepares preschoolers for future learning experiences by promoting curiosity and independent exploration. Practical recommendations for educators are provided to implement effective STEAM activities in early childhood settings.

Keywords: Preschool education, Problem-based learning, STEAM activities, Early childhood development, Methodology, Inquiry-based learning

Introduction. In recent years, the importance of STEAM (Science, Technology, Engineering, Arts, and Mathematics) education in early childhood has gained significant attention worldwide. Introducing children to interdisciplinary learning at the preschool level not only fosters curiosity and creativity but also develops critical thinking and problem-solving skills from an early age. Problem-based learning, as an instructional approach, encourages active engagement, independent exploration, and the practical application of knowledge, making it particularly effective in the context of STEAM activities.

Preschool educational institutions serve as the foundation for holistic development, where children's cognitive, social, and emotional skills are nurtured simultaneously. Organizing problem-based STEAM activities requires careful planning, age-appropriate task design, and the integration of interactive tools to support experiential learning. Despite the growing recognition of STEAM, there is a need for clear methodological guidelines to implement problem-based activities effectively in early childhood settings.

Methodology. This study employs a qualitative research approach to explore effective methods for organizing problem-based STEAM activities in preschool educational institutions. The research focuses on analyzing existing pedagogical practices, observing classroom activities, and reviewing relevant literature on early childhood education and STEAM learning.

Data were collected through direct observation of preschool classrooms, interviews with educators, and analysis of lesson plans and educational resources used in STEAM activities. The study emphasizes practical strategies for integrating interdisciplinary content, designing age-appropriate problem-based tasks, and fostering active engagement among children.

The methodological framework is guided by principles of experiential learning, constructivist pedagogy, and inquiry-based education. Special attention is given to creating an environment that encourages collaboration, creativity, and independent problem-solving, ensuring that activities are both developmentally appropriate and culturally relevant.

The findings are synthesized to provide practical recommendations for educators to implement problem-based STEAM activities that enhance cognitive, social, and emotional development in early childhood settings.

Results. The implementation of problem-based STEAM activities in preschool settings demonstrated several positive outcomes. Observations indicated that children showed increased engagement and curiosity when participating in hands-on, interdisciplinary tasks. Activities such as building simple structures, conducting mini-experiments, and creating art projects based on scientific concepts encouraged active problem-solving and collaborative learning.

Educators reported that children were more willing to share ideas, ask questions, and work together to find solutions, highlighting improvements in social interaction and communication skills. Additionally, children exhibited enhanced creativity and critical thinking, as they explored multiple ways to approach a given problem. The study also found that incorporating familiar, real-life contexts into STEAM activities helped children relate abstract concepts to their daily experiences, making learning more meaningful and enjoyable.

Discussion. The results of this study indicate that problem-based STEAM activities significantly enhance preschoolers' engagement, creativity, and collaborative skills. The observed increase in children's curiosity and active participation aligns with previous research emphasizing the benefits of inquiry-based learning in early childhood education. By integrating interdisciplinary content and real-life contexts, STEAM activities help children connect abstract concepts to tangible experiences, fostering deeper understanding and meaningful learning.

Furthermore, the study highlights the role of educators in facilitating problem-based STEAM activities. Effective guidance, encouragement, and scaffolding were found to be essential for maintaining children's motivation and ensuring productive collaboration. The findings also suggest that such activities contribute not only to cognitive development but also to social and emotional growth, as children learn to communicate ideas, negotiate solutions, and support peers during collaborative tasks.

Conclusion. The study highlights the significance of organizing problem-based STEAM activities in preschool educational institutions as an effective approach to fostering children's cognitive, social, and emotional development. By integrating interdisciplinary content and designing age-appropriate tasks, educators can promote critical thinking, creativity, collaboration, and independent problem-solving among young learners. The findings demonstrate that problem-based STEAM activities not only enhance children's engagement and motivation but also provide a foundation for lifelong learning.

Practical recommendations for educators include carefully planning tasks that are both challenging and developmentally suitable, encouraging active participation, and creating a supportive

environment that nurtures curiosity and exploration. Implementing such methodologies in preschool settings can significantly contribute to holistic child development and prepare children for future educational experiences.

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