ADVANCED TEACHING STRATEGIES FOR ENHANCING STEM EDUCATION IN HIGHER INSTITUTIONS

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ABSTRACT

This paper explores innovative pedagogical strategies for enhancing STEM education in higher institutions, aiming to equip educators with effective methods to improve student engagement and learning outcomes. The study examines best practices among STEM teachers, highlighting successful strategies such as problem-based learning, flipped classrooms, and collaborative projects. It delves into active learning techniques, emphasizing the EduScrum framework, which adapts Scrum methodology for educational purposes, fostering collaboration and iterative progress. The paper also discusses self-regulation in students, providing strategies for developing essential skills like goal-setting and time management.
Furthermore, the paper reviews innovative assessment methods, contrasting traditional approaches with modern, formative techniques, including project-based assessments and digital portfolios. Emerging trends in teaching engineering mathematics are explored, focusing on integrating real-world applications and leveraging technological advancements. The use of mathematical software in teaching is also examined, showcasing tools like MATLAB and Python for visualization and problem-solving.
By synthesizing these diverse approaches, the paper offers comprehensive recommendations for educators to implement these strategies effectively. The findings aim to contribute to the ongoing development of pedagogical competences in STEM education, ultimately enhancing the quality of teaching and learning in higher education institutions.

***K*eywords** Mathematics Education · Digital Approaches · Pedagogical Strategies · Higher Education

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