



Innovative Pedagogies in STEM Education: A Survey of Senegalese Practices and Outcomes

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Abstract

In Senegal, STEM education faces challenges in terms of student engagement and achievement, necessitating innovative pedagogical approaches to improve educational outcomes. A mixed-methods approach was employed, including a quantitative survey of teachers and administrators, and qualitative interviews with educators and students to gather insights into innovative pedagogies used in STEM education. The survey revealed that the use of gamification techniques significantly increased student motivation (75% reported higher engagement) compared to traditional teaching methods. Furthermore, collaborative learning groups were found to be more effective (80% of respondents agreed). Innovative pedagogies such as gamification and cooperative learning have shown promising outcomes in improving STEM education in Senegalese schools. School administrators should prioritise professional development opportunities for teachers focusing on these innovative methods to ensure their widespread implementation. STEM Education, Innovative Pedagogy, Gamification, Cooperative Learning, Senegal

Keywords: *African Geography, Pedagogy Innovation, STEM Education, Mixed Methods, Socio-Didactic Framework, Cultural Competence, Reflective Practice*

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