



Impact Evaluation of Northern Ghanaian School-Based STEM Learning Modules on Academic Performance: A Randomized Controlled Trial

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Abstract

This study examines the impact of school-based STEM learning modules on academic performance in Northern Ghana. A randomized controlled trial was conducted, with schools randomly assigned to either a treatment group (receiving the STEM modules) or a control group (no intervention). The analysis revealed that students in the treatment group showed an average improvement of 12% in mathematics scores and 9% in science scores compared to their counterparts in the control group. These findings suggest that school-based STEM learning modules can significantly enhance academic performance, particularly in mathematics and science subjects. Schools should consider implementing these modules as a strategy to improve student engagement and achievement in STEM fields. STEM education, randomized controlled trial, Northern Ghana, academic performance The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, Ghanaian, Randomization, STEM, Evaluation, Intervention, Performance, Impact, Methodology*

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