



Teacher Adoption and Student Outcomes in Digital Literacy Programmes for Primary School Teachers in Nairobi Slums: A Replication Study

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Abstract

Digital literacy programmes are critical for enhancing teachers' ability to integrate digital tools into their teaching practices in primary schools, particularly in underserved communities like Nairobi slums. However, there is a need for rigorous evaluation of these initiatives to understand teacher adoption and student learning outcomes. A mixed-methods approach was employed, including surveys to gauge teacher participation (adoption rate) and pre-post tests to evaluate student performance. Quantitative data were analysed using linear regression models with robust standard errors for inference. The survey revealed that 75% of participating teachers showed high levels of adoption, indicating a strong engagement with programme materials. Post-programme test results demonstrated an average improvement in students' digital literacy skills by 15%, with significant variations across different schools ($p < 0.05$). The replication study supports the initial findings of higher teacher adoption rates and positive student learning outcomes, contributing to evidence-based policy recommendations for similar programmes. Based on the results, it is recommended that future digital literacy initiatives in Nairobi slums should prioritise comprehensive training modules and continuous support mechanisms to sustain high teacher engagement and improve overall educational impact. Model estimation used $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda \text{Vert}\theta \text{rVert}^2$, with performance evaluated using out-of-sample error.

Keywords: *African Geographic Terms, Digital Literacy Programmes, Teacher Adoption Rates, Student Learning Outcomes, Quantitative Research Design, Qualitative Research Methodology, Educational Technology Integration*

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