Teacher Digital Competency's Longitudinal Impact on Student Academic Performance in Kenyan Schools Revisited,

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Abstract

This study revisits previous research on the impact of teacher digital competency on student academic performance in Kenyan schools, with a focus on longitudinal effects. A mixed-method approach was employed, including quantitative analysis of standardised test scores and qualitative interviews with educators and administrators. Data were collected from a representative sample of schools in Kenya over two consecutive years. Findings suggest that while there is a significant positive correlation between teacher digital competency and student performance ($p < 0.05$), the effect size diminishes over time, indicating potential plateauing or diminishing returns on investment in teacher training programmes. The replication study confirms earlier findings but emphasizes the need for sustained professional development to maintain educational gains. School districts should prioritise ongoing digital literacy training and support for teachers to ensure continuous improvement in student learning outcomes. Model estimation used $\hat{\theta} = argmin\{\theta\}\, sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert\, 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Kenya, Digital Competency, Longitudinal Analysis, Educational Technology, Teacher Effectiveness, Quantitative Research, Qualitative Inquiry*

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