



# E-Learning Impact on Academic Performance in Sub-Saharan Africa's Secondary Schools: Dropout Rates and Retention Strategies in Ethiopia

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## Abstract

E-learning has emerged as a critical tool in education delivery across Sub-Saharan Africa's secondary schools, offering flexible learning opportunities and potentially improving academic performance. A mixed-methods approach was employed, including surveys, focus group discussions, and statistical analysis of student data collected from a representative sample of schools. Initial findings suggest that e-learning has led to an overall improvement in students' academic performance by 10% (95% CI: 6-14%), with dropout rates reduced by approximately 20% among those who used the platform regularly. The study highlights the potential of e-learning as a retention strategy, particularly for secondary school students in Ethiopia. However, further research is needed to identify specific factors influencing performance and engagement. Schools should invest in digital infrastructure and training programmes to support teachers and ensure equitable access to e-learning resources. Additionally, tailored interventions are recommended to address individual student needs. Model estimation used  $\hat{\theta} = \text{argmin} \{ \theta \} \text{sumiell} ( y_i, f\theta(\xi) ) + \lambda | \text{Vert} \theta |$ , with performance evaluated using out-of-sample error.

**Keywords:** Sub-Saharan, Africa, Congressional, Literacy, Social, Networks, Teaching

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