



Replicating Educational Technology Solutions for Remote Learning in Somali Rural Areas

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Abstract

This study addresses a current research gap in Computer Science concerning Developing Educational Technology (EdTech) Solutions for Remote Learning in Rural Areas in Somalia. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Developing Educational Technology (EdTech) Solutions for Remote Learning in Rural Areas, Somalia, Africa, Computer Science, replication study This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{Vert}^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, pedagogy, socio-technical systems, e-learning, participatory design, ethnography, accessibility*

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