



# Innovative Educational Technology Solutions for Remote Learning in Rural Central African Republic Settings

Isengwe Mbinga<sup>1,2</sup>, Diallo Ngaïbé<sup>1,2</sup>, Magwina Zogbi<sup>3</sup>, Nguini Ngoumbi<sup>2,3</sup>

<sup>1</sup> Department of Artificial Intelligence, University of Bangui

<sup>2</sup> University of Bangui

<sup>3</sup> Department of Data Science, University of Bangui

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**Correspondence:** [imbinga@yahoo.com](mailto:imbinga@yahoo.com)

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## Author notes

*Isengwe Mbinga is affiliated with Department of Artificial Intelligence, University of Bangui and focuses on Computer Science research in Africa.*

*Diallo Ngaïbé is affiliated with University of Bangui and focuses on Computer Science research in Africa.*

*Magwina Zogbi is affiliated with University of Bangui and focuses on Computer Science research in Africa.*

*Nguini Ngoumbi is affiliated with University of Bangui and focuses on Computer Science research in Africa.*

## Abstract

Remote learning in rural Central African Republic (CAR) faces significant challenges due to limited infrastructure and resources. Educational institutions often lack reliable internet connectivity, power supply, and sufficient digital devices for students. We employed a mixed-methods approach combining qualitative interviews with stakeholders (teachers, parents) and quantitative surveys among students to gauge their needs and preferences. A prototype educational platform was then developed using agile methodologies, incorporating feedback from our user research. A preliminary survey indicated that over 70% of rural schools in CAR have less than one internet-connected device per classroom. The majority (85%) preferred a platform offering offline capabilities to ensure access regardless of connectivity issues. The findings suggest the need for an educational technology solution focused on enhancing accessibility and user-friendliness, particularly in areas with limited technological resources. Developers should prioritise low-cost hardware solutions and focus on creating a platform that supports offline learning. Continuous engagement with local communities is essential to ensure the sustainability of these technologies. Model estimation used  $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi_i)) + \lambda \|\theta\|_2^2 \}$ , with performance evaluated using out-of-sample error.

**Keywords:** Remote Learning, Sub-Saharan Africa, Mobile Computing, e-Learning Platforms, Wireless Networks, Digital Divide, Participatory Action Research

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