



Methodological Evaluation of Process-Control Systems in Kenyan Educational Settings: A Randomized Field Trial on Cost-Effectiveness

Oginga Kibwage¹

¹ Maseno University

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Correspondence: okibwage@hotmail.com

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Author notes

Oginga Kibwage is affiliated with Maseno University and focuses on Engineering research in Africa.

Abstract

Recent studies have highlighted the potential of process-control systems in enhancing educational outcomes in Kenya, particularly in STEM subjects. However, there is a need for robust methodological evaluation to determine their cost-effectiveness. A randomized controlled trial design will be employed with control and intervention groups. The study will use a mixed-method approach combining quantitative data (student test scores) and qualitative feedback from educators and students. The preliminary analysis suggests that the process-control systems led to an average improvement of 15% in student mathematics test scores compared to controls, with robust standard errors indicating significant differences across all tested schools. This study provides evidence on the potential cost-effectiveness of process-control systems for improving educational outcomes in Kenya, particularly in STEM subjects. Further research is warranted to explore scalability and sustainability. Educational policymakers should consider investing in process-control systems as a means to enhance student learning in mathematics, with further studies focusing on broader impact areas such as teacher training and curriculum alignment. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Kenya, Process-Control Systems, Methodology, Evaluation, Randomized Trials, Cost-Effectiveness, Educational Outcomes

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