

Technology Adoption in Secondary Mathematics Teaching in Kenya: An Explanatory Mixed Methods Study

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Abstract

This study examined the factors related to technology adoption by secondary mathematics teachers in Nyandarua and Nairobi counties in the Republic of Kenya. Using a sequential explanatory mixed methods approach, I collected qualitative data from interviews and classroom observations of six teachers to better understand statistical results from the quantitative survey of 135 teachers, and drew on Rogers' (2003) diffusion of innovations theory. In the initial quantitative phase, using multiple regression analysis, I identified six explanatory variables related to technology adoption that resulted in R square of 61.2% and adjusted R square of 59.3%. These six variables and the corresponding standardized regression coefficients (Beta) are as follows: age of a teacher (), school type (.267), Internet at home and school (.245), educational technology in general (.301), in-service training (.527), and discussions about technology (.161). In the qualitative phase, the participants described how technology training, technology resources, and demographics influenced their decisions to adopt technology in their teaching. Overall, the findings revealed that secondary mathematics teachers in Kenya lacked technology skills and technology training was low, the Internet supported early adopters in selftraining, access to learning resources, and teacher collaboration, while a lack of adequate technology resources hampered technology adoption, the late adopters' had negative views about technology in learning environments and where technology was available the teachers were not using technology for teaching mathematics. Some of the non-significant variables included gender, education level, time, ownership of laptop computer, and computer lab. Indeed, qualitative data revealed that time to complete the syllabus and to prepare technology-enhanced lessons inhibited teachers' decisions to adopt technology in mathematics teaching. Through this study, I conclude that in-service training is the most significant factor in technology adoption process over and above the availability of technology resources while the relationship between school type and age of a teacher on a mathematics teacher's technology adoption score were not well understood. For this reason, technology training programs for teachers need to be reevaluated to consider committing technology trainers who understand technology, training teachers on specific mathematical software, establishing training centers near teachers' localities, and encouraging collaboration efforts. This study suggests recommendations for further research to understand technology adoption in secondary mathematics teaching in Kenya.

Keywords: Technology adoption in secondary mathematics, Teaching in Kenya

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