

Academic Self-Concept, Motivation and Resilience as Predictors of Mathematics Achievement among Secondary School Students in Nairobi County, Kenya

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Abstract

Mathematics is considered a key foundation for scientific knowledge required for the development of any nation. Poor mathematics achievement has been reported nationally. The purpose of this study was to establish whether academic self-concept, academic motivation and academic resilience singly and jointly predict mathematics achievement of secondary school students in Nairobi County, Kenya. The objectives of the study included establishing the extent to which: academic self-concept predicts mathematics achievement, academic motivation predicts mathematics achievement, academic resilience predicts mathematics achievement and determining the relative predictive values of academic self-concept, academic motivation and academic resilience on mathematics achievement, test for gender differences in academic self-concept, academic motivation, and academic resilience and to establish differences in academic self-concept, academic motivation, academic resilience and mathematics achievement among students in different categories of schools. The study was based on the theories of self-determination and resilience by Deci and Ryan, and Flach respectively. Predictive correlational research design was used in this study. The study comprised a population of 9641 form three students in public secondary schools in Nairobi County, Kenya. A sample of 500 respondents was drawn from the population, using purposive, stratified and simple random sampling. A questionnaire was used to measure the respondents' academic self-concept, academic motivation and academic resilience. The participants' mathematics achievement score used was the average score in form two second and third terms and form three first term (2016). A pilot study was conducted among 40 form three students from one coeducational day public secondary school in Nairobi County to establish the validity and reliability of the questionnaire. Descriptive and inferential statistics including simple and multiple linear regressions, ANOVA and t-test for independent samples and Tukey's HSD were used for data analysis. The hypotheses were tested at $\alpha=.05$. The results showed that: academic self-concept positively and significantly predicted mathematics achievement ($F(2,460) = 2.98, P<.05$); academic motivation and mathematics achievement were significantly related in some domains ($F(4, 458) = 8.01, P<.01$) and academic resilience positively and significantly predicted mathematics achievement ($F(1, 461) = 41.49, P<.01$). Further, the three variables working together positively and significantly predicted mathematics achievement ($F(3,459) = 13.88, P<.01$); there were no significant gender differences in the three predictor variables and mathematics achievement and the type of school significantly influenced academic resilience and mathematics achievement ($F(2, 460) = 6.71, P<.01$ and $F(2,460) = 71.91, P<.01$) respectively while it had no significant influence on academic motivation and academic self-concept ($F(2,460) = .16, P<.85$ and $F(2, 460) = .19, P<.83$) respectively. It is recommended that parents and other educational stakeholders work together to enhance the students' academic resilience since the findings indicated that it was the best predictor of mathematics achievement. A similar study should be carried in other counties in Kenya for the purpose of generalization of findings.

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