

A Quasi-Experimental Study of the Impact of 5Es Instructional Model on Students' Mathematics Achievement in Northern Province, Rwanda

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Abstract : Mathematics is the foundational enabling discipline that underpins science, technology, and engineering disciplines. Science, technology, engineering, and mathematics (STEM) subjects are foreseen as the engine for socio-economic transformation. Rwanda has done reforms in education aiming at empowering and preparing students for the real world job by providing career pathways in science, technology, engineering, and mathematics related fields. While that considered so, the performance in mathematics has remained deplorable in both formative and national examinations. Therefore, this paper aims at exploring the extent to which the engage, explore, explain, elaborate and evaluate (5Es) instructional model contributing towards students' achievement in mathematics. The present study adopted the pre-test, post-test non-equivalent control group quasi-experimental design. The 5Es instructional model was applied to the experimental group while the control group received instruction with the conventional teaching method for eight weeks. One research-made instrument, mathematics achievement test (MAT), was used for data collection. A pre-test was given to students before the intervention to make sure that both groups have equivalent characteristics. At the end of the experimental period, the two groups have undergone a post-test to ascertain the contribution of the 5Es instructional model. Descriptive statistics and analysis of covariance (ANCOVA) were used for the analysis of the study. For determining the improvement in mathematics, Hakes methods of calculating gain were used to analyze the pre-test and post-test scores. Results showed that students exposed to 5Es instructional model achieved significantly better performance in mathematics than students instructed using the conventional teaching method. It was also found that 5Es instructional model made lessons more interesting, easy and created friendship among students. Thus, 5Es instructional model was recommended to be adopted as a close substitute to the conventional teaching method in teaching mathematics in lower secondary schools in Rwanda.

Keywords : 5Es instructional model, achievement, conventional teaching method, mathematics

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