

Effects of Using Loci-kit models on Secondary schools Students' Achievement in the Mathematics Topic "Loci" in Kibwezi District, Kenya

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Abstract

Students have continued to perform poorly in mathematics at the Kenya Certificate of Secondary Education (KCSE) examinations in Kenya secondary schools. Their performance in certain mathematics topics has consistently been poor. One such topic is Loci that is taught to 18 year old form four students in secondary schools, Kenya. The poor performance in mathematics has been attributed to several factors, which include: poor teaching methods, lack of teaching and learning resources, and the abstract nature of mathematics. This study sought to investigate effects of using Loci-Kit Models in the mathematics topic loci, during instruction, on students' achievement in mixed-sex secondary schools of Kibwezi District, Kenya. There is however inadequate research conducted in Kenya on the effects of using models in mathematics classrooms on students' achievement in mathematics. The researchers constructed Loci Kit Models to augment the teaching of loci in form four mixed-sex secondary schools in Kenya. A simple random sample of four schools was obtained from 44 mixed-sex district secondary schools in the district. The study was carried out in a mathematics classroom setting. Solomon Four, Non-Equivalent Control Group Design was used. The two experimental groups were exposed to the use of Loci Kit Models as the treatment while the two control groups were taught using the conventional teaching methods. The sample size was 195 students, 82 girls and 113boys. A Mathematics Achievement Test (MAT), constructed by the researcher was used. The instrument was pilot tested and its reliability estimated at 0.77. The instrument was validated by five experts from the Department of Curriculum, Instruction and Educational Management of Egerton University and three secondary school mathematics teachers. The MAT was administered to the two groups, one experimental and one control before intervention and then to all the four groups after intervention. Inferential statistics (t-test, ANOVA and ANCOVA) were used to analyze the data. The level of significance for acceptance or rejection of the hypotheses was set at 0.05 α level. The findings of this study are likely to benefit secondary school students and mathematics teachers for they will understand the effects of using models in mathematics in general and device ways of intervention in order to improve mathematics performance.

Keywords: Loci-Kit Models, mathematics achievement, Kenya

Fulltext: [http://www.ajmse.leena-luna.co.jp/AJMSEPDFs/Vol.2\(2\)/AJMSE2013\(2.2-10\).pdf](http://www.ajmse.leena-luna.co.jp/AJMSEPDFs/Vol.2(2)/AJMSE2013(2.2-10).pdf)