

Effects of Inquiry-based Teaching Approach on Secondary School Students' Achievement and Motivation in Physics in Nyeri County, Kenya

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Abstract:

The overall students' performance in physics at the Kenya Certificate of Secondary Examination (KCSE) has been poor coupled with very low student enrollment. The preferred mode of delivery by physics teachers in Kenyan secondary schools is the expository teaching approach. This approach is dominant despite growing evidence that it is not effective in inculcating the content knowledge, conceptual knowledge and science process skills that are part of quality physics teaching. Available literature shows that Inquiry-Based Teaching (IBT) approach is capable of promoting these attributes among students. However, there is little documentary evidence on the effects of Inquiry-Based Teaching (IBT) approach on secondary school students' achievement in physics in Kenyan secondary schools. This study aimed at finding out the effects of IBT approach on students' achievement in physics in Nyeri, County. The study adopted a Quasi-Experimental Research Design. Solomon-Four Non-equivalent Groups Design was involved. Stratified random sampling technique was used to select four boys' and four girls' county secondary schools in Nyeri, County. The four schools in each category were assigned to treatment and control groups by simple random sampling technique. Each group had one boys' and one girls' county secondary school. Each school provided one form two class for the study and a total of 370 students were involved. Students in all the groups were taught the same physics content but the experimental groups were taught using IBT approach while the control groups were taught through Regular Teaching Methods (RTM) such as lecture method and teacher demonstrations. The experimental group I and the control group II were pre-tested prior to the implementation of the IBT treatment. After four weeks, all the four groups were post-tested using the Students' Physics Achievement Test (SPAT). The instrument had been validated by five experts in education and pilot tested before use to estimate its reliability. The reliability coefficient using K-R21 was 0.87. The acceptable threshold for reliability coefficient is 0.7 and above. The instruments were scored and data was analyzed using t-test, one way ANOVA and ANCOVA at a significance level of coefficient alpha (α) equal to 0.05. The findings of the study showed that Inquiry-Based Teaching (IBT) approach resulted into higher students' scores in achievement in physics. The study recommends that Teacher training institutions, Kenya Institute of Curriculum Development (KICD) and physics teachers should enact IBT approach as the preferred physics teaching approach in Kenyan secondary schools.

Key words: Expository Teaching Approach; Inquiry-Based Teaching Approach; Students' Achievement in Physics

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