

Effects of Practical Work on Students' Achievements in Physics at Secondary School Level in Murang'a East Sub-County, Kenya

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Abstract

This study explored the effects of practical work on students' achievements in Physics at secondary school level in Murang'a East Sub-County. The choice of this study was motivated by the declining number of students taking Physics at KCSE in Murang'a East Sub-County. The situation is dire to the extent that some schools do not even present a single candidate for Physics in KCSE. This is despite the fundamental role Physics as a science subject plays in the contribution of innovations and developments required to achieve vision 2030. This study was designed to investigate the effects of practical work in enhancing students' achievements in Physics in Secondary schools in Murang'a East Sub-County. Specifically the study was set to achieve five objectives namely to examine the effects of practical work on students' performance in Physics; to investigate the effects of practical work on students' attitudinal change in Physics, to assess the influence of practical work in Physics on students' acquisition of science process skills; to find out whether practical work in Physics has any influence in the number of students enrolling to take Physics in Form Three and to develop a scheme for evaluating practical work in Physics. The study targeted 9820 students in 31 public secondary schools of Murang'a East Sub-County. The study was a quasiexperimental design. It comprised four mixed secondary schools purposely sampled; two experimental groups and two control groups. The main units of analysis were the 188 Form 2 students of the four purposively sampled mixed Day Secondary Schools. All the four groups were exposed to the pretest. The experimental groups were taught using the practical approach for one term while the control groups were taught using the traditional method. The study used four instruments namely: A pretest Physics Achievements Test, Physics Attitudinal scale, an Observation Checklist and post-test Physics Achievements test. At the beginning of the term, all the four groups sat for pre-test Physics Achievements test. They completed the Physics Attitude scale. They also sat for the post-test achievements test at the end of the term. An observation checklist for skills Acquisition (OCFSA) was used to assess the science process skills acquired by the students. The data obtained were analyzed using SPSS version 21. Student's t-test was used to compare the mean of the experimental and control groups. The significance of the results was tested at $\alpha = .05$ significance level. The results of the study showed that Practical Approach resulted in higher students' achievements in Physics, lead to improved students' attitude towards Physics and resulted in higher student enrolment in Physics at KCSE. This approach also resulted in improved students' acquisition of science process skills. Finally, a prototype marking scheme for evaluating practical work in Physics was developed. The study concluded that, practical Instructional Approach towards Physics is an effective teaching method which Physics teachers should be encouraged to use to enhance students' achievements in the subject. The study recommended adoption of the teaching

approach and marking scheme in all schools in Kenya in order to boost students' achievements, enhance acquisition of science process skills, improve students' attitude towards the subject and increase the enrolment.

Keywords: Physics Secondary School Level, Murang'a East Sub-County, Kenya

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