ABSTRACT

The Kenyan Secondary School biology syllabus strongly recommends the guided discovery (GD) approach to teaching biology. However, in 2012 a survey of science and mathematics teachers in secondary schools revealed that most teachers still use exposition-with-interaction (EI) method, though research is silent on this claim in Nyakach Sub-county. In GD learners interact through adoption of process skills such as observation, hypothesis testing and experimentation while in EI, interaction is through questioning, thus the two methods are therefore expected to have similar results on learners' performance, but the Kenya Certificate of Secondary Education (KCSE) results vary countrywide. In Nyakach Sub-county, students have continued to attain poor results in biology in K.C.S.E examination with mean scores within the years 2011 and 2013 ranging from 3.73 to 4.85 out of the possible 12.00. The Kenya National Examination Council (KNEC) and Sessional paper No.1 2005 attribute poor performance to methods used in teaching biology. However, no empirical study has been done to document differences in GD and EI and their influence on learners' performance in biology. There was therefore a need to compare the influence of the two methods on learners' performance. The purpose of this study was to compare the influence of GD and EI teaching methods on secondary school learners' performance in biology in Nyakach sub-county. Objectives of the study were to: establish the frequency of use of GD and EI in teaching biology in Nyakach sub-county, establish the influence of GD on learners' performance, establish the influence of EI on learners' performance and compare GD and EI on the basis of learners' performance in biology. This study was guided by a conceptual framework showing use of GD and EI teaching methods on learners' performance in biology. The study adopted causal-comparative and descriptive survey research designs. Target population consisted of 120 biology teachers and 3225 Form 4 students of the year 2014 distributed in 47 schools. Using a stratified sampling technique, fifteen secondary schools, five from each of the three administrative units in the sub-county were randomly selected for the study. A sample of 343 students was determined by use of Fischer formula. Added to the above, 44 Form 4 biology teachers within the study schools were sampled purposively for the study. The sampled teachers were categorized as GD and EI based on the method of teaching they were using. Data was collected as follows: Questionnaire was issued to teachers to establish the frequency of use of GD and EI. Secondly, teachers were observed as they taught to verify results from the questionnaire. Data was also generated through document analysis guide on analysis of documents that were relevant, that is KCSE (2014) examination results in order to provide scores differentiating GD and EI teachers. Experts in the department of Education Communication, Technology and Curriculum Studies helped to determine face validity of the instruments. Piloting was done through test-retest technique and a Pearson product moment correlation coefficient (r) score of .75 was realized for the Questionnaire and .83 for Observation Schedule. Quantitative data was analyzed using frequency counts, means and percentages; and t-test at ($p<0.05$). Qualitative data was analyzed using themes, categories and patterns. Results indicated that percentage mean score of students taught using GD method (54.09%) was higher than that of EI method (37.34%) and the difference was significant,($t(341) = 19.704$; $p=.05$). Findings of this research reveal that GD enhances learners' performance than EI and should be used to teach biology. The study therefore

may benefit teachers and policy makers to adopt better teaching method for improved performance of learners in biology.