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EFFECT OF COLLABORATIVE CONCEPT MAPPING TEACHING STRATEGY ON STUDENTS' ACHIEVEMENT, MOTIVATION AND ATTITUDES TOWARDS CHEMISTRY IN SELECTED SECONDARY SCHOOLS IN KENYA



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Abstract

In Kenya, the fundamental challenge facing teaching of chemistry as a science subject in secondary schools is how to enhance students' conceptual understanding as well as affective characteristics associated with teaching/learning process. The challenge has impeded students' attainment of meaningful learning. Based on this challenge, the present study was designed to determine the effect of Collaborative Concept Mapping (CCM) teaching strategy on secondary school students' achievement, attitude and motivation towards Chemistry learning. The theoretical framework of the study was based on constructivist theories which view learners as active constructors of meaning from input by processing it through existing cognitive structures and then retaining it in the long-term memory. A Solomon-Four Group quasi-experimental research design was used in the study. Based on the design four co-educational secondary schools were randomly selected for the study from secondary schools in Bomet District. Students in the experimental groups were taught using CCM teaching strategy for 8 weeks while the rest were taught using conventional teaching methods. Students' Attitude Towards Chemistry and Motivation Towards Chemistry learning Questionnaire (ATMTCQ) was used in data collection. Mole Concept Achievement Test (MCAT) was also administered to determine students' achievement as well as conceptual understanding on the topic of "mole concept". The research instruments were pilot-tested for validity and reliability before being used in the study. Descriptive as well as inferential statistics were used in data analyses. The statistics used include frequencies, mean, ANOVA and ANCOVA. All the statistical tests were subjected to a test of significance at alpha (α) level of 0.05. Results of the study showed that CCM as a teaching strategy had no significant effect on the achievement level 1 (MCAT1) among students of low and average academic abilities as well as those of higher academic abilities. CCM showed a positive and significant effect on students' achievement level 2 (MCAT2) among students of low and average academic abilities; however this was not the case among the students of high academic abilities. CCM did not also show any significant effect on both students' ATC as well as MTC. The findings are expected to establish foundation upon which innovative teaching strategies can be developed to enhance meaningful learning among chemistry learners. The findings are also expected to form a frame of reference for further research on innovative teaching strategies in chemistry education as well as in science education in general.