

**ABSTRACT**

Achievement in Mathematics is a challenge to students at secondary school level in Kenya. One of the major millennium goals of republic of Kenya is to be industrialized by year 2030. This goal can be achieved by promoting Mathematics as one of the core subjects. Most studies have focused on school related factors, subject related factors and teacher related factors as predictors of students' achievement in Mathematics, scanty literature is available globally on the self-determination, an indication that this area has minimally been researched. The purpose of the study was to investigate influence of self-determination as a predictor of Mathematics achievement among students in secondary schools in Kenya. The objectives of the study were to: measure the influence of efficacy expectation on Mathematics achievement among students in secondary schools in Vihiga Sub County, determine the influence of level of internal locus of control on Mathematics achievement among students in secondary schools in Vihiga Sub County, establish the influence of self-knowledge on Mathematics achievement among students in secondary schools in Vihiga Sub County, and to examine the influence of self-instruction on Mathematics achievement among students in secondary schools in Vihiga Sub County. The Self-determination theory informed the study, supported by Achievement Goal Theory. The study adopted Mixed Methods approach and the Sequential Explanatory Design were used. A total of 1483 form four students, 35 Mathematics teachers, and 27 teacher counsellors formed the target population in the study. A sample size of 445 students, 11 Mathematics teachers, and 9 teacher counsellors were selected using stratified random sampling, purposive sampling and simple random sampling techniques respectively. Quantitative data was collected using a Students' Questionnaire while qualitative data was collected using interviews from students, teacher counsellors and Mathematics teachers. Students' achievement was assessed using 2017 K.C.S.E Exam results. A pilot study was carried out in three schools in Emuhaya sub-county. Reliability of the questionnaire was ensured by Cronbach's alpha and a coefficient of alpha of 0.8 was reported for all items' subscales, showing that all questionnaires were suitable for data collection. Reliability of interview schedules was ensured by researcher consultation with two academic supervisors. Normality of data was tested by using Kolmogorov-Smirnov and Shapiro-Wilk (W) tests. Two academic supervisors at the University revised the instruments to be sure of content, face and construct validity. Descriptive statistics such as frequencies and percentages were used to analyze quantitative data from questionnaires, while inferential statistics such as Regression Analysis and Pearson correlation coefficient were used to analyze quantitative data. Thematic framework was used to analyze Qualitative data. The study found that there was: statistically significant, though weak, positive correlation ( $r=1.42, n=396, p=.005$ ) between self-efficacy of expectation and Mathematics achievement, statistically significant, though weak, positive correlation ( $r=.182, n=396, p<.05$ ) between internal locus of control and Mathematics achievement, statistically significant, though weak, positive correlation [ $r=.192, n=396, p<.05$ ] between student level of self-instruction and Mathematics achievement. Although there was some element of positive correlation ( $r=.088$ ), there was no statistically significant correlation [ $r=.088, n=396, p=.080$  (ns)] between self-knowledge and Mathematics achievement. The findings showed that self-determination significantly predicted the achievement in Mathematics among secondary school students. The study recommends that the school principals should develop structured programs in schools to inculcate internal locus of control among students since internal locus of control had the highest influence on students' achievement in Mathematics. A replication of this study should be conducted in private schools in Kenya.