Effects of teaching through problem - solving approach on students mathematics achievement in secondary schools Kenya.

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Student's low performance in Mathematics at Kenya Certificate of Secondary Education (KCSE) in Kenya has been of concern to primary and secondary stakeholders. This is because the performance in Mathematics determines student's participation in science oriented program-mes at tertiary level. Many interventions have been put in place but low performance persisted. Although science progarnrnes have been targeted by the country (Kenya) to support their development agenda as described in the current vision 2030 which includes social, economic, technological and industrial development. The study examined the effects of teaching through problem solving on students achievements in Mathematics in secondary schools of Muranga County. The study was guided by the following two objectives to: compare students' performance in Mathematics for those taught using problem - solving strategies with those taught using conventional strategies and assess the students change in attitude towards Mathematics when taught through problem - solving strategies in teaching of Mathematics in secondary schools. The study employed quasi experimental design using Solomon Four Group design. The target population was all students in 340 secondary schools in Muranga County. Accessible population was Form Three students comprising 28,475. Four schools were randomly sampled from four categories stratified according to their previous four years KCSE performance giving a total of 16 schools: 8 schools experimental and 8 schools control. Eight schools participated in pre-test and all 16 schools received post- test Mathematics achievements tests after intervention. Data from the research instruments were coded and analysed using Statistical Package for Social Sciences (SPSS) version 23. To establish if there is any significance means difference between students taught through problem solving and those taught through conventional strategies t tests and Analysis of Variance (ANOVA) were carried out. In order to establish the effect of problem solving method approach of teaching Cohens d is used. The study established that students pre-test means differences insignificant (t (273) = 0.924) and Cohens d = 0.17 which is small effect P 1, 0.05. The post test revealed that students performance improved significantly (F (540) — 2.537, p = 0.0025, i 0.05) and Cohens effect of 0.71 which is positive moderate effect. Problem solving skills helped to change the students Attitude towards Mathematics Cohens d of 0.88 which is large. There is overall improvement on Mathematics achievement which benefits students in secondary schools in Kenya to pursue their future career choice. The study recommends that students and teachers should embrace problem solving rather than conventional methods for better achievement in Mathematics in secondary schools in Kenya.

Keywords: Mathematics achievement; Problem Solving; Attitudes.