Education forms a life long source of manpower through which the individual acquire knowledge, skills, positive attitude and positive behavior, which will be the backbone foundation of the country's wealth. The Kenyan government in its vision 2030 has highlighted education as one of the pillars, which will be used to propel Kenyan into industrialized country by 2030. However the effort to realize quality education in all levels of education has been backwashed by poor performance in mathematic and sciences especially at secondary level. To address the poor performance in mathematics and sciences, the Kenyan government in conjunction with government of Japan initiated an In-Service Education and Training (INSET) for strengthening mathematics and sciences in secondary education (SMASSE). The INSET was piloted in 15 districts from February 27th 1998 to 30 June 2003. The Project (SMASSE) was then implemented in 2004 to cover all districts in Kenya. In Tigania West district mathematics and science teachers underwent and completed the four cycles of SMASSE Project, in which teachers were in-serviced on ways of teaching mathematics using ASEI/PDSI, the principles of SMASSE project.

The study aimed at assessing the impact of SMASSE Project on teaching and learning of mathematics in secondary schools in Tigania West district. The use of ASEI/ PDSI principles of SMASSE training was used to establish the impact of the Project on teaching and learning of mathematics. The KNEC examinations results were used to ascertain the impact of the project on teaching and learning of mathematics. Training of mathematics teachers, learning of mathematics, teaching of mathematics and the impact of SMASSE Nationally on mathematics was discussed under literature review. A descriptive survey research design was adopted to access the impact of SMASSE project on teaching and learning of mathematics. The target population had 16 mathematics teachers who had attended SMASSE project and 1112 form four students in the district. Purposive sampling and stratified sampling was used to select seven schools from the various categories of the schools in the district. Simple random sampling was then used to select seven teachers from the sampled schools. 70 students were sampled and systematic sampling was used to select ten students in the individual schools. Specifically student's questionnaire, Head of mathematics department questionnaire and mathematics teacher's questionnaire were used extensively to collect data from teachers and students. Piloting was then done in two schools not sampled to establish validity and reliability of information collected, a correlation coefficient of about 0.85 was reliable. Variables used were students and teachers on whom the raw data was collected for analysis. The data collected were then analyzed using descriptive statistics such as means, modes and reported using frequency, percentages, and graphs. The main findings of the study were as follows; the study found out that there was partial implementation of ASEI/PDSI principles with teachers averagely involving students in the teaching/learning process. Teachers in teaching process also averagely applied students-centred methods of teaching. Performance of students in K.C.S.E had shown a steady improvement since 2004 when SMASSE training was started in the district as oppose to erratic performance before SMASSE training. However performance of mathematics is still low. Teachers and students agreed on the use of SMASSE training in enhancing teaching and learning of mathematics. Major challenges faced by teachers while implementing ASEI/PDSI principles were students' discipline, teachers' workload, availability of physical facilities and students' absenteeism. The researcher had the following recommendations; it was suggested that SMASSE project to be continued as an in-service program for mathematics teachers and that specifically it should be rolled out to primary education level. Teachers who are implementing the ASEI/PDSI approaches should be identified through formulated evaluation scheme and eventually be motivated through
promotions. The school equipment program unit (SEPU) should be fully supported by the government. The curriculum supervisors should be SMASSE compliance. In conclusion SMASSE project (training) was found to have positive impact on teaching and learning of mathematics as evidence by steady improvement of mathematics in the district despite the low performance.