Scientific and technological innovation is the emerging trend all over the world. In Kenya the government has launched the vision 2030 blueprint which reflects envisaged economical and industrial take off by the year 2030. This cannot be possible without emphasizing on quality education. However performance in sciences and mathematics had been poor year in year out. It is due to this dismal performance that in-service training for science and mathematics teachers through SMASSE IN-SET was found necessary. The purpose of this study was to evaluate whether the SMASSE IN-SET has achieved its intended objectives on the teaching and learning of physics in Kahuro District. The objectives of the study included establishing whether the instructional methods used by physics teachers are student centered, if teachers have adopted PDSI approaches in their teaching, the current teachers' and learners' attitude towards physics, the specific ways of improvisation which physics teachers use during teaching and learning process and establishing students' physics performance. The literature was reviewed under instructional techniques in sciences, ASEIIPDSI approach in facilitating science learning, effect of attitude in science education, role of teaching and learning resources in science education and the K.C.S.E physics performance trends. Exploratory descriptive survey design was used to conduct the study. Twelve schools were sampled for the study. Simple random sampling was used to select form 3 and 4 students. The target population comprised of physics teachers and students in the District. Data was collected using questionnaires for students and teachers. An observation schedule was used to record facilities in the sampled schools. The validity of the research instruments was judged and reliability determined by use of test-retest method. The collected data was coded, edited and then analyzed using the statistical package for social science (SPSS). The major findings were that most of the teachers have adopted most of the aspects of learners-centered approach. Positive attitude among teachers and learners toward physics was noted. Teachers were found to conduct class experiments regularly, prepare teaching aids and organize field trips for the learners. In addition, teachers were found to have implemented some aspects of PDSI like evaluation of the lesson, however preparation of ASEI lesson plan was lacking. Moreover, teachers were found to rarely use locally available materials. Finally the KCSE physics performance was found to have improved slightly though at a slow pace. Based on these findings, it is recommended that mathematics and science teachers be sensitized on the need to continue adopting PDSI aspects and learner centered approach and be motivated on the need to embrace them fully for a meaningful impact to be realized in the near future in provision of quality education. Also, an all inclusive stakeholder participatory approach be adopted to cushion gains achieved through SMASSE IN-SET against undesirable effect of extraneous variables. In conclusion, SMASSE IN-SET principles should be fully adopted by teachers and be incorporated in the pre-service teacher education curriculum.