

**IMPLEMENTATION OF STRENGTHENING MATHEMATICS AND SCIENCE
IN EDUCATION PROGRAMME IN TEACHING OF BIOLOGY IN
SECONDARY SCHOOLS IN KENYA**

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award

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Certification

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled "Implementation of Strengthening Mathematics and Science in Education Programme in teaching of Biology in Secondary Schools in Kenya".

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ABSTRACT

Strengthening Mathematics and Science Education programme was started as a joint venture between Kenya and Japan governments as a solution to poor performance in mathematics and science education. The programme is currently being practiced in Japan, Nigeria, and South Africa among other countries. The purpose of this study was to investigate extent of implementation of SMASE programme and how it has influenced performance in mathematics and science education. The approaches of the programme are Activity-Based, Student-Centered, Experiment and Improve as well as Plan, Do, See and Improve. Study objectives included: establishing the extent of implementation of SMASE programme as practiced by teachers; the influence which the programme has caused on learners' perception in learning of biology and; its influence on academic achievement in biology. The study involved biology teachers and students in secondary schools. The study used purposive sampling technique. Purposive expertise sampling was used to determine schools having teachers who had been trained in SMASE programme teaching approaches. Purposive criterion sampling was used to select teachers who were trained in SMASE programme teaching approaches and also the class of students. Then lastly, Purposive systematic sampling was used to select students in the ratio of 1: 3 to come up with 1125 form three students out of the students' population of 3500 in Bungoma North sub-County. The study sampled 66 out of the target of 80 teachers trained in SMASE programme teaching approaches. Form three students were appropriate since they have been in school for more than two years experiencing SMASE programme teaching. The study was carried out in Bungoma North sub-County. The following instruments were used in data collection: Lesson Observation Checklist, Student's Questionnaire and Analytical Method. Piloting was carried out on 10 secondary school teachers who trained in SMASE programme teaching approaches and 50 form three students. Piloting was done to the instruments to ensure they are valid and reliable. Data obtained in this study were organized and analyzed using Statistical Package for Social Science (SPSS). Qualitative data were first translated to quantitative data and then subjected to SPSS programme to generate frequencies and percentages and presented in tables. Quantitative data were also analyzed using SPSS and presented in frequencies and percentages in table form. The study found that: SMASE programme teaching approaches in secondary biology education have been poorly implemented; however learners seemed to indicate a positive perception in learning of biology and; SMASE programme seem not to have contributed towards improved academic achievement in biology education.