INFLUENCE OF MATHEMATICAL LANGUAGE ON STUDENTS' UNDERSTANDING AND ACHIEVEMENT IN MATHEMATICS AT SELECTED SECONDARY SCHOOLS IN KENYA

by

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ABSTRACT

Mathematics is a subject in school curriculum that has a specialized language with a set of words and symbols that have unique meanings. Achievement in the subject over the years has been poor. Research on mathematical language as a means through which mathematics concepts are abstracted is minimal and has not yet addressed the language as a method of teaching the subject. This study sought to investigate the influence of mathematical language on student's understanding and achievement in mathematics at the secondary school level in Kenya. Mathematical language was studied in three parts: the terms (words), the symbols, and the structures (concepts). A sample of 18 secondary schools stratified by social set up, gender, and location were involved in the study. The sample comprised 661 students, 71 mathematics teachers. Also 18 observed lessons, and 18-school end of term marks and examinations provided information on mathematical language and achievement in mathematics. The study investigated the influence of 'mathematical language' on students' achievement in mathematics in secondary schools, and to determine extent to which it is included in mathematics lessons. The mathematical language, gender and mathematics resources formed the independent variables, while achievement in mathematics and understanding mathematical language formed the dependent variables. A teacher's questionnaire, a student's questionnaire, three tests (on mathematical terms, symbols and on structures), and a lesson observation schedule were administered after pilot testing in Kapsoya Secondary School in Eldoret to determine their suitability and reliability. Descriptive and inferential (correlation and t-test) statistics were used for data analysis. The significance level was set at α=0.05. Results show that there is a significant relationship between achievement in mathematics and understanding mathematical language. It was also observed that understanding in mathematical language among secondary school students is poor. There is no gender difference in achievement in mathematics. Mathematical language is ignored by teachers, textbooks and in examinations. The findings of the study provide a basis for organizing the mathematics curriculum and teaching methods. Therefore, mathematical language approach to teaching would improve on achievement in mathematics; hence curriculum developers, and methods of teaching mathematics should have mathematical language approach included.

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