

Influence of Students Attitude towards Performance in Mathematics in Primary Schools in Keiyo South District, Kenya

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Abstract: *The purpose of this paper was to examine the influence of students' attitudes towards performance in mathematics in primary schools in Keiyo South District, Kenya. Descriptive survey design was used in the study to investigate the attitudes of primary school learners towards mathematics. Data was collected by use of questionnaires, interview schedules and class examination administered previously. The accessible population was teachers of Mathematics and Standard Eight learners from selected primary schools in Keiyo South District, Kenya. Sample study comprised of 300 learners (150 male students and 150 female students) and all teachers of Mathematics from the sampled schools in Keiyo South District, Kenya. Stratified random sampling was used to categorize schools in either boarding or day schools. Simple random sampling was used to select 50 schools from 119 primary schools and 5 male students and 5 female students from each selected Standard Eight class. The study used purposive sampling technique to select Mathematics Teachers. Data was collected using questionnaire and interview schedule. The collected data was analyzed using both descriptive (means, standard deviations and percentages) and inferential statistics was used with the aid of the Statistical Package for Social Sciences (SPSS). The paper established that there was a positive relationship between attitude of pupil's and their performances in mathematics in primary schools. The paper recommended that both parents and teachers should strive to cultivate positive attitude towards mathematics among learners by encouraging them.*

Keywords: Attitude, Performance, Mathematics

1. Introduction

Attitudes are seen as more effective and less cognitive than beliefs or values [1] and often they are defined similarly, and used interchangeably, with dispositions [2]. In general, attitudes are directed towards something (in this case, mathematics), are seen as either positive or negative, and are grounded in experience [1]. Way and Relich commented that "although definitions of attitude vary, they generally include the idea that attitudes are learnt, manifest themselves in one's response to the object or situation concerned, and can be evaluated." Fear of success was first postulated by Horner [4] as a variable useful in explaining gender differences in the research on attitude and performance in mathematics. He describes the conflict, resulting fear, and decreased performance that many women experience because of the clash they perceive between attaining success and fulfilling the female roles in our society.

Research over the last decade has shown that males and females have different classroom experience because they approach learning differently and because teachers tend to teach them differently. Achievement expectations for females in some subjects are usually lower as they are for members of certain racial and ethnic groups and for poor learners [5]. Ogoma [6] found that attitude affect study on attitude and achievement when he conducted a research study on attitude and achievement in mathematics among standard seven pupils in Nairobi primary schools.

Traditionally, female students have found advanced mathematics achievement elusive. Female students' mathematics achievement in the elementary grades is equal to male students but decreases in middle school [7]. An analysis of mathematics achievement of twelfth grade

female students in 15 countries in Britain revealed that in all three countries female students were less successful than male students [8].

Fennemma et al, [9] in study of Gender and Mathematics Education Research found that the relationship between attitude and performance is weaker for female students than male students. Generally then, it appears that performance in mathematics is significantly related to attitude. In addition, given the persistent poor performance, it was important to establish factors contributing to this. Of particular interest to the study was the influence of students' attitude towards mathematics with specific reference to content, objectives, methods and evaluation of Mathematics curriculum in Public Secondary Schools. There is need to investigate other factors apart from performance that could be influencing attitudes towards mathematics.

2. Influence of attitude on performance of students in Mathematics

There is widespread interest in improving the level of mathematics performance in schools. Apart from the economic benefits of better preparing young people for the numeracy demands of modern work place and raising the overall skill levels of the work force, there are also social benefits tied to improving access for larger numbers of young people to post- school education and training opportunities and laying stronger foundation to skills for lifelong learning. The interest in raising levels of performance has led to a focus on identifying the range of factors that shape performance as well as understanding how these factors operate to limit or enhance the performance of students by gender.

In Kenya, while a small proportion of secondary schools continue to offer satisfying well- rounded education programmes, the majority of schools fall short of providing for the learning needs of their students. Poor academic performance in key subjects in the curriculum like Mathematics and Science at the Kenya Certificate of Secondary Education (KCSE) examinations has not been satisfactory for quite a long time [10]. Several reasons have been given to account for these variations in performance in mathematics. Some authors like Dugger [11] attribute it to unfair distribution of qualified teachers in the country; while Odhiambo, [12] states that the root cause of poor performance in Mathematics is that mathematics teachers are poorly prepared. Siringi, [13] also reported that performance in key curriculum subjects like Mathematics and Sciences at KCSE examinations has not been satisfactory for quite a long time. The Third International Mathematics and Science Study (TIMSS) in Australia showed that students' background variables influence differences in achievement in Mathematics.

The reported gender difference in attitude towards Mathematics influenced some researchers to study some affective variables as mediators of gender differences in Mathematics achievement [14]. However, little consensus existed among researchers regarding the influence of affective variables on gender and mathematics achievement. Some studies reported statistically significant effects of affective variables on the learning of Mathematics [14], while others indicated no relationship between attitude variables and Mathematics achievement [15]. Even among those studies that found a significant relationship, there was still a controversy regarding the educational implications of the results. For example, some researchers concluded that although statistically significant, the mean effect size for the relationship between attitude towards mathematics and achievement in Mathematics was not strong enough to have useful implications for educational practice [16].

One explanation for inconsistent findings regarding the relationship between attitude and Mathematics achievement was that such a relationship existed only with respect to particular Mathematics content areas [14] and for specific affective variables [17]. Studies have shown that factors such as motivation and attitude have impacted students' achievement. The student's attitude towards an academics subject is crucial factor in learning and achievement in that subject. Whether a student views himself or herself as a strong or weak person in a specific subject may be an important factor in his or her academic achievement. Papanastasiou (2002)[16] showed that there is a positive relation between Mathematics and math achievement. However this study focuses on student's attitude towards Mathematics with specific reference to objectives, content, methods and evaluation of the Mathematics curriculum and establishes their influence on Mathematics performance.

3. Methodology

The research design for this study was descriptive survey. The study adopted an ex-post facto research by using the causal-comparative design. Three types of schools were

used in this study for comparison purposes. These were; mixed-sex day schools (Male and Female students in a mixed school are taught in the same stream); male boarding school and female boarding school. It is a design in which the study variables are not exposed to direct manipulation. The research design was limited to the standard eight learners and mathematics teachers in selected schools. The researcher used the exploratory research design.

The research study was conducted in Keiyo South District, which borders Baringo District to the East, Koibatek District to the South, Eldoret East District to the West and Keiyo North District to the North. Keiyo South is located at the heart of the Rift Valley Province. Majority of the activities done in the district is farming and cattle keeping which is carried out by the male. These have prompted the researcher to find out why male learners perform better in mathematics than female learners.

This study involved standard eight learners and mathematics teachers from the selected primary schools in Keiyo South District. Ten (10) students per school in 50 schools were targeted. The rationale of selecting these groups was to investigate the sociological factors influencing primary school learners' attitudes towards mathematics. Keiyo South District was chosen by the researcher because of its performance in mathematics. Culture is still rooted in the District hence can be the agent of change. Stratified random sampling technique was used to categorize the schools into either male/female boarding or mixed day schools. To select the interact group for study; the researcher used convenient and purposive sampling to select the class for research. The study used a survey involving standard eight learners and mathematics teachers of selected primary schools in Keiyo South District. Stratified sampling was used to categorize schools into male boarding schools, female boarding schools and mixed day schools.

Stratification was done according to gender composition of the schools. It ensured that the three categories of schools (mixed day, female boarding and male boarding), in the ratio 18: 17: 15 was used in the sample. Purposive and convenient sampling was used to select the classes for research. Simple Random sampling method was used to select 10 students from each category of learners.

Data was collected through researcher-designed questionnaire, interview schedules and class examination results administered previously. The data collected was analyzed using the Statistical Package for Social Science (SPSS). Data was analyzed using descriptive statistics which involved the use of frequencies and percentages. SPSS was used to aid in data analysis. Descriptive statistics used included means scores, frequencies and graphs.

4. Findings

4.1 The Influence of Pupil's Attitude towards Mathematics Performance

In this study, students classified as having positive attitudes were assumed to be those who scored 4 and 5

points according to Likert Scale, whereas those who scored three points were considered to be neutral and finally those who scored one or two points were classified as negative. The findings of students' attitudes towards learning of mathematics were generalized as positive, neutral and negative in reference to gender (boys and girls) under table 11. Out of three hundred students who participated in the study, two hundred and sixteen (72%) had positive attitudes, twenty nine (9.7%) had neutral attitudes and fifty five (18.3%) had negative attitudes. On the whole, the data indicates that majority of the students had positive attitudes towards learning of mathematics. However, when comparing the attitudes of boys and girls, the table shows that more boys (39.3%) than girls (32.7%) tend to have positive attitudes towards learning of mathematics whereas more girls (10.6%) than boys (7.7%) tend to have negative attitudes. This shows a low degree of association between the gender and students attitudes towards the learning of mathematics. From the study there is a significant influence of student's gender and his or her attitude towards learning of mathematics.

Table 1: Students' Attitudes towards Learning of Mathematics

Gender Attitude	Positive		Undecided		Negative	
	Fr	%	Fr	%	Fr	%
Boys	118	39.3%	9	3.0%	23	7.7%
Girls	98	32.7%	20	6.7%	32	10.6%
Total	216	72%	29	9.7%	55	18.3%

4.3.1 Perception of Pupils on the Importance of Mathematics

The percentages for pupils' attitudes in relation with their importance of mathematics are shown in Table 2. It was revealed that a higher percentage of the pupils 277(97.3%) perceived that they viewed mathematics as an important subject, while the rest 15(5%) perceived the mathematics to be not important. This implies that pupils' attitudes towards mathematics are significantly influenced by their perception on the importance of mathematics

Table 2: Pupils' Perception on the Importance of Mathematics

Pupils' Perception on the Importance of Mathematics	Positive		Undecided		Negative	
	Fr	%	Fr	%	Fr	%
Importance of Mathematics	277	92.3%	8	2.7%	15	5%

4.3.2 Pupils' Perception of their Performance as Expected by Peers

Majority of the pupils (82.66%) perceived their peers to be optimistic about their passing with only 17.34% not optimistic. From the study pupils with positive attitudes who perceived that their peers expected them to pass were more than those who perceived that they were expected to fail by their peers. Majority of the pupils (82.66%) had

positive attitudes, compared to 11.34% with negative attitudes. Therefore these percentages show that pupils' perception of peer expectations influences their attitudes towards learning of mathematics. Table 3 shows percentages for pupils' attitudes according to the performance expected by peers.

Table 3: Pupils Perception of their Performance as Expected by Peers

Pupils Perception	Positive		Undecided		Negative	
	Freq	%	Freq	%	Freq	%
Boys	136	45.33	4	1.33	10	3.33
Girls	112	37.33	14	4.67	24	8.01
Total	248	82.66	18	6.0	34	11.34

Table 4: Coefficients on Learner's Performances in Mathematics

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Correlations					
					B	Std. Error	Beta	Zero-order	Partial	Part
1	Constant									
	Attitude									

a. Dependent Variable: Learner's performances in mathematics

The correlation coefficient of attitudes of pupils towards mathematics was (.456), showing a positive relationship. The findings showed that the more attitudes of pupils towards mathematics the higher the learner's performances in mathematics. The findings concurs with, (Oakes 1990) that, gender differences in attitudes and perceptions of the usefulness of mathematics for middle school students to be statistically important. Female students show less interest in mathematics and have negative attitude toward mathematics. Fennemma et al (1994) found that the relationship between attitude and performance is weaker for female students than male students. It appeared that performance in mathematics is significantly related to attitude. Owiti (2001) argues that attitudes affect achievement and achievement affect attitude. Fennemma (1990) stated that attitudes were related to achievement in mathematics.

5. Conclusion

In conclusion, boys and girls attitudes towards learning of mathematics are influenced by their perception of performance expected of them by their peers. It shows that there was an influence of peers on the attitudes of both boys and girls towards the expected performance. From the study majority (72%) of the students had positive attitudes, twenty nine (9.7%) had neutral attitudes and fifty five (18.3%) had negative attitudes. This indicated that majority of the students had positive attitudes towards learning of mathematics. A higher percentage (94.0%) of the pupils perceived that they viewed mathematics as an important subject while the rest (6%) perceived otherwise. This implied that pupils' attitudes towards mathematics are significantly influenced by their perception on the importance of mathematics. The boys and girls attitudes towards learning of mathematics are influenced by their perception of performance expected of them by their peers. It shows that there was an influence of peers on the attitudes of both boys and girls towards the expected performance.

The relationship between gender attitudes and perception of its expectations was found that aspects of teachers expectations and willingness to assist were significantly related to both boys' and girls' attitudes towards learning of mathematics. Consequently, boys and girls develop different perceptions of their abilities and relationships with academic disciplines. The idea behind these works corresponds to the conclusions of the findings that teachers' expectations determine the way in which they interact with the boys and girls and thus influence the boys and girls relationship with mathematics. In conclusion to this finding, teachers have higher expectations on the boys than on the girls and hence interact more with the boys than with the girls.

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Author Profile



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