CAUSES OF POOR PERFORMANCE IN MATHEMATICS IN SECONDARY SCHOOLS IN KIAMOKAMA DIVISION, MASABA SOUTH DISTRICT, KENYA

BY

ALFRED OMAIYO MAIKO

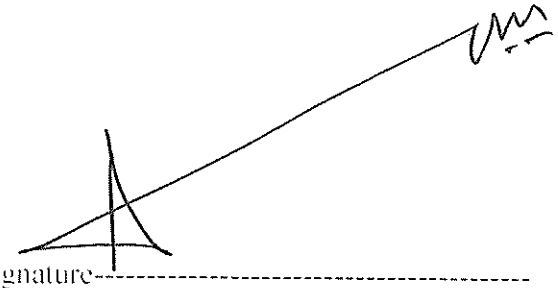
BED/42426/92/DF

A RESEARCH REPORT SUBMITTED TO THE INSTITUTE OF OPEN AND DISTANCE LEARNING IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE AWARD OF BACHELORS DEGREE IN EDUCATION (SCIENCE) OF KAMPALA INTERNATIONAL UNIVERSITY

NOVEMBER 2011

DECLARATION

I Alfred Omaiyo Maiko declare that this research project is my original work and has never been submitted for any academic award. Where the works of others have been cited acknowledgment has been made.



Signature---------- Date 26/04/2011

Candidates' name:

ALFRED OMAIYO MAIKO

BED/42426/92/DF

APPROVAL

This research report is submitted for examination with my approval as the candidates' University Supervisor.

Signature: ----------

Date: 25/04/2021

Name: MR. MUNDU MUSTAFA

DEDICATION

This report is dedicated to my lovely wife Rose Bisieri Nyamwamu for her love and support to the family.

To all my children: Babeto Omaiyo and Marvin Kwamboka Omaiyo. I love you all.

ACKNOWLEDGMENT

All praise is to the Almighty God for the gift of life, for the spiritual guidance, protection and health in all my undertakings.

I do acknowledge the encouragement of those for encouraging me to join KIU to pursue this degree programme of which today the completion of this report marks the beginning of a great academic achievement.

My research supervisor Mr. Mundu Mustafa, who worked tirelessly to ensure that this report gets to its apex, is duly acknowledged for good work supervised.

I also do acknowledge the teaching staff of the secondary school where I teach for being co-operative with me and showing team spirit in the school

To my academic and non-academic colleagues, my family friends are as well highly acknowledged especially.

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MATH: mathematics

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ABSTRACT

The major purpose of the study was to determine Gender mathematics concepts' perception and its effects on academic performance of students in selected secondary schools in Kiamokama Division, Masaba South District, Kenya. The specific objectives of the study were to investigate the relationship between girl's attitude and performance in mathematics. Investigate the relationship between teachers' attitudes and girls' performance in mathematics. Determine the relationship between the curriculum and performance of girls in mathematics. Determine the relationship between overcrowded classes and performance of girls in mathematics. The methods used for data collection were questionnaires to the pupils and interviews with the teachers. The study revealed that few girls enjoy mathematics because they think that mathematics is hard and meant for boys who are clever. The study found out that teachers attitude towards girls performance in mathematics also affected there performance. The study also revealed that overcrowded classes contributed to poor performance of girls in mathematics. Finally the study revealed that the curriculum was too heavy for girls to handle and therefore performed poorly in mathematics. The government should construct facilities at school for mathematics teachers to teach in a conducive environment in order to aid the better performance of mathematics students in their schools.

The government should have a policy in place that encourages the taking up of mathematics subject especially to the female students who at times think they are not good enough for the subject. The girl students should be encouraged to relate equally with there fellow boy students in all subjects regardless of whether it is mathematics or not.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter shows the background of the study, problem statement purpose, objective, hypothesis, research questions, scope and significance of the study.

1.1 Background of the Study

The last decades of the twentieth century saw many concerted efforts in research into gender issues all over the world. In Africa, international bodies and educationalists began in the 1960s to look into the way girls and women were faring in Education. Their findings were depressing. By 1970s pro-female initiatives by some African governments to encourage enrolment of girls in schools were started. Consequently, low enrolment figures indicated in the earlier years (1960-70) were in the 1990s shown to have improved. In Malawi statistics indicated that girls comprised 54% of the students enrolled in 1990, an increase from 44.8% in the previous years. While in Zambia, Kenya and Nigeria females constituted nearly 50% of the children enrolled in grade one (FAWE 1996).

For over twenty years there has been concern about the lack of women in higher level mathematics and in careers for which mathematics was a prerequisite. Fennema and Sherman (1977) claimed that a lack of mathematical background knowledge prevented women from entering a variety of occupations. In Australia too, mathematics results are used as a critical filter for higher education and future careers (Willis, 1995) and sex differences in participation remain a concern (Cuttance, 1995; Barnes & Horne, 1996).

Over the last two decades in Australia there have been a number of government policy initiatives concerning the education of girls (Australian Education Council, 1993). There has also been renewed interest in the potential of single-sex environments to cater more effectively for the needs of girls (Milligan & Thomson, 1992).

Redressing the Gender Imbalance in mathematics although there are several differing feminist theories, they share an underlying bond when redressing the gender imbalance in the teaching and learning of mathematics as part of a global project of achieving educational and occupational equity. Feminists of equality demand legal and actual equality between the sexes and identify the sexual division of labour as the main source of women's oppression. They seek to redress imbalances from an intervention perspective, aimed at increasing the participation of women in mathematics and focus on programmes aimed at remobilizing girls. (Walkerdine | 1985)

The interest in studying the relation between gender differences in spatial performance and mathematical performance lies in the reasoning that gender differences in mathematical abilities mediate those found on spatial tasks. For instance, in a classic study, Hyde, Geiringer, and Yen (1975) demonstrated that gender differences on the rod-and-frame test were eliminated (made no significant) when mathematical test performance was controlled statistically.

Voyer (1996a) presented data which put a different light on this area of research. This author demonstrated that a clear distinction had to be made between results obtained with tests of mathematical abilities performed in a laboratory and measures of mathematical skills derived from classroom performance. Specifically, Voyer (1996a) hypothesized that mathematics performance was a suppressor variable in the relation... The secondary

school enrolment has risen to about seven million students (Ministry of basic Education, 2005) hence the overcrowding. secondary students are taught by teachers who do not specialize in subjects during training that lasts two years after secondary education. In the schools, teachers take preference to teach subjects they feel they are strong in. The majority of teacher trainees at the Grade C plain are admitted to Teachers Colleges (TCs) either failed or performed poorly in mathematics at the Kenya Certificate of Education (UCE) examinations. This contrasts with the practice of selection of teachers in Canada who come from a strong pool of candidates (Wildeen & Holborn, 1990).

In Kenya about 10% of the children like and are willing to study math. The rest have to be persuaded or forced to study mathematics because it is compulsory in Republic of Kenya (1999). They have a completely negative attitude towards the subject (especially the girls). The main reason for these problems is that up to the late 1970s, nobody chose to go to the university to study education as a profession. The good mathematics students studied engineering, medicine, accounting, or any other course but not teaching. Many of those who failed to meet the minimum requirements for their preferred careers became teachers. Such mathematics teachers tended to scare the learners to cover up their lack of content knowledge and their inadequate preparation to teach the lessons. Saha L. J (1983).

Girls who participate well in mathematics are discriminated and men fear to marry them thinking they are tough. Such attitudes have lead to poor performance of girls in mathematics and therefore there's need for the study to clear up such attitudes. Currently, no research has been carried out in the area in relation to identification, description,

selection and presentation of gender issue in the education sector during the teaching/ learning process.

1.1 Statement of the Problem

Although many scholars have shown interest in research work, a few of them have ventured into mathematic discipline. No special efforts have been made to determine gender and academic performance in mathematics, during the reform movements of 1960s in which there were major attempts to improve students learning of mathematics by changing the curriculum, very little achievement was give to increasing for careers and therefore it calls for a number of assumptions in performance by gender due to some factors and hence need for the study.

1.2 Purpose of the Study

This study will describe the factors leading to the poor performance in mathematics in the selected schools in Kiamokama Division, Masaba South District, Kenya.

1.3 Research Objectives

(i) Determine the factors that affect students performance in mathematics

(ii) To determine the students attitudes towards mathematics

(iii) To determine the effect of gender on academic performance in mathematics

1.4 Research Questions

(i) What are the students' attitudes towards mathematics?

(ii) What are the factors that affect student's performance in mathematics?

(iii)How does gender affect student's performances in mathematics?

1.5 Scope of the Study

The study will be carried out in Kiamokama Division, Masaba South District, Kenya. Academic performance in mathematics by gender in the zone will be determined and described specifically in secondary schools. All the above schools are gender mixed. The zone has a population of approximately 104 TSC teachers, approximately 71 PA teachers all handling approximately 6000 students in secondary schools only. The study will be undertaken between April 2011 and August 2011.

1.6 Significance of the Study

The study will benefit the following disciplines:

Provide information that can be used by the Ministry of Education Policy Makers to identify attitudes that can be associated more with high performance of girls in mathematics among students.

Enable Policy Makers provision for improving teaches quality with increased knowledge on the relationship between attitudes and achievement in mathematics of girls among students.

Increase awareness of the Head teachers, Board of Governors and PTA and Teachers on attitudes associated with high performance in mathematics by gender.

The findings will be expected to assist teachers to adjust their methodology of teaching to incorporate solutions to any shortcoming highlighted in the study.

In brief the mathematics teacher performance will be reviewed, priority areas for improvement will be identified and improvement plan containing may be developed for each priority area.

The studies will give possible solutions to all education stakeholders to improve mathematics performance by gender.

Lastly the report is expected to form a basis for future research on related studies in or around the same are which is currently not exhausted.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Chapter Overview

This chapter shows the theoretical frame work, the factors affecting student's performance in mathematics, student's attitudes towards mathematics and the effects of gender and performance in mathematics.

2.1 Theoretical Framework

The study will be based on the Attribution Theory by (Weiner 1972) which identifies a number of perceived causes or explanations of academic success, characterized as internal, external, stable and unstable (Anderson W.L 1991).These categories may be used to characterize the different attributions of success and failure in terms of specific factors such as ability, task difficulty, effort and luck. (Otieno, K 1997)

In mathematics participation and achievement for both males and females attribution style interacts with many other internal influences, such as confidence, perception of the usefulness of mathematics and fear of success and greatly influences them.(Barnes, Et al (1984). Looking at these components potentially offers a valuable insight into understanding why gender differences in mathematics occur.

Confidence, which has generally been accepted as a belief about one's competence in mathematics, has been identified as one of the most important affective variables (Reyes, 1984), influencing the students' approach to new material including a determining factor of their persistence. The student will persist if confident of finding a solution or eventually gaining understanding; likewise, a confident student is more likely to

participate in mathematical courses at a higher level. Fennema and Sherman (1976) produced the Fennema-Sherman mathematics Attitude Scales which measured confidence using a confidence subscale: they also measured the students' mathematics achievement. Their results showed that when a gender difference in mathematics achievement in favor of males was found, it was accompanied by a gender difference in confidence, also in favor of males. These gender differences in confidence existed even when there were no differences in achievement. Leder (1995) states that the weight of evidence in the US suggests that females are less confident than males about their mathematical ability and therefore less likely to persist on difficult tasks. They are also more ambivalent about the value of mathematics as an occupational prerequisite.

Eddowes (in Burton, 1986:23) and many others claimed that girls' performance in spatial tasks is significantly worse than that of boys. This theory too has been refuted by researches such as Walden and Walkerdine (1985:23): who examined this assumption and were unable to justify it. Likewise, Walden and Walkerdine concluded that they could confirm assumptions by Wood (1976), for example, which argues that girls perform better at lower cognitive level mathematics tasks than at higher cognitive level mathematical tasks, and dismiss similar assumption relating to differing cognitive styles between the sexes.

2.2 Factors That Affects Student's Performance in Mathematics

2.2.1. Over Crowded Classes

Another factor for student's poor performance in mathematics is overcrowded classes. The introduction of FSE has its own down sides. The issues that teachers pointed out in this study reinforce the challenges that teachers in the Nakabugo et al. (2007). Certainly,

when teaching in large classes teachers provide fewer exercises and practice so as to reduce the amount of marking to do. There is also limited space to conduct group work that would enhance effective coverage of content. This is true because the overcrowded curriculum minimises students' opportunity-to-learn mathematics as teachers try to cover too much content in too little time available. Nakabugo et al. (2007).

2.2.2. The Curriculum

According to Carey et al (1994) even the development of curriculum designed to serve all students has perpetuated inequalities. One reason for this is that the developers have not considered what is known about how children learn mathematics with understanding. In some instances there has been little communication between researchers in mainstream mathematics education, who have not been directly concerned with equity issues and equity researchers, who have not been concerned with critical mainstream research.(Barnes, M. 1991). Before truly equitable classrooms can be developed, concerns about equity and knowledge about children's learning must be integrated. Carey et all (1994) suggest a need for blending research on equity and children's learning, stating the knowledge gained using a cognitive science research paradigm contributes to our understanding of learning in schools.

The nature of the curriculum and syllabus is one critical element for the opportunity-to-learn. The curriculum is overcrowded thus affecting opportunity-to-learn. Since the curriculum is too heavy the most teachers are not able to cover it adequately thus reducing the chances of the students to learn Otieno, K (1997). Although teachers attempt to cover all the content of the syllabus, the frequent disruptions in the teaching time due to un-gazetted holidays, late start of the term and so on do not allow the completion of the

syllabus in most schools. This result indicates that the content of the syllabus may not all be relevant to the needs of the students either for their further education or use in real life. The content is then cosmetically covered on the surface to prepare students for examinations. The implication of this finding is that curriculum review that is focussed on the needs of the society is necessary Barnes, M. (1991).This is true because in most cases the teachers do not manage to complete the syllabus.

2.2.3 Poor School Infrastructure and Lack Instructional Materials

A large number of studies in the developing countries have consistently shown that availability of instructional materials positively influences learner achievement: the levels of infrastructure seem to have a close correlation with learner achievement and availability of textbooks and instructional materials has a consistently positive effect on learner achievement in developing countries (Heyremann Farnel and Sepulveda Stuando, 1991). Similarly, Lockheed and Verspoor, 1991 found that school-based interventions raise student achievement. The levels of infrastructure seem to have a close correlation with learner achievement as one move from least facility schools (Govinda and Varghese, 1993).

2.2.4 Students Have Few Incentives to Study

Most educators believe that, as an ideal, all students should learn as much as their ability and effort will permit. Yet, most schools reward high achievement alone, apparently assuming that the lure of high grades and test scores will inspire effort in all. Because high ability students usually capture the best grades and test scores, the labor of less-talented students is seldom acknowledged and the grades they receive for it do not inspire

effort. Hence, low-ability students and those who are disadvantaged--students who must work hardest--have the least incentive to do so Gavin, M. K. (1997). They find this relationship between high effort and low grades unacceptable, something to be evaded if possible. Some of them express their displeasure by simple indifference, others by disruption and deception

2.2.5 Quality of Teachers

Various writers have come up with views about the characteristics of competent teachers and benefits of having such teachers as follows:

The Education Policy Review Commission Report (EPRCR) (1989) explains teacher competence as having a knowledge of child development, of the material to be taught and suitable methods, his skills must enable him to teach, advice and guide his students, community and culture with which he is involved; his attitudes should be positive without being aggressive, so that his examples are likely to be followed as he transmits explicitly, and implicitly the national aims and moral and social values.

It's from the above: give many characteristics and qualities, which effective teachers should posses. There are many students who perform well without teachers in some subjects while others with well-qualified teachers perform poorly. The researcher therefore aims at establishing the effect of teacher competence on academic performance of students in secondary schools.

2.2.6 Facilities in Schools

The success or failure of secondary schools is measured against the presence or absence of structures and facilities provision and management. Nsubuga (1977) holds the view

that an important element of a good school is that of facilities. He emphasizes that a good school should have adequate facilities which help with teachers and students to effectively teach and effectively learn in a convenient and comfortable environment.

According to Kochhar (2001) physical facilities contribute a lot to the general atmosphere of the school. He suggests that healthy surroundings, good sanitary arrangement leave little scope for irritation. Musaazi (1982) and Ssekamwa (2000) agree that most programmes of instruction and pupil services require some physical facilities such as school building, school grounds, enough desks, chairs, teaching materials and libraries needed in instruction and incidental to institution. The possession of adequate facilities in the school for studying is a characteristic of an effective school.

However, there are many students who perform well in schools with limited facilities and there are also many students who perform poorly in schools, which are well facilitated. The researcher therefore aims at carrying out a critical analysis of the correction between academic performance and the availability of facilities in secondary schools.

2.2.7 Teacher's Attitudes towards Student's Performance in Mathematics.

The personality of the teachers teaching mathematics is worrying. The teachers have weak academic backgrounds on the mathematics content to deliver Barnes, M., & Horne, M. (1996). Their own attitudes to mathematics may contribute to their inability to motivate the students to learn mathematics. The teaching methods that are used remain predominantly the traditional 'talk and chalk' mode of delivery. The teachers are under pressure to enable their students pass examinations and are therefore forced to water down the implemented curriculum. Anderson W.I. (1991) Although teachers attempt to

cover all the content of the syllabus, the frequent disruptions in the teaching time due to un-gazetted holidays, late start of the term and so on do not allow the completion of the syllabus in most schools. The characteristics of the students retard the pace of coverage of the content. R. Ndawula, R. & Bbosa, D. (2007). The fact that few students can not effectively read and write by the time they are in class six or eight, which is the top class in the secondary school level, spells out problems of the ability to comprehend what is taught.

Teachers sometimes contribute to girls' poor self-concept in mathematics. They may imply, for example, that girls do not need mathematics or they may react more negatively when girls ask questions of clarification than when boys ask (Jackson & Leffingwell, 1999).Jones and Smart (1995) consider lack of confidence to be a major factor affecting girls low participation in mathematics. This is true because most teachers show girls that they are not capable of passing mathematics and this discourages them.

2.3 Students Attitudes towards Mathematics

According to McLeod (1992) Attitudes toward mathematics, including perceptions of how appropriate mathematics is for females, play a prominent role in females' lower performance and participation in mathematics in relation to males. Based on their analysis of NAEP data trends, Bae, Choy, Geddes, Sable, and Snyder (2000) contend, "Achievement gaps appear more closely related to attitudes than to course taking". The data show that females are less likely than males to like or to think they were good at mathematics. Females also experience mathematics anxiety to a greater degree than males (Levine, 1995).

Females' dispositions toward—and hence achievement and participation in—mathematics are believed to be socialized, inculcated by a society that tends to view mathematics as a male domain and which perpetuates the idea that males are naturally more mathematically inclined (Hanson, 1997).This is true because girls who do well in mathematics are referred to as boys.

Griffiths (1992), indicates that research carried out on 750 students at Edinburgh University between 1987 and 1991 showed that female students rated their own IQs lower than those of their fathers and, in three of the five years, higher than those of their mothers.(Arnot, M. 1983).

Conversely, male students rated themselves superior to their mothers and, in three of five years, to their fathers too. This suggests a widely accepted belief that men are more intelligent than women. The issue is made worse by the fact that the women being tested, presumably the intellectual elite, should be more aware of gender issues and research, or at the very best, should be more confident of their own ability.

McLeod (1992) identifies three types of component attitudes, emotions and beliefs relating to attitude to mathematics. Firstly, emotions are intense feelings, either positive or negative, which are evoked by a situation such as being confronted with a mathematic task. Secondly, are attitudes, which are predispositions to act in certain ways given certain concepts, ideas or situations? Attitudes can be held towards mathematics and include (according to Bell et all, 1983): Liking/disliking of mathematics, Confidence (or lack of) in own ability, anxiety towards mathematics and perceived utility of mathematics.

Thirdly, there are systems of ides or beliefs which reflect a person's values and outlook, including beliefs about gender roles and the appropriateness of mathematics for men and women.(APU 1988). Some content that the importance of attitude towards mathematics is its connection to achievement: for example, Bell et all (1983) and McLeod, (1992) found a low but significant correlation between these two factors – thus, more positive attitude may produce a higher level of achievement which is further compounded by gender. Research ambivalent, however, on the attitude – achievement link and there is much stronger argument that links attitudes to mathematics with future participation. (Otieno, K 1997). I concur with the researchers that girls negative attitudes towards mathematics affects their performance.

2.4 Gender and Academic Performance in Mathematics

Research on gender differences in academic achievement offers educators of young adolescents thought-provoking information on implications and guidance on specific directions to take. The accumulated literature on this topic covers students' confidence in learning mathematics, sex-typed expectations for performance in mathematics and science, self-estimations of ability to learn science and mathematics, "mathematics risk-taking" behaviors, laboratory experiences for females, and participation in science fairs. In this review of literature, the author pays particular attention to research that: 1) focuses on gender differences in mathematics and science achievement, and 2) offers implications for middle level school educators addressing young adolescents' gender-specific needs.

Gender differences in academic self-concept have been a topic of research for several decades. Particular attention has been given to differences in mathematics self-concept: however, differences in verbal self-concept and in mathematics and verbal self-efficacy

have also been explored. One reason why gender differences in academic self-concept and self-efficacy are important is that these constructs are strongly related to academic achievement and a variety of motivational indicators (e.g., Bong, 2001; Byrne & Gavin, 1996; Gottfried, 1990; Marsh & Yeung, 1997; Muijs, 1997; Pajares & Miller, 1994, 1995; Skinner, Wellborn, & Connell, 1990; Zimmerman & Kitsantas, 1999). Research evidence strongly suggests that the relations between these constructs are reciprocal and that self-evaluations affect achievement more strongly with increasing age (Byrne & Gavin, 1996; Skaalvik & Hagtvet, 1990; Wigfield & Karpathian, 1991). Gender differences in academic self-evaluation may therefore result in subsequent gender differences in academic achievement and motivation (Sax, 1994). Achievement in particular areas, such as mathematics and language, correlates higher with matching areas of self-concept than with general academic self-concept (see overview by Marsh, 1993). Gender differences in self-concept should therefore be explored in particular academic sub domains. In this study we explored gender differences in self-perceived abilities and motivation in mathematics and verbal arts.

In conclusion inadequate research has been conducted on gender and academic performance in mathematics and therefore this study seeks to contribute to this area of study.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter details with the methods the researcher will use to collect data. Specifically, the research design, specific environment of the study, respondents involved in the study, research instruments, data collection procedures and statistical treatment of data.

3.1 Research Design

The research will employ a descriptive research design the descriptive design has an advantage of being exhaustive. This is because it permits the researcher to gather comprehensive, systematic and in-depth information about each case of interest (patton 1990). Young (1956) pointed out that exhaustive studies describe accurately the relationship of variables and process recommended the qualitative nature of the descriptive case study in terms of being exhaustive. It yields rich data using interviews and questionnaires. Relevant office will be visited and a questionnaire plus an interview form will be used to collect the data. Excel computer Programme and Microsoft word will be used in data processing. Microsoft will be used in typing.

3.2 Research Population

The research will be carried out in Kiamokama Division, Masaba South District, Kenya. The case study is selected because that is where the researcher lives and therefore it will be made easy to get information from the respondents. The costs of research will also reduce that is the researcher will need to take few trips. The selected subject has in the recent past showed poor results by gender hence need for the study. The researcher

teaches mathematics in one secondary mixed gender school and wants to explore its performance by gender.

3.3 Sample and Sampling Procedure

The study will involve selected teachers and students both male and female in private and public secondary schools to represent the others one QASO representing curriculum developer, 5 head teachers to represent public schools 2 head teachers to represent private secondary schools, 20 public secondary school teachers, 8 private secondary school teachers and 60:20 public to private school students . A sample random technique will be used to get the best possible results. This type is useful because it ensure that all schools and respondents stand an equal chance of being picked. The selected schools, teachers, education officials, management and students will represent others in the zone. The identified respondents will participate in filling questionnaires. In case purpose method of selecting teachers and students indicate gender biasness, random method will be use per class for students and subject teachers will be involved to get the random sample for the teachers.

3.4 Instruments of Data Collection

The instruments of the study will include: interviews with the teachers and questionnaires to students of which the teachers will help the students in filling them. There will be four sets of questionnaires for the study, for QASO head teachers, subject teachers and students. Face to face interviews will be administered. Interviews are more flexible in that an interviewee can adapt to the situation and get as much information as possible (Mugenda and Muganda, 2003).

3.5 Research Procedure

A letter of introduction will be picked from the University and this will help in a way that the interviewees will give the researcher information.

The researcher will then take the letter to QASO chamber zone who will recommend for further assistance in the sampled schools the researcher will personally deliver the questionnaires from the first week of May 2009. Mean while, a pre-test of questionnaires will be made at school where the researcher is currently teaching. Comments and suggestions maybe by the respondents will be considered and in corporate.

3.6 Statistical Treatments of Data

The frequency and percentage will be used to determine the number of sample respondents that will participate in the study and the number that will participate positively in the research.

Descriptive and inferential techniques will be used to analyze data. Specifically the student's sample t-test will be used to describe the impact of gender on academic performance in mathematics. Descriptive technique like the mean and standard deviation will be used to describe respondents and other questionnaire responses. The researcher will then analyze the response to all questions and interview guide. This will be done manually using a coding scheme where all variables and responses are assigned numerical values to easy tabulation and analysis. To permit qualitative analysis, data will be coded and treated statistically, using descriptive and inferential techniques such as percentage, means and frequency presented through tables.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND ANALYSIS OF DATA

4.0 Overview

This chapter is a presentation, interpretation and discussion of the field results. The results are presented in tables and in form of frequency counts and percentages. The results and discussions are centered on the set objectives of the study.

4.1 Profile of the Respondents

Table 4.1: Sex and age distribution of the respondents

Response	Frequency	Percentage (%)
Age		
12 yrs and below	30	33.3
13-15yrs	40	44.4
16 and above	20	22.2
Total	90	100
Sex	Response	Percentage
Female	40	44
Male	35	39
No response	15	17
Total	90	100

Table 4.1 shows that sex and age of the respondents for both boys and girls and from both private and public school. 44% of the respondents indicated that were female while 39% of the respondents were male and 17% of the respondents did not indicate whether they were male or female and others the responses were not clear. Then 33.3% of the

respondents were between the age of 11 years and below while 44.4% were between the age of 12-15 years and 22.2% of the respondents were of the age bracket of 16 years and above.

Table 4.2: Class of the respondents

Class	Frequency	Percentage
Form one	25	28
Form two	35	39
Form three	30	33.3
Total	90	100

The class of the respondents was divided into three categories that are Form one, Form two and Form three levels. 28% of the respondents were in standard six, 39% were in standard seven and 33.3% of the respondents were in standard eight.

The respondents were asked the number of mathematics teachers they have in their school and below was their response

Table 4.3: Response on the number of mathematics teachers in our school

Number of teachers	Frequency	Percentage (%)
One teacher	50	56
Three teachers	25	28
Five teachers	7	7
Over six teachers	5	6
No teachers	3	3
Total	90	100

The table above indicates that 56% of the respondents said that they have one mathematics teacher. 28% said they have three teachers. 7% said they have five teachers while 6% said they have more than six teachers and 3% of the respondents revealed that they do not have mathematics teachers. The students added that some of these teachers call themselves mathematic teachers but they are not qualified in the subject.

The respondents were asked the qualification of their mathematic teachers and this was their response

Table 4.4: Response on the qualification of mathematics teachers

Qualification	Frequency	Percentage (%)
Form four leaver	3	4
Certificate	10	13
Diploma	21	26
Degree	33	41
No response	13	16
Total	80	100

Table 4.4 indicates that most of the respondents that is 41% revealed that their mathematics teachers were of degree level. 26% said that they were of diploma level. 16% did not respond this means that they do not know the qualification of he teachers while 13% revealed that their teachers were of certificate level and 4% said that they were of form four leavers. This means that most of the mathematics teachers in these schools were of degree level.

In the interviews held with the teachers and the head teachers they revealed that most of these teachers are degree holders and those with diplomas and certificates were to going

to up grade their level. They revealed that if the teachers are well qualified they can use effective methods to teach students and make them understand.

According to the Education Policy Review Commission Report (EPRCR) (1989) explains teacher competence as having a knowledge of child development, of the material to be taught and suitable methods, his skills must enable him to teach, advice and guide his students , community and culture with which he is involved: his attitudes should be positive without being aggressive, so that his examples are likely to be followed as he transmits explicitly, and implicitly the national aims and moral and social values.

The respondents were asked what mathematics equipment do they have and below was their response

Table 4.5: Response on the mathematics **equipment students have**

Equipment	Frequency	Percentage (%)
Geometrical set	45	56
Calculator	20	25
Counters	8	10
Others	7	9
Total	80	100

Table 4.5 shows that 56% of the respondents revealed that they have geometrical sets as mathematics equipment, 25% said that they have calculators while 10% said that they have counters and 9% of the respondents said that they have other equipments apart from the mentioned ones. This implies that most of the students in schools have geometrical sets as mathematics equipment.

The teachers and head teachers revealed that most students have sets just because it is compulsory that every pupil should have a geometry set and that it is the most important of all since even low classes can use it and being cheap every parent can afford to buy it. There fore it can in one way or the other be a facility that enables students performs well in mathematics.

Nsubuga (1977) holds the view that an important element of a good school is that of facilities. He emphasizes that a good school should have adequate facilities which help with teachers and students to effectively teach and effectively learn in a convenient and comfortable environment.

The respondents were asked whether the school has any mathematic praise awards to those who perform well and this was their response

Table 4.6: Response on the praise awards

Response	Frequency	Percentage (%)
Yes	60	75
No	20	25
Total	80	100

According to table 4.6, 75% of the respondents agreed that their schools have mathematics praise awards for students who perform well while 25% of the respondents disagreed. This means that most schools award best performing students.

When the teachers and head teachers were interviewed them most of them revealed that they praise awards for students who perform well in every subject. They added that this bring competition among students thus resulting in better performance as every pupil will

be competing for the praise. Head teachers and teachers of schools that do not award students revealed they do not have money to buy awards every term but this does not mean that students perform poorly. They also revealed that students are awarded with mathematics equipments like sets, calculators and text books. This is so because these awards still contribute or help students in the subjects and hence perform well.

4.2 Factors That Affects Student's Performance in Mathematics

The first research objective of the study was to determine the factors that affect students' performance in mathematics. To achieve this, respondents were asked questions related to the objective. Data collected was analyzed under the question: What are the factors that affect student's performance in mathematics? The results are presented below:

Table 4.7: Response on the factors that affect student's performance in mathematics

No.	Items	Strongly agree	Agree	Strongly disagree	Disagree	Total
1	Students fail mathematics because of overcrowded classes	29%	42%	11.1%	18%	100%
2.	The curriculum contributes to student's poor performance in math.	28%	28%	22.2%	22.2%	100%
3.	Poor School infrastructure such as building and furniture lead to students poor performance	33.3%	44.4%	8%	14.4%	100%
4.	Lack instructional materials such as textbooks lead to poor performance in mathematics	50%	33.3%	6%	11.1%	100%

5	The quality of teachers motivates to pupil and hence performance well in math	56%	39%	-	6%	100%
6	Adequate school facilities contribute to students performance in math	33.3%	34.4%	14.4%	18%	100%
7	Teacher's attitudes towards student's in regards to mathematics affect their performance.	48%	24.4%	9%	19%	100%

According to the table 29% of the respondents strongly agreed that Students fail mathematics because of overcrowded classes. 42% agreed while 11.1% strongly disagreed and 18% of the respondents disagreed.

28% of the respondents strongly agreed that the curriculum contributes to students poor performance in math.. 28% agreed. 22.2% strongly disagreed and 22.2 % of the respondents disagreed.

33.3% of the respondents strongly agreed that Poor School infrastructure such as building and furniture lead to student's poor performance. 44.4% agreed while 8% strongly disagreed and 14.4% disagreed.

50% of the respondents strongly agreed that Lack instructional materials such as textbooks lead to poor performance in math. 33.3% agreed while 6% strongly disagreed and 11.1% of the respondents disagreed.

56% of the respondents strongly agreed that the quality of teachers motivates to pupil and hence performance well in math. 39% agreed while 6% of the respondents disagreed.

33.3% of the respondents strongly agreed that adequate school facilities contribute to students ' performance in math. 34.4% agreed. 14.4% strongly disagreed and 18 % of the respondents disagreed.

48% of the respondents strongly agreed that Teacher's attitudes towards students especially the girls in regards to mathematics affect their performance. 24.4% agreed while 9% strongly disagreed and 19% of the respondents disagreed

The information gathered from the teachers showed that their work was affected by overcrowded classrooms. The overcrowding large classes' results from the FSE policy on education has lead to classes of over 80 students which result in indiscipline problems, overloaded teachers and a resources constrained environment where there are inadequate resources such as suitable textbooks and a high pupil to teacher ratio. The class size automatically gives much workload to the teachers to prepare lessons, teach them and mark assigned work if any

About half the teachers reported that the nature of the syllabus and the curriculum that is followed is overburdened, overcrowded with topics and congested. According to the teachers with the loaded curriculum coupled with the attitudes of girls towards mathematics lead to poor performance in math.

The teachers also revealed that Poor School infrastructure such as building and furniture lead to students' poor performance. Lack instructional materials such as textbooks lead too poor performance.

According to the study qualified teachers know how to teach well and know the effective methods to use to make students understand what they are taught. The study revealed that unqualified teachers sometimes have negative attitudes towards students especially

towards the girls and this affects their performance. The teachers further revealed that if their adequate school facilities like a well stocked library, students are in position to perform well.

According to Nakabugo et al. (2007), there is also limited space to conduct group work that would enhance effective coverage of content. This is true because the overcrowded curriculum minimises students' opportunity-to-learn mathematics as teachers try to cover too much content in too little time available.

The nature of the curriculum and syllabus is one critical element for the opportunity-to-learn. The curriculum is overcrowded thus affecting opportunity-to-learn. Since the curriculum is too heavy the most teachers are not able to cover it adequately thus reducing the chances of the students to learn Otieno, K (1997).

Also according to (Govinda and Varghese, 1993), the levels of infrastructure seem to have a close correlation with learner achievement as one move from least facility schools Nsubuga (1977) holds the view that an important element of a good school is that of facilities. He emphasizes that a good school should have adequate facilities which help with teachers and students to effectively teach and effectively learn in a convenient and comfortable environment.

According to Kochhar (2001) physical facilities contribute a lot to the general atmosphere of the school. He suggests that healthy surroundings, good sanitary arrangement leave little scope for irritation. Musaazi (1982) and Ssekamwa (2000) agree that most programmes of instruction and pupil services require some physical facilities such as school building, school grounds, enough desks, chairs, teaching materials and laboratories needed in instruction and incidental to institution. The possession of

adequate facilities in the school for studying is a characteristic of an effective school.

4.3 Students Attitudes towards Mathematics

The second research objective of the study was to determine the attitudes of girls and boy towards mathematics. To achieve this, respondents were asked questions related to the objective. Data collected was analyzed under the question: What are the attitudes of boys and girls towards mathematics? The results are presented below:

Table 4.8: Response on Students Attitudes towards mathematics

No	Items	Strongly Agree	Agree	Strongly Disagree	Disagree	Total
1	Girls believe that mathematics is meant for boys	33.3%	39%	11.1%	17%	100%
2.	Girls think that they are not good in mathematics	28%	33%	17%	22%	100%
3.	Girls naturally hate mathematics	39%	44.4%	7%	10%	100%
4.	Boys believe that they are more intelligent than girls that's they pass mathematics	47%	42.2%	6%	6%	100%

According to the table 33.3% of the respondents strongly agreed that girls believe that mathematics is meant for boys. 39% agreed while 11.1% strongly disagreed and 17% of the respondents disagreed.

28% of the respondents strongly agreed that Girls think that they are not good at mathematics. 33% agreed. 17% strongly disagreed and 22 % of the respondents disagreed.

39% of the respondents strongly agreed that Girls naturally hate mathematics. 44.4% agreed while 7% strongly disagreed and 10% disagreed.

47% of the respondents strongly agreed that boys believe that they are more intelligent than girls that's they pass mathematics. 42.2% agreed while 6% strongly disagreed and 6 % of the respondents disagreed.

According the teachers the reason why girls do not like mathematics is that they think you have to work hard to pass it and according to them they think the subject is for the boys and they naturally hate mathematics so with this they always neglect it and some miss the lesson hence ending up performing poorly. The teachers also revealed that the boys believe that they are more intelligent than girls so to prove this they have to perform better than them that is why they concentrate. always attentive and do not miss classes hence leading to their better performance.

According to Mel.eod (1992) Attitudes toward mathematics. including pereceptions of how appropriate mathematics is for females. play a prominent role in females' lower performance and participation in mathematics in relation to males. Based on their analysis of NAEP data trends. Bae. Choy. Geddes. Sable. and Snyder (2000) contend. "Achievement gaps appear more closely related to attitudes than to course taking". The

data show that females are less likely than males to like or to think they were good at mathematics. Females also experience mathematics anxiety to a greater degree than males (Levine, 1995).

According to Arnot, M. 1983), conversely, male students rated themselves superior to their mothers and, in three of five years, to their fathers too. This suggests a widely accepted belief that men are more intelligent than women.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Overview

The major purpose of the study was to determine the factors affecting academic performance of students in mathematics in Kiamokama Division, Masaba South District, Kenya. This chapter focuses on the discussions of the findings, conclusions and recommendations. Finally, the chapter ends with suggestions for further research.

5.1 Discussions

The first research objective was to determine the factors that affect student's performance in mathematics. The study revealed that overcrowding large class' that results from the FSE affect students performance and nature of the syllabus and the curriculum that is followed is overburdened, overcrowded with topics and congested. The study also revealed that Poor School infrastructure such as building and furniture lead to students' poor performance. Lack instructional materials such as textbooks lead too poor performance. Lack of well trained and qualified teachers and lack of adequate school facilities such as well stocked library lead to poor performance among students. The study also revealed that some teachers have negative attitudes towards students especially the girls in mathematics and therefore girls tend to hate the subject and hence poor performance

This is supported by Nakabugo et al. (2007), there is also limited space to conduct group work that would enhance effective coverage of content. This is true because the

overcrowded curriculum minimises students' opportunity-to-learn mathematics as teachers try to cover too much content in too little time available.

The nature of the curriculum and syllabus is one critical element for the opportunity-to-learn. The curriculum is overcrowded thus affecting opportunity-to-learn. Since the curriculum is too heavy the most teachers are not able to cover it adequately thus reducing the chances of the students to learn Otieno. K (1997).

Also according to (Govinda and Varghese. 1993). the levels of infrastructure seem to have a close correlation with learner achievement as one move from least facility schools

The second objective of the study was to determine the attitudes of girls and boy towards mathematics and according to the study the attitudes girls have towards mathematics contributes to poor performance. The study revealed that few girls enjoy mathematics because they think that mathematics is hard and meant for boys who are clever. The study also revealed that Girls naturally hate mathematics and boys believe that they are superior to girls. and this is supported by Mcl.eod. (1992) a more positive attitude may produce a higher level of achievement. which is further compounded by gender. Also based on their analysis of NAEP data trends. Bae. Choy. Geddes. Sable. and Snyder (2000) contend. "Achievement gaps appear more closely related to attitudes than to course taking". The data show that females are less likely than males to like or to think they were good at mathematics. Females also experience mathematics anxiety to a greater degree than males (Levine. 1995).

According to Arnot. M. 1983). conversely. male students rated themselves superior to their mothers and. in three of five years. to their fathers too. This suggests a widely accepted belief that men are more intelligent than women.

The third objective of the study was to determine the factors that motivate girls and boys to learn mathematics. The study established that:

5.2 Conclusion

The major purpose of the study was to determine the factors affecting gender and academic performance of students in mathematics in Kiamokama Division, Masaba South District, Kenya.

The study revealed that overcrowding large classes, the nature of the syllabus and the curriculum that is followed is overburdened, overcrowded with topics and congested. The study also revealed that Poor School infrastructure such as building and furniture lead to students' poor performance. Lack instructional materials such as textbooks lead too poor performance. Lack of well trained and qualified teachers and lack of adequate school facilities such as well stocked library lead to poor performance among students. The study also revealed that some teachers have negative attitudes towards students especially the girls in mathematics and therefore girls tend to hate the subject and hence poor performance

The study revealed that girl's attitudes towards mathematics contributes to their poor performance in math. The study revealed that few girls enjoy mathematics because they think that mathematics is hard and meant for boys who are clever. The study also revealed that Girls naturally hate mathematics and boys believe that they are superior to girls.

5.3 Recommendations

- The government should construct facilities at school for mathematics teachers to teach in a conducive environment in order to aid the better performance of mathematics students in their schools.
- The government should have a policy in place that encourages the taking up of mathematics subject especially to the female students who at times think they are not good enough for the subject
- The girl students should be encouraged to relate equally with there fellow boy students in all subjects regardless of whether it is mathematics or not.
- The community should be sensitized to encourage the sending of girls to school so that they get equal access to education.
- Trained and qualified teachers should be employed and they should not have a negative attitude towards students especially the girls.

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APPENDIX A: QUESTIONNAIRE TO THE STUDENTS

1. Personal information

Age

12 yrs and below [ ]

13-15yrs [ ]

16 and above [ ]

Sex

Female [ ] Male [ ]

Class

4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ]

Parent's educational level

Below class 8 [ ] class 8 graduates [ ]

Below form 4 [ ] form 4 graduates [ ]

Tertiary college [ ] University graduate [ ]

Number of mathematics teachers in your school

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5-7 [ ] over 8 [ ] no teachers [ ]

Which is the qualification of your mathematics teachers?

Form four leaver [ ] degree [ ] none [ ]

Which mathematics equipment do you have?

Geometrical set [ ] calculator [ ] counters [ ] others [ ]

Does the school have any mathematics praise award?

Yes [ ] No [ ]

Factors that affects student's performance in mathematics

Students fail mathematics because of overcrowded classes

The curriculum contributes to student's poor performance in mathematics

Poor School infrastructure such as building and furniture lead to students' poor performance

Lack instructional materials such as textbooks lead to poor performance in mathematics

The quality of teachers motivates to pupil and hence performance well in mathematics

Adequate school facilities contribute to students' performance in mathematics

Teacher's attitudes towards student's in regards to mathematics affect their performance

Students Attitudes towards mathematics

Girls believe that mathematics is meant for boys

Girls think that they are not good at mathematics

Girls naturally hate mathematics

Boys believe that they are more intelligent than girls that's why they pass mathematics