FACTORS CONTRIBUTING TO POOR PERFORMANCE IN MATHEMATICS IN KENYA CERTIFICATE OF SECONDARY EDUCATION IN KIKUYU SUB-COUNTY, KENYA

BY

IHEME CHUKWUEMEKA KELECHI

A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT FOR POST GRADUATE DIPLOMA IN EDUCATION OF THE UNIVERSITY OF NAIROBI

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DECLARATION

Declaration by candidate

This project is my original work and has not been presented in any other university or institution of higher learning for examination.

Signed: …….. Date: ……

IHEME CHUKWUEMEKA KELECHI

Registration No. L40/74009/2014

Declaration by Supervisor

The research project report has been submitted for examination with my approval as the university supervisor

Signature……. Date……..

Dr. Anne Aseey

Senior Lecturer, University of Nairobi

DEDICATION

This project is dedicated to all teachers and those who impart knowledge, skills and character to others in different capacities.

ACKNOWLEDGEMENT

I would like to thank God for His gift of life, good health and strength to undertake this work.

My gratitude goes to my provincial superior, Very Rev. Father Simeon Nwobi who granted me the permission to pursue this course of study when I made the request.

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To all my parishoners at Sacred Heart Shanzu Parish Mombasa and St. Joseph Kerwa, your support is highly appreciated.

I am highly indebted to the staff and students of Kerwa Secondary School. You provided me with the enabling environment for my teaching practice. God bless you all.

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ABREVIATIONS AND ACRONYMS

KNEC: Kenya National Examination Council

KCSE: Kenya Certificate of Secondary Education

EFA: Education for All

KCPE: Kenya Certificate of Primary Education

ABSTRACT

The purpose of the study was to investigate factors contributing to poor performance in mathematics in Kikuyu sub- County. Four research objectives were formulated to guide the study. The study adopted descriptive survey method. Data were gathered by use of questionnaire for the students and teachers while data were analyzed qualitatively and quantitatively. The study revealed that performance in mathematics was poor. Findings indicated that teachers' method of teaching and provision of teaching and learning materials influenced performance in mathematics. The study concluded that students should be helped in getting sponsors to keep them in school. The study further concluded that parental involvement in encouraging students will help in improving student's performance. Based on the findings it was recommended that schools should motivate students to develop positive attitude towards mathematics. It was also recommended that understanding of mathematics should be taught using methods that will help students get the concept. Taking the limitation and delimitation of the study, it was suggested that a study on contribution of the stakeholders and the government in giving financial support to help improve mathematics be conducted.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In the conference held in April 2000, in Dakar, titled "World Education: Education for All: All for Education: A Framework for Action, it was made abundantly clear that every person has a fundamental right to education. This is because education is the key to and foundation of all other human rights, as well as the bedrock of all other developments. In other words, it is through education that one is able to develop and equally empowered to exercise all other human rights.

When Kenya as a country got it independence in 1963, its government prioritized education in that it was seen as a fundamental tool to overcome illiteracy, as well as alleviating poverty and eradication of various diseases. Every nation considers mathematics as the basis for the advancement of technology and science, the knowledge of which leads to socio-economic enhancement of the society. In other words, for a nation to advance scientifically and technologically, it has to make mathematics a priority thus enabling the citizens to apply themselves effectively in the area of natural and applied sciences.

Hence, when students are well grounded in mathematics, it will enable them to appropriately fit in with regard to this scientific and technological age. Fakuade (1977) sums up this assertion thus: "for the purposes of economic survival, the ordinary citizen needs to be able to compare and estimate values of articles, determine prices of foodstuffs, reckon distances and time, weigh evidence and be able to sift substances from chaffs".

This is the reason why mathematics is made a mandatory subject for primary and secondary schools in the country of Kenya.

For those who are aspiring to be admitted into the higher institutions to pursue courses such as engineering, medicine, architecture and other related courses, mathematics is a prerequisite for them. Evidence shows that there has been persistent poor performance in mathematics with regard to the national examinations regardless of the fact that mathematics plays a pivotal role in the society.

The body charged with the responsibility of conducting examinations at the end of each school cycle is the Kenya National Examination Council (KNEC). These examinations include the Kenya Certificate of Primary Education (KCPE) for the primary school and Kenya Certificate of Secondary Education (KCSE) for the secondary school. This body is mandated to coordinate summative assessment at national level.

In Kenya, national examination scores at primary and secondary levels act as proof of completion and qualifications for further education and later justification for entry into the labour market (Nelson Jagero 2013). Research done in Kikuyu sub county shows that performance in mathematics for the year 2015 was 3.08 and year 2016 was 3.37 respectively.

Thus, looking at the above, it becomes necessary to find out the reasons why students in Kikuyu sub-county in the county of Kiambu perform poorly in mathematics in the Kenya Certificate of Secondary Education with the view of improving their performance in mathematics.

The provision of teaching and learning resources in improving performance and role of teachers in their methods of teaching and effectiveness are taken to be independent variables while achievements in mathematics as dependent variables.

1.2. Statement of Problem

The National Ministry of Education has worked hard to develop a curriculum that addresses its needs in the country. Teachers have been given special training in this area, however, the efforts made have not yielded the desired goal as performance in mathematics has been relatively poor and appalling low over the years.

Any remedial action to be taken requires the identification of the possible contributory elements that lead to weak performance in the subject of mathematics. What supports can be provided within academic environment to improve the performance of students in mathematics? What things can the school do to help students perform well in mathematics? There are many factors which influence performance but the extent to which the teacher influences performance in mathematics is a very important aspect of study. This is because teachers are responsible in education of the students.

1.3: Purpose of Study

The intention of this research work is to find out how the teacher influences performance in mathematics in Kikuyu sub-county, Kiambu County.

1.4: Objectives of the Study

This research work sets out to accomplish the following objectives:

(i) To ascertain the factors influencing poor performance in mathematics in kikuyu sub-county, Kiambu county

(ii) To lay bare how much influence the provision of resources of teaching and learning in relation to enhancement of performance in mathematics in kikuyu sub-county

(iii) To assess the role of teachers in their methods of teaching and effectiveness and how they influence performance in mathematics

(iv) To seek suggestions on how to improve performance in mathematics in kikuyu sub-county.

1.5 Research Questions

This research work shall be is guided by the outlined questions below:

(a) What are the factors influencing poor performance in mathematics in Kikuyu sub-county?

(b) To what extent does the provision of both teaching and learning resources help in improving the performance in mathematics in Kikuyu sub-county?

(c) What is the role of teachers in their teaching methods and effectiveness in influencing performance in mathematics in Kikuyu sub-county?

(d) What suggestions can be put in place with regard to improvement in performance in mathematics in Kikuyu sub-county?

1.6 Significance of the Study

This study constitutes of useful information that will help policy makers, teachers and parents know the underlying causes that hinder strong performance in mathematics. It would open new horizon for researchers in the future.

1.7 Assumption of the Study

The assumptions of this research are as follows:

(a) Schools in Kikuyu sub-county kept accurate and reliable records on students' performance in mathematics

(b) Respondents gave honest and accurate information.

1.8 Limitations of the Study

A fraction of the sample and sub-samples have been used in this research, leading to a limited generalization of the findings.

1.9 Delimitations of the Study

This research concentrated only focu on how the teacher influences performance in mathematics and the researcher delimited the investigation in Kikuyu sub-county. Information on performance was only based on opinions of teachers and students.

1.10 Definition of Significant Terms

Performance: by performance we mean accomplishment of a particular that is given in relation to pre-set known standards of accuracy, completeness, cost and speed.

School background: refers to factors within the school, such as teachers, head-teachers' leadership style and adequacy of teaching learning resources which influence students' performance and achievements.

Teacher: a teacher refers to any individual who systematically guides and facilitates a child's learning within a specific formal or non-formal learning environment.

Methodology: by methodology we mean a set or system of methods, principles and rules for regulating a given discipline, as in the arts or sciences.

Effectiveness: effectiveness means the degree to which objectives are achieved and the extent to which targeted problems are solved.

1.11 **Organization of the Study**

This research work comprises of five chapters. Chapter one deals with the preliminaries of the research which includes: background of the study, problem statement, purpose and objectives of the study, research questions, significance of the research as well as limitations and delimitations of the research and so on.

Chapter two is about the literature review of the research. This comprises of methodology applied in teaching mathematics, materials for teaching and learning mathematics, the attitude of teachers of mathematics towards mathematics as well as their effectiveness, the workload of teachers of mathematics together with remedial lessons on the subject. Chapter three handles the methodology applied with regard to the research. In chapter four, we have the analysis of data together with data interpretation. Finally, in chapter five is about the conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter we have the literature review which gives background upon which information is premised and insights into various issues on teachers' methodology and effectiveness, teachers' attitudes and students' attitudes towards mathematics and provision of teaching and learning resources are examined.

2.2 Teachers' Effectiveness and Performance

2.2.1 Attitude towards Mathematics

In the view of Akamolage and Olorenfemi Olabis (2011), there are many children who do not have the opportunity to attain their maximum height in the pursuit of education as a result of their poor background. Despite the fact that the subject of mathematics is considered as a prerequisite requirement in technological courses, studies show that the feelings of many in the society towards mathematics and science subjects is not a positive one. (Rogers & Ford 1997). The future of our society will be determined by citizens who are able to understand and help shape the complex influences of science and technology on our world (Ungar, 2010).

The attitudes of teachers are considered to play a major role with regard to teaching and learning of the subject. When a teacher approaches it with a negative attitude, it invariably affects learners as regards their performance. If a teacher approaches the teaching of mathematics positively, there is a high probability that he or she will positively influence a good number of students in the choice of their career. Corkfort (1882) noted that there was no area of knowledge where a teacher had more influence over attitude as well as understanding of his/her students that he/she

did in mathematics. A teacher of mathematics may influence for good the attitude towards mathematics of several thousands of young people and decisively affect many in their career choices.

In addition, Johnson (1972) notes that it is the attitudes which are built that are highly involved in the learning and retention of the subject and it is often the attitude the teacher builds that is the basis of their rank as successful teachers. This indicates that if a student develops a positive attitude then there are chances of liking mathematics and at the same time performing in it are increased and vice versa. Mwamwenda (1995) argued that the achievement of students in a subject is determined by their attitudes rather than inability to study.

T.U. Sa'ad, Adamu and A.M. Sadiq (2014) asserted that mathematics works as a tool to understand many other subjects and languages. In a broad sense, it forms the basis of many of the sciences, such as science, physics, engineering and astronomy. Mathematics is taught to motivate the masses which allows for advancement in technology as well as in science and technology. Things ranging from the hydrogen bomb to compact discs would not have been possible to build without knowledge of mathematics and impacting such a magnifying and dynamic series of logic based knowledge is to be done through developing and promoting positive mathematical attitudes amongst students regardless of their cultural and social differences.

2.2.2 Provision of Teaching and Learning Resources

Resources of learning have a major role to play with regard to teaching and learning of mathematics as subject, and this necessarily affects the academic achievements of the students. Learning materials are the key ingredients for teaching. In many developing countries, secondary

school students either lack books altogether or are requested to share books with their fellow students. School furniture in particular chairs, form an important part of learning environment. Students need furniture to follow lessons comfortably and attentively and make notes and work on exercises and assignments.

The conditions of the building are very important too. Fordham (2002) notes that teachers in classroom with lockable doors, windows are able to leave teaching aids in the class as long as they want without fear of theft or damages. Often times, some learning and teaching materials such as books, charts are not sufficient. There are some areas that these materials are not even available. This insufficiency of materials is a serious issue, all the more in countries that allocate a very meagre amount of money to education. In this this situation, there are other related problems coupled with it. From studies carried out by the World Bank (1988), some schools were found to have dilapidated buildings, missing or broken desks and chairs, lacked good ventilation and sanitation facilities which are essential for students' well- being and their performance.

Similarly, a study carried out in Nigeria (Jerry, 2009) highlighted the poor performance of students in mathematics and other science subjects. It pointed out that the factors responsible for this poor performance included: insufficient facilities of learning, lack of instructors who are qualified as well as devoted. It also highlighted the lack of ability of the students to perform well in practicals as well as the methodology employed by the teachers. It also talked about majority of the books used in schools being written by foreign authors, the language of which is not easy for the students to understand (Akinola, 2006).

According to Dzara (2012), poor performance in mathematics has been on the increase in Malawi; and this is attributed to the following causes: non-availability of quality textbooks, the perception by students that mathematics and sciences are hard, the laziness of students as well as insufficient time allocated for the teaching of mathematics.

The importance of textbooks cannot be overemphasized with regard to defining the curriculum. It plays a major a role when it comes to defining the curriculum. According to Lockhead and Verspoor (1991), together with Mugwaya, Jeko and Manyumwa (2012), textbooks delineate what should be taught and learned in class and thereby bridging the gap between the objectives that schools are meant to achieve and actual activities of the schools. In the same vein, Budde (1998), says "the content knowledge encompassed by the textbooks supplements the teacher's own knowledge and helps him/her organize the instruction activities that are appropriate or suitable.

2.3 Summary of Literature Review

Here the researcher tried to review literature related to teachers' effectiveness and performance, attitude towards mathematics and provision of teaching and learning resources. This is with the view to identifying their impact in poor performance of mathematics in Kikuyu sub-county, Kiambu County, and seeking suggestions on how to improve performance in mathematics.

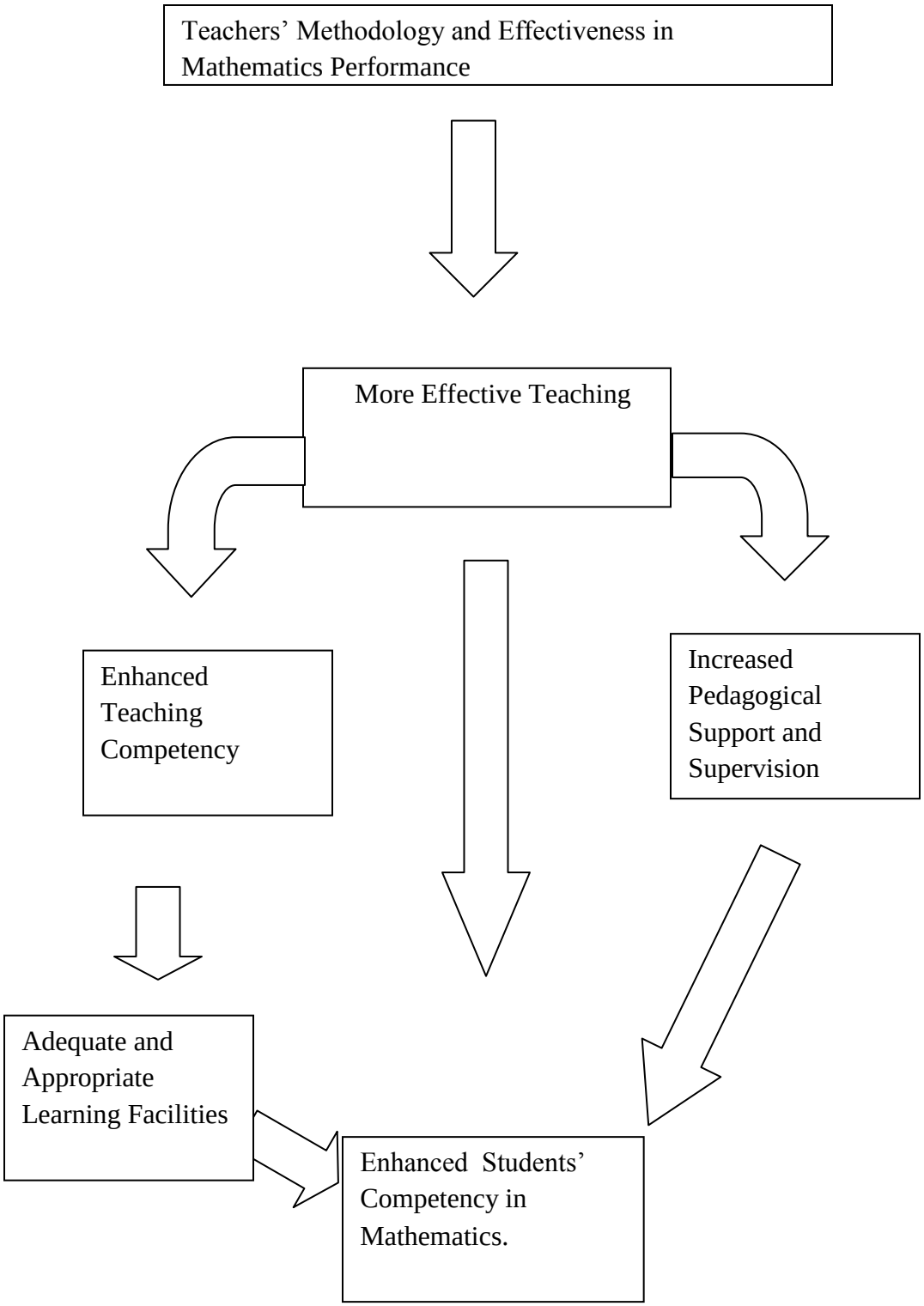
2.4 Conceptual Framework

It has been conceptualized that poor performance in mathematics is influenced by teachers' methodology and effectiveness in teaching. The focus is on effective teaching, enhanced teacher competency, adequate and appropriate learning facilities as the independent variables. Enhanced

students competency in mathematics depended on teacher effectiveness and methodology which is the expected result.

The teacher has it as a duty and obligation to make sure that all material components of a school harmonize. There are the students and teachers' attitude towards the subject of study, learning resources and equipment.

Figure 1 Factors influencing poor performance in mathematics



2.5 Theoretical Framework

This research work follows Skinner's Motivational Theory of Learning. Skinner (1985) states that "students' motivation to undertake a task depends on expected reward. He further says that efficient learning will take place when there strong motivation of learner to learn by the teacher. According to him, this motivation could be as a result of either external or internal factors. And these stimuli play a vital role with regard to guiding the behaviour or attitude of the learner in the attainment of the goals desired. To this end, it is necessary that students are motivated using various means that include but not limited to: advice on choosing of careers, the provision of physical facilities (laboratories) as well as encouraging them verbally. When this is done it will definitely lead to an improved performance in the subject of mathematics.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter three comprises of the methodology employed for this research work. It talks about research design, target population, sample techniques and sampling techniques, research instruments, validity of instruments, collection of data and analysis of data.

3.2 Research Design

The method employed by this research is the descriptive survey method. Descriptive research is a systematic collection and analysis of data in order to answer questions and to test hypothesis concerning the current status of a variable of interest to the researcher (Njageh, ARK, 2018, p.8). This descriptive method is carried out in such a way that the participants are accurately depicted. Kumar (2005) asserts that a descriptive survey method is important because it draws its general conclusions from the discovered facts.

3.3 Target Population

Target population is the total number of respondents in an area that the researcher is interested in. The target population for this particular study is students and teachers from secondary school in Kikuyu sub-county. They were chosen because they are directly involved in performance. The target population consists of 30 public secondary schools this is according to the sub-county director in Kikuyu.

3.4 Sample Size and Sampling Techniques

A sample is a sub group in a population which can be used as a representative of population to derive inferences about the characteristics of that population. The researcher has employed stratified sampling method in the selection of schools involved in the research within Kikuyu

sub-county. The strata were grouped based on the category of the secondary schools namely: national, county, extra-county and private.

In the view of Gay (1981) together with Hilton (1995), ten percent (10%) sample of a population is seen as minimal but with regard to a smaller population, twenty percent (20%) will be needed. Considering a total population, the researcher worked with 30% to make the research viable. A sample of six was selected based on stratified technique on the secondary school category strata from a total of thirty. The schools were stratified in to two strata, that is public day and boarding schools. The students were stratified according to gender and classes from form one, two, and three while teachers were stratified according to gender, classes they teach and professional qualification. The sample consisted of 14 teachers and 56 students.

3.5 Research Instruments

The researcher has used questionnaire as the research instrument. A questionnaire is a written list of questions the answers to which are recorded by respondents. In a questionnaire respondents read the questions and interpret what is expected and then write down the answers. This questionnaire was designed to solicit for information that helped the researcher in answering questions of the study.

There were two questionnaires namely: the questionnaire for Mathematics teachers and questionnaire for students of mathematics. Both questionnaires were given to teachers and students respectively.

To answer questions likert type items on attitude were used. Items were graded using the following key: Strong Agree (SA) was awarded 5 points. Agree (A) 4 points, Undecided (U) 3 points; Disagree (D) 2 points and Strongly Disagree (SD) 1 point.

Alternative items were graded in the opposite with reversed keys: SA (1); A (2); U (3); D (4); and SD (5). Reversing the scoring of the negative items has the advantage of reflecting positiveness toward the object in question (Nyaga 1997).

3.6 Instrument Validity

Validity can be seen as the degree to which an instrument measures what it purports to measure (Muganda, 2003). The researcher made use of content validity which refers to how adequately a test is related to a specific field of study or content and how adequately the test samples domain about which inferences are to be made.(culled from Lecture Series on Educational Measurements and Evaluation by Matheka V.M. p.32). In identifying the teachers' methodology and effectiveness in influencing performance in mathematics, it was possible to construct an instrument that would include all possible items that measured a given concept.

3.7 Instrument Reliability

Reliability is the degree to which an assessment tool produces stable and constant results. In other words, reliability refers to the accuracy of the measurement provided by a test. (Lecture Seires by Matheka V.M, p.28). The idea behind reliability is that any significant results must be more than one of finding and inherently repeatable (Moskal et al, 2000). Test-retest method was used to determine the same instrument twice to the same group of subjects. There was usually a time lapse between the first period and the second testing period. The computation of person correlation co-efficient (V) between scores from both testing periods was employed as shown by the formulae below (Kumar, 2005).

$$V = \frac{N\,ExY-(Ex)(EY)}{\sqrt{N\,E\,x^2-(Ex)^2\,(N\,Ey^2-(Ey)^2)}}$$

X= odd scores

Y= even scores

EX= sum of x scores

3.8 Data Processing and Analysis

The data collected was analyzed using qualitative analysis technique. Statistical analysis and calculations were done through the computer programme of spss and ms office excel data analysis package. The next chapter presents detailed data analysis and discussion of findings.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter's objective is on the presentation of results of the data analyzed together with the appropriate interpretations to enable the researcher make informed judgment on the problem under investigation.

4.2 Return Rate of Questionnaire

With regard to questionnaire to rate of return, Saunders, Lewis and Thornhill (2007) point out that a response rate of 60% and above can be considered sufficient in answering research questions.

In our study, out of 56 questionnaires administered to the students 53 (95%) were returned. Out of 16 questionnaires administered to teachers 14 (90%) were returned and were useable for data analysis.

4.3 Demographic Information of the Respondents

The respondents are teachers and students. This section presents that of teachers and students.

4.3.1 Demographic Information of the Teachers.

The teachers were asked to indicate their data.

Table 4 .1 Gender Distribution of Teachers.

Gender	Frequency	Percentage
Male	8	57.2
Female	6	42.8
Total	14	100

The findings revealed that there were 8 (57.2%) male teachers while 6 (42.8%) were female. Both male and female were presented although the males were more.

Also the teachers were requested to show their level of academic qualification. The responses are shown in the table below:

Table 4. 2: Teachers' Level of Academic Qualification

Level of Education	Frequency	Percentage
M. Ed	3	21.4
B. Ed	9	64.3
Diploma	2	14.3
Total	14	100

Data revealed that 9 (64.3%) of the teachers were holders of Bachelor of Education degree; 3 (21.4%) were holders of Master of Education degree while 2 (14.3%) were holders of Diploma. The data show that majority of teachers are well qualified mathematics teachers and therefore are capable of influencing good performance in mathematics.

Further, teachers were requested to indicate whether the students had the required learning resources example: calculators, logbook and mathematical sets. Most teachers gave a response

of most students lacking required learning resources. Asked to explain to what extent and they responded as indicated below:

Table 4. 3: Extent of learning resources

Extent of learning resources	Frequency	Percentage
Very High	2	14.3
High	2	14.3
Low	10	71.4
Total	14	100

The data showed that 2 “Very High” (14.3%) were of the opinion that students had learning resources; 2 “High” (14.3%) while 10 “low” (71.4%) indicated only a few. It means that a low number of students had this resource.

4.3.2. Demographic Data of the Students:

The demographic data of students were based on gender, form and their academic expectations as shown by the table below:

Table 4. 4: Gender Distribution of Students

Gender	Frequency	**Percentage**
Male	**25**	**44.7**
Female	31	**55.3**
Total	**56**	**100**

The findings revealed that 25(44.7%) were boys while 31(55.3%) of the students were girls. Both male and female were presented although females were more. It was noted that in the mixed schools in Kikuyu sub-county, girls are more in number than the boys.

In addition, the students were requested to show their respective classes. The response they gave is as shown in the table below:

Table 4. 5: The Distribution of Students according to their classes

Students' Form	Frequency	Percentage
Form 1	7	12.5
Form 2	9	16
Form 3	14	25
Form 4	26	46.5
Total	56	100

The data indicate that students from form 1 were 7 in number which is about 12.5% of the total respondents. 9 were in form 2 which is about 16%, 14 in form 3 which is 25% and 26 were in form 4 and that is about 46.5%. The data show that most of the respondents were in form 4.

The researcher further sought to establish teachers' expectation on their academic achievements. Their responses are as shown below:

Table 4. 6 : Distribution of Students' Academic Expectations

Academic Expectations	**Frequency**	**Percentage**
Very High	**46**	**82.1**
High	**8**	**14.3**
Low	**2**	**3.6**
Total	**56**	**100**

Data indicated that 46(82.1%) had very high expectations of students' academic achievements, 8(14.3%) had high expectation while 2(3.6%) had low expectation. This indicates that teachers had confidence in their students and believed they can perform well academically.

The researcher further sought the overall climate in their school. The responses were as shown below:

Table 4.7: Overall Climate in School

Overall Climate	**Number**	Percentage
Good	**12**	**21.4%**
Satisfactory	**35**	**62.5%**
Poor	**9**	**16%**
Total	**56**	**100%**

The data above indicated that 12(21.4%) of the students felt that the overall climate in school was good, 35(62.5%) said it was satisfactory while 9(16%) felt it was poor. This shows that majority of the students were satisfied with the climate in their school. The overall climate of discipline, infrastructure was satisfactory according to their response.

4.4. Provision of Teaching and Learning Resources in Improving Performance in Mathematics.

4.4.1 Causes of Poor Performance in Mathematics

According to Ayot (2000), the organization and running of school can contribute to how students fair in schools. If schools are poorly managed, the teachers, students and subordinate staff tend not to enjoy what they are doing. This can create laziness among teachers, students and subordinate staff. The material components of a school are the students, teachers, books, equipment and the buildings, and these must harmonize. Students perform well in examination because they are motivated due to confidence they have in school and teachers. Teachers avoid absenteeism both in class and in school. Teaching equipment are available, students obey teachers, there is no misuse of public funds and school property, hence good performance.

With regard to giving answer to the question that is aimed at ascertaining the causes of poor performance in mathematics in Kikuyu sub-county, the researcher requested the teachers to indicate the degree of significance of the items regarding improvement in teaching and learning the subject of mathematics. The items included a wide range of learning resources.

Table 4.8: Teachers' Responses to what extent Learning resources are significant to improvement in performance in Mathematics

Learning Resources	Very High		High		Low		No Influence	
	F	%	F	%	F	%	F	%
Availability of Textbooks	7	50	4	28.6	2	14.3	1	2.4
Adequate and qualified Instructors	9	64.3	2	14.3	1	2.4	1	2.4
Good Sanitation Facilities	3	21.4	2	14.3	4	28.6	5	37.7
Well Ventilated Buildings	2	14.3	3	21.4	3	21.4	6	42.8
Availability of Desks	8	57.1	3	21.4	2	14.3	1	2.4
Enough Chairs	6	42.8	4	28.6	2	14.3	2	14.3

Findings from table 4.5 indicate that very high number of teachers 7 (50%) were of the opinion that availability of textbooks helped in improved performance in mathematics while 4(28.6%) indicated high; 2(14.3%) were low and 1(2.4%) had no influence. In Chepchieng's (1995) view, there is a correlation between the availability of quality textbooks and performance. In the availability of quality textbooks affect the performance of students from lower income families,

who cannot afford the books particularly, those who attend boarding schools that are in rural areas. The non-availability of textbooks invariably affect their performance.

The researcher further sought to find out how adequate and qualified instructors influence performance in mathematics and the responses were: 9(64.3%) very high, 2(14.3%) high, 1(2.4%) low and 1(2.4%) no influence. This indicates that most of the teachers were in agreement that adequate and qualified instructors would lead to improved outcome in the subject mathematics. This is because teachers are the major driving force to enable learning to take place. This means that the adequacy and quality of teachers are considered major factors that seriously affect school performance. This is in agreement with Birgen(2005) when he said that teaching as a profession is one of the duties that requires both qualification as well as experience to produce a good result. Again, there is the need to recruit more teachers who are competent, and by so, the teacher-student ratio will increase leading to improved performance in mathematics.

Good sanitation facilities were also rated as factors influencing performance, where 3(21.4%) rated very high, 2(14.3%) high, 4(28.6%) low and 5(37.7) no influence. This indicates that sanitation was not a major factor that contributed to poor performance.

With regard to well ventilated buildings, findings indicated that 2(14.3%) rated very high, 3(21.4%) high, 3(21.4%) low and 5(37.7) no influence. This shows that this was not enough a factor to lead to poor performance in mathematics while availability of chairs and desks were major factors that would lead to improved performance in mathematics. They rated as follows: 8(57.1%) very high, 3(21.4%) high, 2(14.3%) low and 1(2.4%) no influence. Availability of good desks and chairs is essential for the students' well-being in school.

4.5 Teachers' Methods of Teaching

Teachers are chief facilitators for learning to take place. The major factors about teachers that seriously affect school performance are adequacy and quality. To determine the extent to which teachers use different methods in teaching, they were requested to show how frequent they employed the methods. Table 4.6 presents that data.

Table 4.9: Teachers' Methods of Teaching

	Frequency	Rarely	Not at All
Question and Answer	13	1	0
Lecture	2	2	10
Group Discussion	10	4	0
Problem Solving	12	1	0
Experiment	3	2	9
Research Method	11	3	0

The data above indicate that teachers use different methods in teaching. For example 13(92.8%) reported that they use question and answer method; 10(71.4%) use group discussion; 12(85.7%) use problem solving method and 11(78.5%) use research methods; 2(14.2%) use lecture method and 3(21.4%) use experiment method. Asked why they frequently used the first three methods mentioned above, they reported that students need to be involved in learning and these methods were learner centered. The methods facilitate learning by creating a conducive atmosphere as well as taking care of the individual differences. Costello (1991) considers the use of lecture method as ineffective, in that there is no active participation on the part of learners, it rather makes them passive. However, it is only useful when it comes to coverage of vast content.

4.5.1 Teachers' Attitude towards Teaching Mathematics

The data presented by teachers responding on their attitude toward mathematics showed that 1(7.1%) had a negative attitude. The attitude of teachers towards the subject shows that they were ready to assist students in learning mathematics. This indicates then that teachers' attitude is not a cause of poor performance in mathematics.

4.6 Performance and Learning Resources

With regard to availability of facilities of learning, the researcher requested the respondents to show the adequacy of learning facilities with respect to their school. Students' responses on the level of availability of facilities in school are indicated in the table below:

Table 4.10: Adequacy of Learning Facilities

Availability of Resources	Enough		Not Enough	
Classrooms	28	50%	28	50%
Textbooks	19	33.9%	37	66.1%
Toilets	15	26.8%	41	73.2%
Teachers	17	30.4%	39	69.6%
Library	3	5.4%	53	94.6%
Furniture	13	23.2%	43	76.8%
Teaching Aids	10	17.8%	46	82.2%

The data indicated that some schools did not have adequate facilities to enable smooth learning. 28(50%) reported there were not enough classrooms, 38(66.1%) lacked enough textbooks, 41(73.2%) did not have enough toilets while 39(69.6%) did not have enough teachers. It was noted that most schools in the area lacked libraries 53(94.6%). Lack of enough facilities could be

a factor contributing to poor performance. This is in line with Watkins (2000), who noted that education materials have a major bearing, one of the most powerful and consistent determiners of learning achievements. These materials include furniture, library facilities and writing materials.

4.7 Suggestions Put In Place To Improve Performance in Mathematics in Kikuyu Sub-County By Teachers and Students.

In their suggestions, the teachers talked about various methods of teaching that create conducive atmosphere for students to learn as individuals. It includes a guided group discussion as well as the establishment of mathematics club in schools, thus enabling students to perform better in it.

In addition, the teachers made the suggestion of getting the government more involved with the view of getting more monetary assistance for the provision of basic facilities, including but not limited classrooms, toilets, libraries, books, all the more in sub-county schools. There was also the suggestion to government regarding to more recruitment of well- trained and competent teachers to improve teacher-student ration.

The students suggested that teachers should create a friendly environment in classrooms while teaching mathematics and use methods that make them feel involved. Further, the students felt guiding and conselling them on the importance of education would help improve their performance. They should also be helped with school fees payment to help curb absenteeism which they felt contribute to them missing school hence concepts being taught in their absence.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

Chapter five highlights the things that have been found out in this research study. It makes some conclusions as well as recommendations with regard to the goals or objectives it set out to achieve.

5.2 Summary of the Findings

This research work set out to find out the degree of influence of the teacher as regards performance in the subject of mathematics in the sub-county of Kiambu county namely, Kikuyu. The objectives which were formulated to guide the study are as follows: (a) to find out the factors that bring about weak performance in mathematics in Kikuyu sub-county; (b) this objective aimed at establishing the provision of materials for teaching and learning in improving performance in mathematics in schools located in Kikuyu sub-county; (c) objective three sought to assess the role of teachers in their methods of teaching and effectiveness on how they perform in mathematics; (d) Finally, objective four sought suggestions on how to improve performance in mathematics in Kikuyu sub-county. The researcher employed the method of descriptive survey in carrying out this study. The sample comprised of fourteen (14) teachers and fifty six (56) students. Data were gathered by use of questionnaires for students and teachers while data were analyzed qualitatively and quantitatively.

The study revealed that mathematics was still performed poorly in secondary schools in Kikuyu sub-county. Poor performance was as a result of various factors which took a wide view of teachers' credentials, educational attainment and knowledge that tend to affect their

effectiveness. Low instructions and poor methods can result to poor performance. This research also revealed that teacher's attitude, commitment and competency determine greatly the quality the students are able to attain with regard to education. These findings were revealed by students who reported that 12(21.4%) of the school climate was good, 35(62,5%) satisfactory and 9(16%) felt it was poor. They also established that 13(92.8%) of teachers use question and answer while 10(71.4%) use group discussion. They revealed that the use of different methods make for a conducive atmosphere for learners as well as taking care of individual differences.

Again, the researcher found out that the provision of teaching and learning resources influenced performance in mathematics for example: some schools did not have the required facilities for smooth learning in the school. For instance, 38(66.1%) lacked enough text books while 39(69.6%) did not have enough teachers and most schools lacked libraries 53(94.6%).

The findings also revealed that much as mathematics is a prerequisite for admission to do technological courses, stil the general public does not have positive feelings towards mathematics. However, findings from teachers revealed that 1(7.1%) of teachers had a negative attitude towards mathematics indicating that most of them were ready to assist students, thus their attitude was not the cause of poor performance in mathematics.

5.3 Discussion of findings

The findings revealed that performance in mathematics can be influenced by teacher effectiveness and performance, attitude towards mathematics and provision of teaching and learning resources as discussed.

5.3.1 Teachers' Effectiveness

It is the responsibility of teachers to ensure that students comprehend the theories and concepts of mathematics. In this regard, teachers are the facilitators. That the students have received quality education depends largely on the attitude, commitment and competency of the teachers. In other words, the attainment of quality education by students depends largely on the commitment, attitude and competency of the teachers. It also depends on conditions on which the teacher and the students are working. To this end, Counbs (1995) asserts that "teachers' attitude towards their work and students, their classrooms management and their interaction with students while teaching mathematics have a great impact on their performance.

Teachers' credentials, educational attainment and knowledge tend to affect their effectiveness, low quality instructions and poor methods of teaching can result to frustration and boredom of the learners and eventual poor performance in mathematics.

Adam (1971), avers that "teachers have a big role to play in the teaching and learning". This entails that as a human resource, the teacher has the primary responsibility to inculcate knowledge into students. (Ajayi, 2009), enumerates the qualities of a teacher that is qualified and does his/her work as a professional: the teacher has to be a master of the subject matter; he/she has to be organized, must have the capacity to clarify ideas, he/she has to be a positive motivator, having good imagination, engaging the students in tasks that are of value or meaningful within a given period of time; he/she gives tests and examinations to students in order to monitor their progress. He/she also manages adequately the details of learning.

The study established that teachers' effectiveness influenced performance in mathematics in Kikuyu sub-county. Teachers' credentials, educational attainment and knowledge tend to affect performance. The methods used in teaching can either result to either good or dismal performances. A teacher who is trained well exhibit the following professional characteristics as Ajayi (2009) enumerates: mastery of subject matter, well organized, capacity to clarify ideas and capacity to get the students participate in meaningful ideas throughout the period of teaching. This was established by a number of teachers (92.8%) who said that they use question and answer method, a method that is learner centered. It creates an enabling environment which creates room for individual differences of the students to be catered for, hence improving performance in mathematics.

5.3.2 Attitude towards mathematics

The study established that attitude towards mathematics can influence performance. Both learner and teacher attitude can result to either good or dismal performance in mathematics. When a positive attitude is developed towards the subject, one gets grounded in it. In other words, it enhances the retention and learning of the subject. A teacher is then considered successful if he/she is able to instill in the students this positive attitude towards the subject. This entails that if a student develops the disposition towards mathematics, chances are high that he/she will do well and vice-versa. In the findings it was established that (7.1%) of teachers have a negative attitude while (92,2%) have a positive attitude and therefore most teachers were ready to assist students in learning mathematics.

5.3.3 Provision of teaching and learning resources

The research study ascertained that adequate provision and availability of instructional and learning materials play a pivotal role with regard to teaching and learning of mathematics. Learning materials are key ingredients for teaching. They play pivotal role in defining the

curriculum. A good learning environment should have enough textbooks, qualified and devoted instructors, good sanitation as well as enough furniture. In the findings, it was established that (50%) of teachers were of opinion that availability of textbooks helped in improved performance in mathematics. In line with the above, (Birgen 2005) believes that experience and qualification are prerequisite requirements for teaching to be able to deliver adequately. This means that teachers must be provided with teaching and learning facilities for an adequate delivery.

5.4 Conclusion

The researcher made the following conclusions based on the established findings: that mathematics in Kikuyu sub-county was still performed poorly. Teachers' methods of teaching influenced students' performance, solving problems, question and answer and research methods were found as the most appropriate methods since every individual student is involved. Provision of teaching and learning resources influenced performance in mathematics. For example, some schools did not have the required facilities for a smooth running of the school such as textbooks, teaching aids, library and enough teachers.

The study also concluded that students should be helped in getting sponsors who may assist them in paying fees. This will enable the students to have more contact hours with their teachers thus improved performance. Parents should be encouraged to help their children in their studies, make sure the assignments given are done and express concern when their children's performance is poor by visiting schools to discuss with the teacher.

5.5 Recommendations

The researcher made the following recommendations relying on what he found out:

1. Schools should motivate students to develop positive attitude towards mathematics.

2. The stake holders and the government should give financial support to the schools to ensure that materials for teaching and learning (classrooms, libraries, textbooks) are adequately provided.
3. Understanding of mathematics should be taught using methods that will help to get concept of logic and reasoning into the students.

5.6 Suggestions for further research

The areas the research considered for further research include:

i. Contribution of other stakeholders such as Board of Management in improved performance in mathematics.
ii. Assessment of the implications of current policies on improved performance in mathematics.

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APPENDICES

Appendix I: Letter of Introduction

Dear Respondent,

I am a post graduate diploma student at the University of Nairobi. I am carrying out a research on teachers' methodology and effectiveness: factors contributing to poor performance in mathematics in Kenya Certificate of Secondary Education in secondary schools in Kikuyu sub-county, Kiambu County.

The information provided will facilitate the carrying out of the study. The information will be treated with the highest level of confidentiality and will only be used for the purpose of this study and not any other. I therefore request you to assist me achieve this goal by allowing me choose your school as my study sample.

Thank you for your cooperation.

Yours faithfully

Iheme Chukwuemeka Kelechi

L40/74009/2014

Appendix II: Teachers Questionnaire

Section A

This section requires one to give personal and general information.

1. Gender (Tick appropriately) Male ( ) Female ( )

2. Professional qualification M,Ed ( )

   B, Ed ( )

   Diploma in Education ( ).

3. Do your students have the required learning resources in mathematics (calculator, geometrical set, mathematical tables, text books) Yes ( ), No ( )

Section B

In your assessment, indicate the extent to which these items enhance the teaching and learning of mathematics.

	Very High	High	Low	No	Very Low
Availability of textbooks					
Adequate qualified and devoted instructor					
Good sanitation facilities					
Well Ventilated buildings					
Availability of desks and chairs					

2. What is the main cause of poor performance in mathematics in your school?

3. How often do you use the following methods to teach?

	Frequently	Rarely	Not at all
Question and Answer			
Lecture			
Group Discussion			
Problem Solving			
Experiment			
Research Method			

4. In your opinion indicate the extent to which teachers' attitude influences performance in mathematics?

Appendix III: Students Questionnaire
Students' questionnaire

Section A

This section requires you to provide an answer to the provided space. Tick where appropriate.

1. Gender? Male ( ) Female ( )

2. In which form are you?

   1 ( )

   2 ( )

   3 ( )

   4 ( )

3. Do your teachers have a high expectation on your academic achievements?

   Yes ( ), No ( )

4. How is the overall climate in your school? Good ( ), Satisfactory ( ),

   Poor ( )

Section B

This section contains a number of statements. Study each of the statements and give your response.

Indicate the availability of the following facilities in your school.

Facilities/Resources	Enough	Not Enough
Classrooms		
Textbooks		
Toilets		
Teachers		
Library		
Furniture		
Teaching aids		