

TEACHING METHODS AND ACADEMIC PERFORMANCE OF PUPILS IN
MATHEMATICS IN KENYA CERTIFICATE OF SECONDARY EDUCATION IN
RUIRU DIVISION CENTRAL PROVINCE, KENYA

By:

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DECLARATION

I Muniu Patrick Mwangi hereby declare to the best of my knowledge that the work embodied in this research work is my original work arrived at reading and research and has never been published or submitted to any other university or any other institution of higher learning for any academic award.

The literature and citation from other scholar's work have been fully referenced and acknowledged in the text and bibliography.

Name: Muniu Patrick Mwangi

Signature: PM

Date: 01/06/08

DEDICATION

This piece of work is wholly dedicated to all my friends, Classmates, Lecturers, sisters and my parents. Most importantly, I dedicate this part of literature to you who is reading it right now, may it benefit you as you read it.

APPROVAL

This project has been submitted with my approval as the University Supervisor

Signature:.....

John the Baptist Baliruno

Date:.....

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First my heart felt gratitude goes to the almighty God for his support, guidance, protection and providence as I worked and toiled to make this piece of work a success .May His name be praised.

Amen.

Much appreciation goes to my supervisor, John the Baptist Baliruno Who, though tightly scheduled sacrificed some of his time to guide me step by step in this research work. May God remember him in his endeavors!

I felt highly indebted to my dear wife, for having stood by me throughout my study period. May God reward her mightily. I also want to thank my children for their patience and understanding when I was busy studying .

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ABSTRACT.

The research is based on the teaching methods and performance of pupils in Mathematics in Kenya certificate of secondary education (K.C.S.E). A case study in Ruiru Division, central province, Kenya

The research objective was to determine the relationship between teaching of pupils and their performance in Mathematics as a subject. The researcher investigated the problem on the ground and the reasons why students hate and fail Mathematics especially girls. He also dealt with the relationship between the teacher experience and performance in Mathematics. Investigation was also based on the effects of integrated of Mathematics and other related subjects. Avenues are also explored to solve the problems in teaching and performance in Mathematics with an aim of improving it.

The Researcher used a survey design. Questionnaires were used as research tool. The findings of the study indicated that some students have very poor foundation of Mathematics right from primary schools where believes of hardness of mathematics are obtained. Lack of efforts to improve on Mathematics subject and lack of Mathematical practice have affected the teaching and performance of Mathematics negatively.

The researcher recommended on pupils being taught on how to do revision and use of group works right from primary level to build a strong Mathematics background. Use of calculators should be introduced in schools to ease the work of calculations. Teachers of Mathematics should use all teaching methods recommended and attend in service courses regularly. The head teachers should make facilities like fully equipped Libraries available in their school, and relevant books of Mathematics should be made available in the schools.

Students also should contribute to the smooth learning of the mathematics, through attending all Mathematics lesson and be willing to learn.

CHAPTER ONE:

BACKGROUND OF THE STUDY

1.1 INTRODUCTION

One of the most fascinating aspects of human development is the ability to learn .Learning is an amazing fact, one of which has attracted the attention of statistics in human development. How do children accomplish this, what enables a child not only to learn numbers but to put them together in calculations.

Mathematics continues to grow at a rapid rate, spreading into new fields and creating new applications, in its open-ended search for patterns. Several factors growth of technology, increased applications, impact of computers, and expansion of mathematics itself have combined in the past century to extend greatly both the scope and the application of the mathematical sciences. The changes must be reflected in the schools if our students are to be well prepared for tomorrow's world.

As a language of patterns, mathematics is a means for describing the world in which we live. In its symbols and vocabulary, the language of mathematics is a universal means of communication about relationships and patterns.

In Kenya, mathematics has become a very important tool because in every day to day chore, you cannot avoid calculations in every thing you do. Individuals are propelled to learn mathematics to meet the requirements of a classroom or to carry out everyday tasks such as shopping, jobs, etc. A prior knowledge of mathematics can also be an added advantage in the sense that a learner has an idea of how to deal with figures probably at work. Mostly rural schools teachers teach simple mathematics at lower primary level (P1, 2, 3). At upper primary

More than at any other time in history, society is placing demands on citizens to interpret and use mathematics to make sense of information and complex situations. Computers and other technologies have increased our capacities for dealing with numbers, for collecting, organizing, representing, and analyzing data. Tables, lists of numbers, graphs of data, and statistics summarizing information occur in every form of the media.

To be well informed as adults and to have access to desirable jobs, students today require an education in mathematics that goes far beyond what was needed by students in the past. All students must develop and sharpen their skills, deepen their understanding of mathematical concepts and processes, and hone their problem-solving, reasoning, and communication abilities while using mathematics to make sense of, and to solve, compelling problems. All students need a deep understanding of mathematics; for this to occur, rigorous mathematical content must be reorganized, taught, and assessed in a problem-solving environment. For students to develop this deeper level of understanding, their knowledge must be connected to a variety of ideas and skills across topic areas and grade levels in mathematics, to other subjects taught in school, as well as to situations outside the classroom.

The researcher, being a graduating student at Kampala International University intends to come up with various recommendations which if implemented handling mathematics subject teaching in Kenyan schools will lead to a remarkable improvement to the otherwise poor performance.

1.2 A statement of the Problem to be Investigated

- Ruiru secondary School is a school with bright students who have been performing better in the other subjects but lagging behind in mathematics subject, students have been having negative attitude towards mathematics and very few students believe that they can ever make it in this subject.
- The school also has the problem of shortage of text books and teachers and this makes it difficult to do enough exercises and teachers lack better teaching methodologies.
- Poor management of library resources in terms of searching and identifying the borrowed books and this demotivates the students from going to library.

1.3 Objectives

1.3.1 General Objective

This study will determine the significant relationship between teaching of pupils and their performance in mathematics in Kenya Certificate of Secondary Education.

1.3.2 Specific Objective

- i) To investigate the relationship between poor performance in mathematics, physics and other related subjects.
- ii) To encourage students to have positive attitude towards Mathematics.
- iii) To identify the effects of inadequate teaching facilities and how it has failed the progress of Mathematics.
- iv) To identify good methodology for Mathematical power.
- v) To find the solution that can contribute to the improvement of Mathematics

1.4 Scope of the Study

- To motivate students in doing better in mathematics and other subjects to meet the satisfaction and the goals of the school Through better performance
- To establish better teaching methodologies in school to boost the school performance, through motivating teachers and students, Students will be encouraged to form group discussions and to attend seminars that endeavor to demystify mathematics.
- To help students appreciate the logical structure of mathematics and the scope of mathematics in modern society. Procedures and ideas are emphasized, as are the development of applications and skills.

1.5 Significance of the Study

This study shall benefit the following:

The Ministry of Education which has been complaining about poor performance of mathematics subject will find some of its findings useful in their quest of improving the performance of education. It will be able to seal some of the loopholes that have been causing the subject's dismal performance.

The curriculum developers of mathematics will find the study beneficial. This is because; the research has included the literature part of mathematics subject. The curriculum developers will therefore get immediate information on which to design new methods to improve performance in mathematics.

The mathematics teachers will find the study beneficial in that it may provoke them to re-examine and re-consider their approaches to

teaching mathematics. This will make them become more sensitive to the problems facing them and their learners.

Head-teachers will be prompted to put pressure on the Ministry of Education to consider training and posting more teachers in order to reduce the workload of teachers of mathematics who may have been overworked.

Other researchers will be stimulated to undertake similar studies in other areas since this may not fully be representative of the actual picture in the whole country, that is, it forms the foundation of further research.

The researcher will advance suggestions and recommendations which will help educational planners in their quest for appropriate changes in the curriculum and the educational system for the benefit of those it is intended to serve.

Students of mathematics will find the findings helpful. The study will provide them with necessary information as they prepare to undertake challenging courses in universities and diploma colleges such as computer science, accounting and statistics. This way, Kenya would no longer rely on foreign expatriates who draw a lot of our foreign exchange.

CHAPTER TWO

REVIEW OF THE RELEVANT LITERATURE

2.0 Introduction

This chapter covers a report of previous investigations related to the Teaching Methods and Academic Performance in Mathematics, theoretical formulations from other studies and background information are presented. The researcher sub-divided the chapter into the following;

2.1 Pupils performance in Mathematics and other related subjects.

According to the statistics done in 2006 pupil have been performing poorly in mathematics subject, a drastic fall in Mathematics was registered and there was an indication that if nothing is done there would be very few students who would be permitted to chose the career of their choice following the poor performance in Mathematics subject (Nganga, 2006).

According to Daily Nation (Tuesday 26, 2006) under the title 'causes of cheating decline in Kenya Certificate of Secondary Education, it was reported that the Ministry of Education laments poor grades in Mathematics. The results analysis reflected a declining performance in key subjects like Physics , economics and accounting against an improvement in Social Sciences especially History and Government.

The above report has been the same over the years. Every year results are out, it is the trend of the Ministry to analyze the results and generally comment through the print and electronic media. In the recent History of exam performance, the term 'improvement in mathematics subject performance' has been lacking. Mathematical

subject is clearly poorly performed by high school pupils, although among the highly gifted youngsters, it is present earlier-by age 13. when all students are considered, the size of the difference is small. But among the most capable the gender is considerable. According to the (Camilla, 1980), the mathematical performance of thousands of high-achieving form four students, the boys outscore the girls on the mathematics subject-related differences in Mathematics do not occur in all kind of test items. Boys and girls perform equally well on tests of basic Mathematics knowledge; the girls do better in computational skills.

2.1.2 Gender affecting the performance of Mathematics

Although a lot has been done to reduce the gender imbalance at the primary level, there are still fewer girls than boys out of school due to several reasons such as cultural practices, poverty, long distance to school and HIV/AIDS. The gender disparity is also seen in terms of academic performance in national examinations and participation in certain science-oriented courses at the university and tertiary levels of education (Saitoti, 2003).

Due to inadequate teaching and learning materials and shortage of teachers, the secondary schools have found it difficult to maintain high quality. Moreover, performance in national examinations indicates that students do poorly in mathematics and science subjects yet these are critical in placement and admission to competitive courses at universities and other training colleges (Mugo, 2005).

There has been an increased entry and a closing gender performance gap in most subjects at Kenya Certificate of Secondary Education, apart from chemistry and economics, which are still largely taken by boys and social sciences which is largely taken by girls. Male students

continue to achieve relatively less well in English and the arts. Single sex Girls' schools continue to be particularly successful in examination performance. At A-Level there is higher male entry into sciences (Physics, Technology, Computer studies, Chemistry and Mathematics). Significantly, there is a higher female entry for arts and humanities. Males gain higher A-level grades than females in nearly all subjects especially in mathematics, chemistry, technology, history, English and modern foreign languages. However this grade superiority is being eroded, with a marked improvement in female performance at A-level (Wilcox, 1995).

It seems that girl's performance vis-à-vis progressivism was inevitably not good enough despite their obvious successes. Mixed ability teaching in secondary sector was framed within the discourse of comprehensive education and the reduction of the social class differentials. Scant attention was paid to, therefore to, pupil behavior in mid sex classrooms which negatively affected girls performance (Kelly, 2003).

Both genders suffer, but women in the most obvious and persuasive ways. The reason for the suffering is that the society teaches that there are genetic differences in aptitude that are related to gender and to the proper roles for each gender. For example, our culture deems men to be better at mathematical things aptitude but to be less able in literally matters, and women to have less mathematical aptitude but to be better at empathy and nurturing (Sadker, 1994).

Thus it is with mathematics, science and women but the problem is even sinister because the achievement gap between the genders in mathematics and science is not nearly as great as is the situation with

respect to reading and writing, but the myth persists in terms of self-esteem and opportunities provided. The study of women entering the University of California at Berkley, all have been high achievers in general in order to be admitted. In the year of study, though 57% of the males admitted had taken four years of mathematics, only 8% of the females had. Without the four years of mathematics courses, students are not eligible for the calculus sequence, would rarely attempt chemistry or physics and are disadvantaged for statistics and economics (Tobias, 1993).

The academic opportunity discrimination persists. The old notion that girls who were achievers would make poor dates probably has diminished somewhat but the idea of femininity and academic excellence can go together is not well established and many females are still taught that academic learning is not as important as being good looking and charming (Myra, 1994).

For males, too, gender stereotypes cause great damage academically. Differential treatment at an early age can have devastating effects. Between kindergarten and third grade boys are about three times as likely to be retained in grade (held back a year) as girls. Retention at that age increases the likelihood of dropping out of school, about 75% compared with students of equal achievement who were promoted. The same proportional difference exists with respect to retention between grades four and six, where the effect is to increase the dropout rate by about 90% (Gray, 1993).

With respect to the basic education, schools offer, gender differences in academic aptitude if they exist, need have no effect. There are no gender differences sufficient to prevent boys and girls from having

equal degrees of excellence in all the areas within the general curriculum. In an excellent educational system (or classroom), everybody wins. Good education is the key. But the school has to lead on this one (Friedman, 1995).

In the mid 1980's, data collection on individual and school culture was less systematic and less pervasive than today. Any evidence of gender difference tended, therefore to be piecemeal and fragmented. However it was possible to identify various more or less consistent patterns of gender difference of the period. Variations in achievements (girls being better at reading and boys having more advanced mathematical problem solving skills and better spatial awareness) were held to derive from biology and were therefore viewed as natural (Walkerdine, 1983).

In examinations of the 1970's, girls tended to do as well as boys up to O-level (except in mathematics and science), but after this boys had the advantage both in the numbers that stayed on at school and the number of subjects taken at A-level. From CSE upwards there were fewer subject entries for girls than for boys (by about 15%) and A-level, subject entries for boys exceeded girls by about 10,000. this is relatively lower participation of girls in examinations was reflected in their relatively lower performance in them (Rendel, 1974).



2.2 Students Attitude Toward Mathematics

Students commonly ask “why study Mathematics?” and frequently follow this comment with “I can’t do Mathematics.” This question and comment really go hand in hand. The primary reason that students “can’t do Mathematics” is because they have difficulties relating Mathematics to their everyday experiences and thus have little inspiration to test their Mathematical abilities. The goal of this study is to answer question and consequently change the comment. The researcher hopes to convince students how to value Mathematics. In other words, the researcher wanted the students to begin to understand that the technique of Mathematics can be looked at as a structured extension of their natural thinking process. Everyone loves to solve a puzzle, but not everyone sees that the solution can be expressed as a Mathematical model. (Macnon, 2002)

The researcher wanted to help each student become confident in his or her own ability. Often time the students first reaction to a Mathematical problem is “I can’t do it” before s/he undertakes an attempt. Usually this is because the student has been unable to relate the problem to anything familiar or practical. Once a negative posture has been assumed, the student is more than likely doomed to failure. Rebuilding a students confidence began by relating problems to familiar real-life situations. An important step in this process is to have a student become adept at being a Mathematical problem solver. Instead of just solving individual problems, emphases should be placed on having the student getting used in formulating an associated model. In other words try to have the student recognize common

patterns in problem and then translate those patterns into Mathematical symbols. (Patel, 2000)

By this, the student sees a logical classification of problems and a semantic approach to the problem solving rather than an unending set of problems. At this stage the student should be learning how to communicate mathematically. The important point here is that the students become comfortable with estimating solution and recognizing proper magnitudes that the result should have. thus a result that is way out of line should immediately be send up a warning flag and cause the students reevaluate his/her problem formulation and/or solution methodology. Further once the Mathematical solution has been achieved, it is critical that the students be able to translate the result back into the context of the original problem. Numbers alone are not sufficient, a proper translation and explanation of the numbers into real terms are needed for the numerical result to have any meaning. The students must become comfortable with the translation from words to Mathematics symbols and then from numerical back to words when a student arrives at this point, solving problems in a satisfying challenge. Students began to see the value of logical approach is simpler, more efficient, and more fun, (Nelson, j, 2003).

While paper and pencil solutions remain at the core of the foundation that is needed for building a solid conceptual understanding of mathematics, slide rules and numeric tables have been replaced by calculators. Calculators are becoming more powerful and micro-computers are becoming faster and less expensive. It is therefore important to show the students how to properly use calculators and the computers. This will ease complicated manipulation that can easily be accomplished with modern technology, (Jackson, 2005).

2.3 Teaching Facilities in Mathematics

The physical plants of all schools are similar: Each must have class rooms, libraries, a playground, and other important facilities required by the ministry of education. But they are also different. Schools vary in how libraries are equipped, classrooms are furnished and arranged and in how many pupils are enrolled-factors that make an important difference in children's life at school.

2.3.1 Classroom seating arrangements

Teachers' room arrangements often reflect their educational philosophies. The familiar row-and- column seating plan usually indicates a traditional approach to classroom learning, circles and clusters of desks are more open oriented. When children are sitted in rows and columns, pupils location affects participation: Teachers interact the most with children seated "front and center " (Adams, 1989).

Although sociable children tend to choose central desk and shy children desks on the outskirts of the classroom, the seating effect is not simply the result of pupil's personality. When the sociable children sit away from the center, their participation declines (koneya, 1988).

Do these approaches means that teachers should locate quiet pupils in center desk, where they will be more likely to be noticed and to participate in class discussions? Doing so could lead to considerable anxiety for shy children. A better approach might be to rearrange the entire seating plan so that participation of all pupils is enhanced. In an experiment in which three seating arrangements-row-and-column, large circle, and small clusters of desks-were compared, the circular configuration worked best in promoting participation and attention during class discussion. The cluster arrangement ranked second, and

the raw-and-column seating plan produced more pupil withdrawal and off-task behavior than either of the other conditions (Lambert, 1985).

2.3.2 Class and pupil's body size

Is there an optimal class size that fosters effective pupil's learning? Reviews of the research indicate that as class drop below 15 or 20 pupils, academic achievement improves (cooper, 1989).

Teachers of fewer children spend less time disciplining and more time granting pupils individual attention- factors that may be responsible for the achievement gains (Finn & Achilles, 1990).

By the time children reach high school, They no longer spend most of their time in a single, self contained class room. Instead, they move from one classroom to the next and have access to many activities outside regular academic instructions (Smith & Glass, 1988).

Teaching mathematics requires more input than other subjects because the teacher has to explain logics in words and numbers to the students. Yet they have the same number of periods and classes as teachers of other subjects. These problems need to be addressed. Science teachers should be allocated more lessons and paid a tuition allowance (Nganga, 2006).

There are many things that hinder the learning and teaching of Mathematics in Kenya schools. Belief in information particularly in text-books is entrenched. It is not unusual for teachers to tell pupils that something is right because the book says so. Any attempt to correct a book is often met with disbelief. Whether a exercise is done or not, lessons are often statements of facts or absolute truths from books not to be challenged of course a school laboratory rarely has the

computer and calculator to challenge such laws and learner has to believe (Kipkulei, 2003).

2.4 Mathematical Teaching Methods

According to Gachathi Report (1996), which states that one of the basic requirements in making education relevant to the today's problems of learners is to enable the student to observe phenomenon of the environment, gather data about them, interpret the data and then use them to solve problems.

Teaching methods should be used to develop ability to gather information by observing experiment as well as the ability to draw valid scientific inferences from the observed data (Kenya education commission, 1984).

To teach curriculum content, a particular way of teaching has a significant effect on the entire and learning situation. Many educations emphasize the child centered approach to education. This kind of approach has the modern view of the teacher as a helper challenging the learner to discover himself/herself (Hayman, 2000).

The effectiveness of teaching and learning are determined by the type of teaching methods applied. Despite such advice teachers in most classroom situations today are still controllably, restricting, inhabiting and do most of the talking. Seventy percent of the talking in the average primary and secondary school is done by the teacher (Stephen, 1998).

The drill method of teaching neglect pupil participation methods for low education achievements in education. Teachers are encouraged to adjust their instructions to the need of particular children and to use

activity method so as to make education child-centered (Mackay, 1980).

The teaching of mathematics in Kenya has been affected by certain attitudes. The environment, the teacher and experiments are likely to have dominating influence and create a favorable or negative attitude towards the science subject. Teachers should make mathematics a more enjoyable and far less dull and exhausting in order for the learner to acquire the scientific skills for themselves enabling them to go on learning after they have left school (Macgregor, 1985). The teaching of mathematics is based on the PDSI approach (Plan Do See, Implement) which emphasizes on the student being completely involved in the progression of the lesson. The student is actively involved in the activities of the lesson results of the mathematics subject (SMASSE, 2005).

2.4.1 Mathematical power in Students

(Sternmark, 1988) reassert the goal of Mathematical power of all students and emphasizes the phrase "for all students" many of the emphases here are motivated by a concern for equity-giving every student fair access to Mathematical education. Included male and females; rich, poor, and middle class.

All students should be expected to cope successively with the mathematics they will encounter outside the classroom, including the increasingly sophisticated mathematics demand in most job and most colleges course. Equally important, students should appreciate the beauty and fascination of mathematics and approach the mathematics they will encounter through out their lives with curiosity, enjoyment and confidence. (Steward, 2004)

What is the nature of mathematics student will control in their lives beyond school? Real mathematics is rarely restructured or marked with key words. Real situation seldom look like recipes; more often, they are complex and ambiguous. A single task can encompass many problems, often not clearly defined. There may be ways to go finding a solution or even deciding what constitute a solution. Completing a task may take hours, weeks or even years of sustained, persistent work. Furthermore, people use Mathematics in everyday world to accomplish a task. It is not enough for student to produce answers to reorganized exercises; they must be able as well to use Mathematics to help make sense of real situations. The character of Mathematics the student will control in their lives beyond such must be kept in mind.

2.5 Theoretical Framework

This study is based on Kenya's Joint Admissions University Board (KJUB) theory which states that performance in mathematics has made students in universities study degree programme that they have no interest in even after qualifying for other programme with very high grades in other subjects except mathematics. The policy in Kenyan Education is that without a grade C+ and above in mathematics, you cannot study prestigious degree programme like medicine, engineering, Accounting, pharmacy etc. A student who scores As in all science subjects but fails to pass Mathematics is restricted to the less prestigious courses. Students who perform well in mathematics at primary level will experience few or problems in handling complex calculations in secondary schools. The same said student progresses to university level with no career choice problem whatsoever.

The senate doubted the commitment of mathematics teachers in assisting the learners improve in the performance. It also wondered why the Ministry of Education would not allow teachers to specialize in particular subjects only in teachers training colleges which they argued that it would prepare the teacher to deliver effectively.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Design

The researcher used a survey design. The researcher made questionnaires and used them as a research tool. Three types of questionnaires were prepared for the head teacher, Mathematics teacher and for pupils.

The research design demonstrated how information would be elicited from the intended respondents. It was geared towards the collection of primary and secondary schools' data.

3.2 Scope

The researcher was based in Ruiru Division, Kiambu District of Central Province of Kenya. The Researcher opted for this area because of availability of resources where there is a National Schools, three Provincial Schools and more than eight District Schools. The schools are all within the same range and so easily and cheaply accessible. The researcher also had very limited time to carry out the research

3.3 Respondents

This study involved head teacher, teachers and students from a Murera High School, Juja High School and Gachororo Secondary School respectively. Convenient sampling was used to select the schools.

The three head teachers were purposively sampled. They were selected because being school heads has the highest authority and play a major role as policy makers. The Mathematics teachers teaching form III and IV were randomly sampled to represent the official agents of the teaching learning process. Lastly students who actively participate in filling the questionnaire were selected using random

sampling. The researcher considered ten pupils from each school and so from the admission record of the form four students, the researcher divided the number of students by ten (10), for example if in Murera High school there are 80 students in form four and form three, researcher divided $80/10=8$, then randomly selected the first one from number 1-8 and then picked every eighth student until he got ten and then used the same process for the other two schools Gachororo and Juja.

3.4 Instruments.

The Researcher used questionnaires as a tool for collecting data from the sample population. The questionnaires consisted of both open and close ended questions. Three types of questionnaires were used

- (1) Questionnaire for school heads (3 items)
- (2) Questionnaire for teachers (6 items)
- (3) Questionnaire for pupils (120 items)

3.5 Validity and Reliability of Research Instruments

Statistical procedure will be used to analyze the data. All the answered questionnaire items collected will be arranged and used in the analysis. The data will be analyzed using both quantitative and qualitative methods. Tables of frequency distribution will be used to show different patterns of data categories.

The frequencies will be translated into percentage using the following formula below:

$$\frac{X \times 100}{N} = \%$$

Where X = Number of respondents

N = total number of questionnaires

3.6 Data Collection Procedures.

The Researcher sent three transmittal letters to the three secondary schools asking for permission to conduct the Research in those schools.

The Data collection was planned to take four days. The Researcher used questionnaires in the collection of the primary data. The questionnaire was administered and collected by the researcher personally. Secondary data was collected from textbooks, commission reports, academic papers and other research works carried out. The research was also based on materials and information that was available in Kenyatta University and Nairobi University.

DEFINITION OF TERMS

For the purpose of the study the following terms are used operationally.

Dismal performance to poor performance
Below grade c

Kenya Certificate of Primary Education will mean- the final exam
Kenya Certificate of Primary Education - final exam done after 8 years of study at primary school level of which passing promotes a pupil to a secondary school

Kenya Certificate of Secondary Education will mean- the exam done after the four years of the secondary school Kenya Certificate of Secondary Education - Exam done after the four years of secondary school of which passing with B+ and above allows you to join Kenya's Public Universities.

Performance Both -individual and average mark scored by a group of students in an examination.

Poor performance - Average score by a group of learners in an examination that falls below the average mark. That is below grade c aggregate.

CHAPTER FOUR

4.0 ANALYSIS, PRESENTATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction:

This section contains an analysis and interpretation of data collected from three secondary schools in Ruiru Division, Kiambu District of Central Province of Kenya. The problem of the study was to determine the teaching methods and academic performance with an aim of improving mathematics in Kenya Certificate of Secondary Education Exam. The researcher used the questionnaires filled by the three head teachers, six Mathematics teachers and one hundred and thirty pupils selected from three schools of Ruiru division. Therefore 3 head teachers' questionnaire, 6 Mathematics teachers' questionnaires and 120 pupil's questionnaires were used throughout the analysis. The data concerning the concerned topics were analyzed and it was through that data the researcher was able to pass effective message to the head teachers, Mathematical teachers and more important to the students of Ruiru Division, Kiambu District, Central province Kenya.

The data collected was primarily on:

4.1 Pupils performance in Mathematics

4.1.1 Gender Affecting Mathematics

4.2 Attitude toward Mathematics

4.2.1 Students attitudes towards Mathematics

4.2.1 Teachers attitudes towards Mathematics

4.3 Teaching Facilities in Mathematics

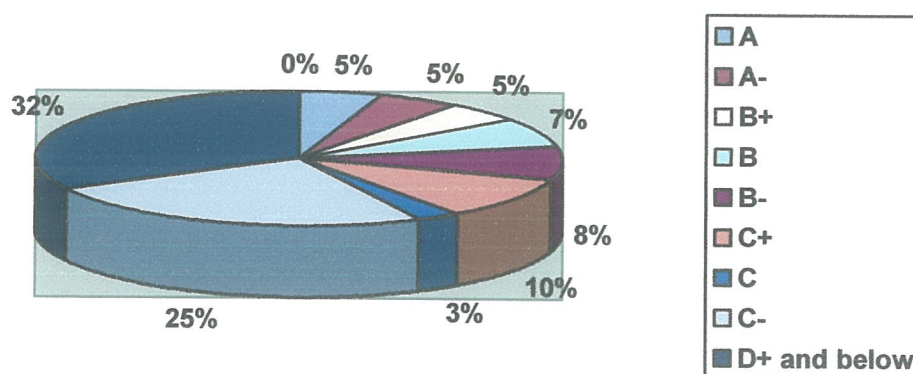
4.3.1 Classroom seating arrangements

4.4.1 Mathematical power in Students

4.1.1 Table 1 Pupils performance in Mathematics

Students response	Frequency N=120	Percentage %=100
No. of students who got grade A	6	5%
No. of students who got grade A-	6	5 %
No. of students who got grade B+	6	5 %
No. of students who got grade B	8	7 %
No. of students who got grade B-	9	8 %
No. of students who got grade C+	12	10 %
No. of students who got grade C	4	3 %
No. of students who got grade C-	30	25%
No. of students who got D+ and below	39	33 %
Total	120	100

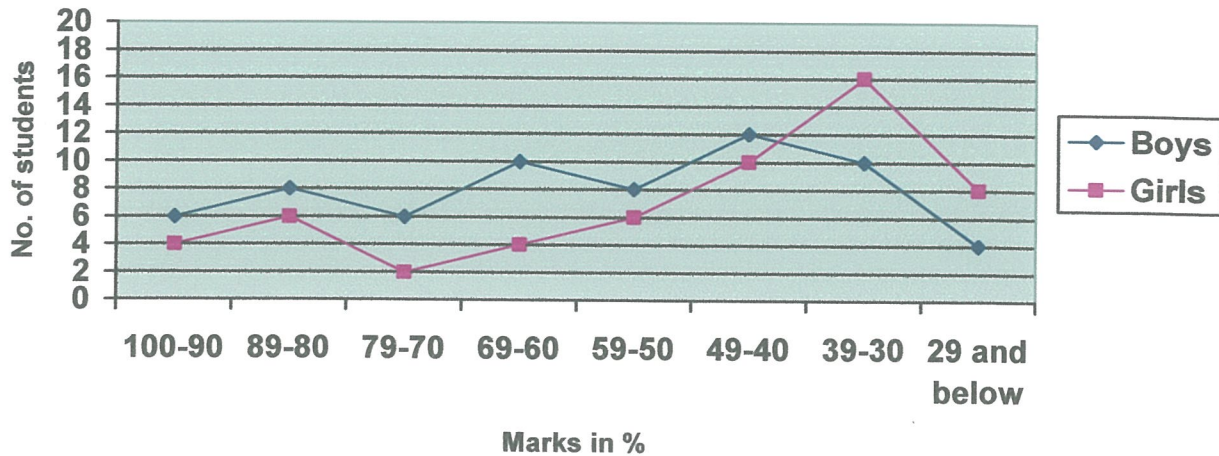
Figure 1 Graph representing of Performance in Ruiru Division



In order to get the information of how the students performed in their Kenya Certificate of Secondary School in 2007, the researcher used 120 pupils questionnaires from the three secondary schools. The analysis shows that only 5 % of the students from the three schools

registered a grade A that year. 5 % of the students also obtained grade A-, 5 % of the students got B+, 7 % and 8 % obtained grade B and B- respectively. 10 % and 3 % also got grade C+ and C respectively. This shows that more than a half or 58% of the students got a grade below C, and this reflected a serious issue and it was due to this poor performance registered in Ruiru division that the researcher was interested to carry out this study. It is alarming situation to the people of this locality and something needs to be done in order to improve the performance of Mathematics in this region. Teachers, students and concerned party need to seek solution to improve Mathematics if Ruiru division is catch up and compete with the rest of the students all over the world.

4.1.2 **Figure 2** Gender and Mathematics

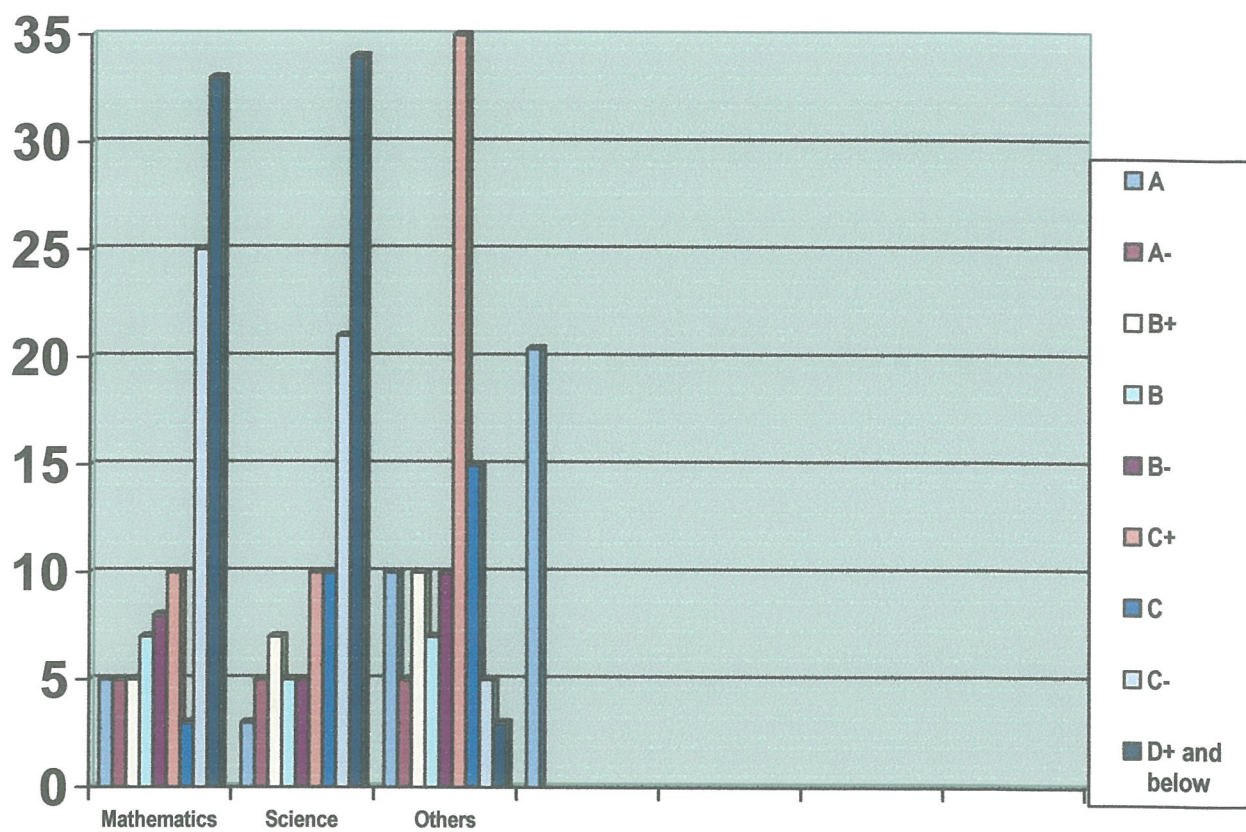


The figure above indicates the performance of boys and girls, there is a very big gap between the performance and the girl child is more affected. From the analysis 6 boys got high marks ranging between 100 and 90 percents compared to the girls where only 4 girls got the same marks. 8 boys got the marks ranking from 89-80 while only 6 girl who got this marks. Poor performance is highly indicated where the 8 girls registered 29 marks and below compared to the boys performance where only 4 boys who got 29 marks and below. Generally, 34 girls registered a failure or 49 marks and below while only 26 boys who failed. This means that more than a half of the boy's number under experiments had passed while more than a half of the girls under experiment failed. This is a pathetic situation and girls need to be motivated to perform better as well.

4.1.3**Table 2** Comparison of performance between mathematics, science, and other subjects.

Grades	Mathematics		Science		Others	
	N=120	%=100	N=120	%=100	N=120	%=100
A	6	5%	4	3 %	12	10%
A-	6	5 %	6	5 %	6	5%
B+	6	5 %	8	7 %	12	10%
B	8	7 %	6	5 %	8	7 %
B-	9	8 %	6	5 %	12	10%
C+	12	10 %	12	10%	42	35%
C	4	3 %	12	10 %	18	15%
C-	30	25%	26	21%	6	5%
D+ and below	39	33 %	40	34%	4	3 %

4.1.3.1 **Figure 3** Graphical representation of comparison of subjects



The table 2 represents the comparison of performance between Mathematics, Science subject and other subjects. The representation shows that the Mathematics subject is performed poorly than any other subject. Science subject is not yet done good there is poor performance in science subjects. It is clear that other subjects registered good grades compared to Mathematics and science subject. According to the table, 5 % of there students registered grade A in Mathematics, 3 % , in science and 10 % in other subjects . Alos 5% of the students got Grade A- in Mathematics, Science, and other subjects. 5 % of the students got grade B+, 7% in science and 10 % in other subjects. Many of the pupils got D+ and below in Mathematics ,and science than in other subjects.

I.2.1 Table 3 : Students Attitude toward Mathematics

Students Response	True		False	
	N=120	%=100	N=120	%=100
Mathematics is important	24	20	96	80
I cant do Mathematics	36	30	84	70
I hate Mathematics	72	60	48	40
Mathematics is hard	108	90	12	10
Mathematics need reform	72	60	48	40
I have confidence in Mathematics	24	20	96	80
Everyone needs Mathematics	60	50	60	50
Mathematics relate to every day experience	72	60	48	40



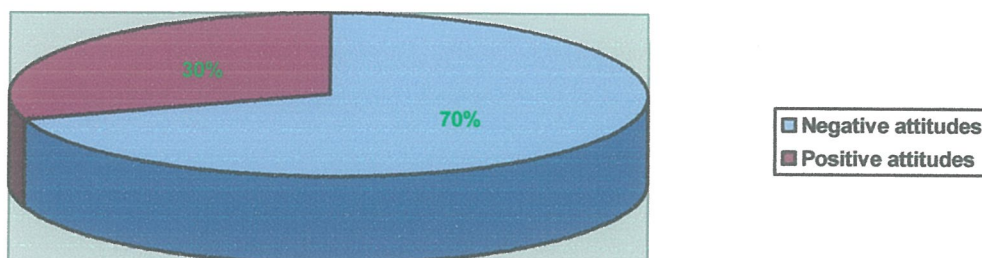
The above table illustrated the attitude the students have towards Mathematics. The researcher used 120 questionnaires filled by the students, this reflected the attitude of the whole group . From these questionnaires 20 % of the students agreed that mathematics is important, while 80 % of the students disagreed with the statement. This reflects the common question the students ask "why study Mathematics?" Macnon, 2000 state that the primary reason that students ask this question is because they have difficulty relating Mathematics to their every day experiences and thus have little inspiration to test their Mathematical abilities. Every student must value Mathematics because the world is changing and we need to change the world too mathematically.

The table also shows 30 % of the students who strongly believed that they can never do Mathematics. This is a very bad attitude because once the student set the mind negatively toward any subject, what follow is a total failure. According to the performance of Ruiru division so many students were below average and the believe that students cant do mathematics could have contributed to this failure. Infact the study reflected 60 % of the students who hated mathematics. Once the students conclude that they hate mathematics and they cant do mathematics, what follows is a common chorus that mathematics is herd. The above table indicates 90 % of the students with believe that mathematics is hard.

However 60 % agreed that Mathematics need reform, today mathematics is taking another dimension and a change should be implemented. This will change the view of the students who do not have confident in mathematics. The above table shows 80 % of the students who do not have confident in mathematics, and this is the reason why we have 50 % of the students thinking that they do not

need mathematics and hence a few thinking that mathematics do not relate to every day experience as 40 % in the above table indicated.

Figure 4:Pupils attitude towards Mathematics



4.2.2 Table 4: Teachers Attitude toward Mathematics

Teachers Response	True		False	
	N=6	%=100	N=6	%=100
Mathematics is important	1	17	5	83
I enjoy teaching Mathematics	2	33	4	67
Students can perform better in Mathematics	2	33	4	67
Mathematics is hard	4	67	2	33
Mathematics need reform	5	83	1	17
I have confidence in Mathematics	2	33	4	67
Everyone needs Mathematics	3	50	3	50
Mathematics relate to every day experience	4	67	2	33

Teachers also have negative attitudes towards Mathematics, despite the fact that they are the teachers of this subjects, 83 percents of the teachers in the three selected schools do not see the need of the

students doing mathematics because they think Mathematics is not important. Infact its only 33 percents of the teachers who enjoy teaching Mathematics, this may also affects their view in students performing well, 67 percents of the teachers believed that students cannot do well in Mathematics. This is because they also believe that Mathematics is hard as 67 percents of the teachers believed so. As a result 83 percents had the view that Mathematics needs reform.

1.3.0 Teaching Facilities in Mathematics

4.3.1 Table 5: Students response toward the teaching facilities

Students Response				
	Refuted		Admitted	
	N=120	%=100	N=30	%=100
Lack of equipped library	2	20	8	80
Have enough computers at school	1	10	9	90
Use calculators at school	4	40	6	60
Poorly ventilated classrooms	3	30	7	70
Lack of spacious classrooms	1	10	9	90

4.3.1.1 Table 6: Pupils Visitation to library

Pupils evaluation	Frequency=120	Percentage=100
Daily	15	12
Weekly	25	21
Monthly	45	38
Do not visit at all	35	29

Mathematical facilities is inadequate in Ruiru division, this has a great impact to the teaching and performance of mathematics as a subject. The table above indicates the 80 percents of the students complaining that the schools did not have equipped libraries, 90 percents and 60 percents of the students admitting that they did not also have enough computers and calculators at schools respectively. The classrooms were also poorly ventilated and were not spacious enough as 70 percents and 90 percents respectively of the students indicated. This can poorly affects their attitude toward the mathematics and the hate of their schools and the hope to improve even if they were willing to do so.

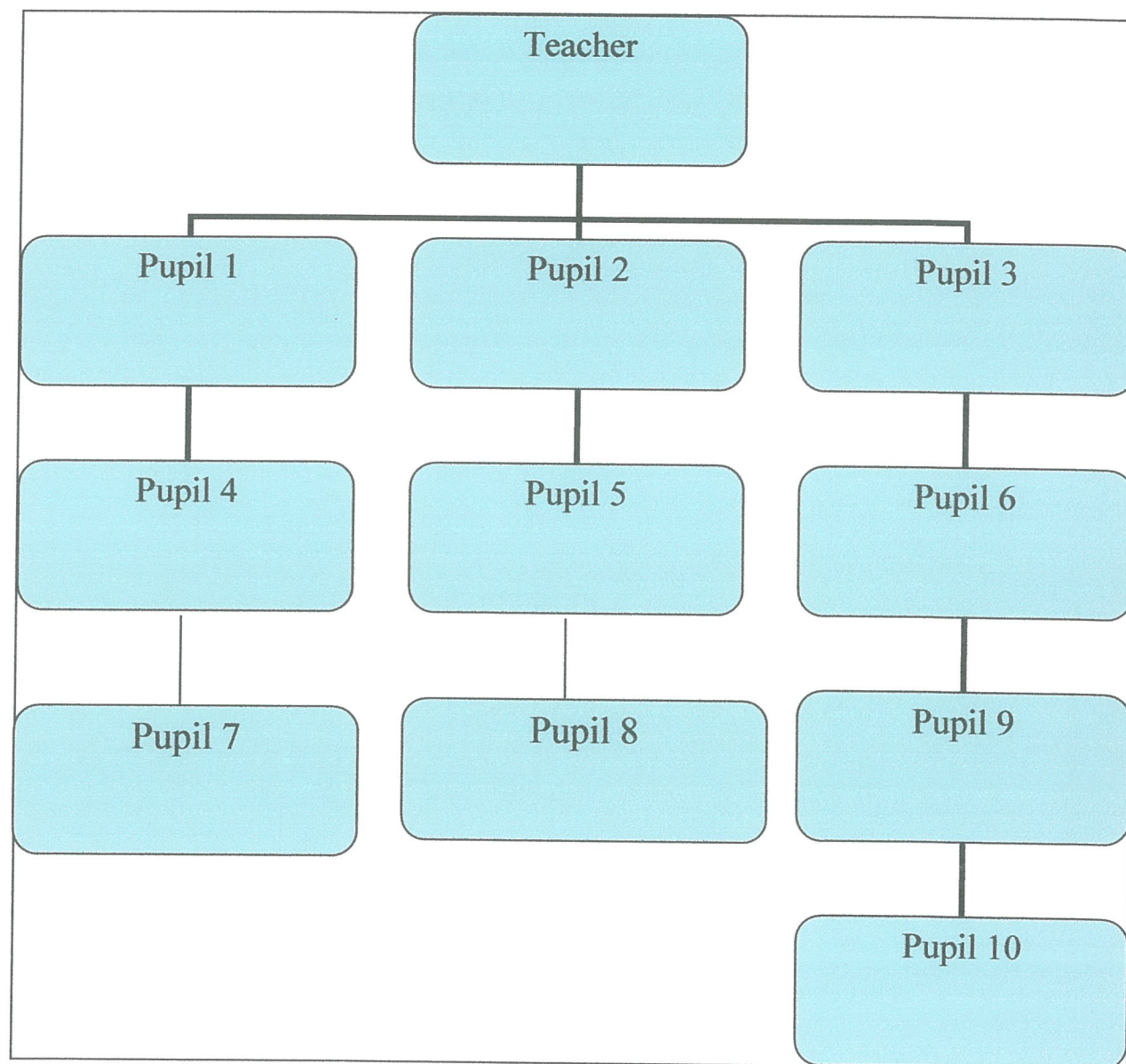
I has also been noted even if the schools do not have equipped library, the ones that are available are not well utilized. Only 12 % of the students visit the library every day, 21 % visit the library weekly, 38 % visit the library monthly and 29 % of the students do not visit the library at all.

4.3.2 Table 7: Teachers response toward the teaching facilities

Students Response				
	Refuted		Admitted	
	N=10	%=100	N=10	%=100
Lack well framed syllabus.	2	20	8	80
Have enough teaching aid at schools	1	10	9	90
Organize frame of work before the lesson	4	40	6	60
Large students body size	3	30	7	70
Lack of spacious classrooms	1	10	9	90

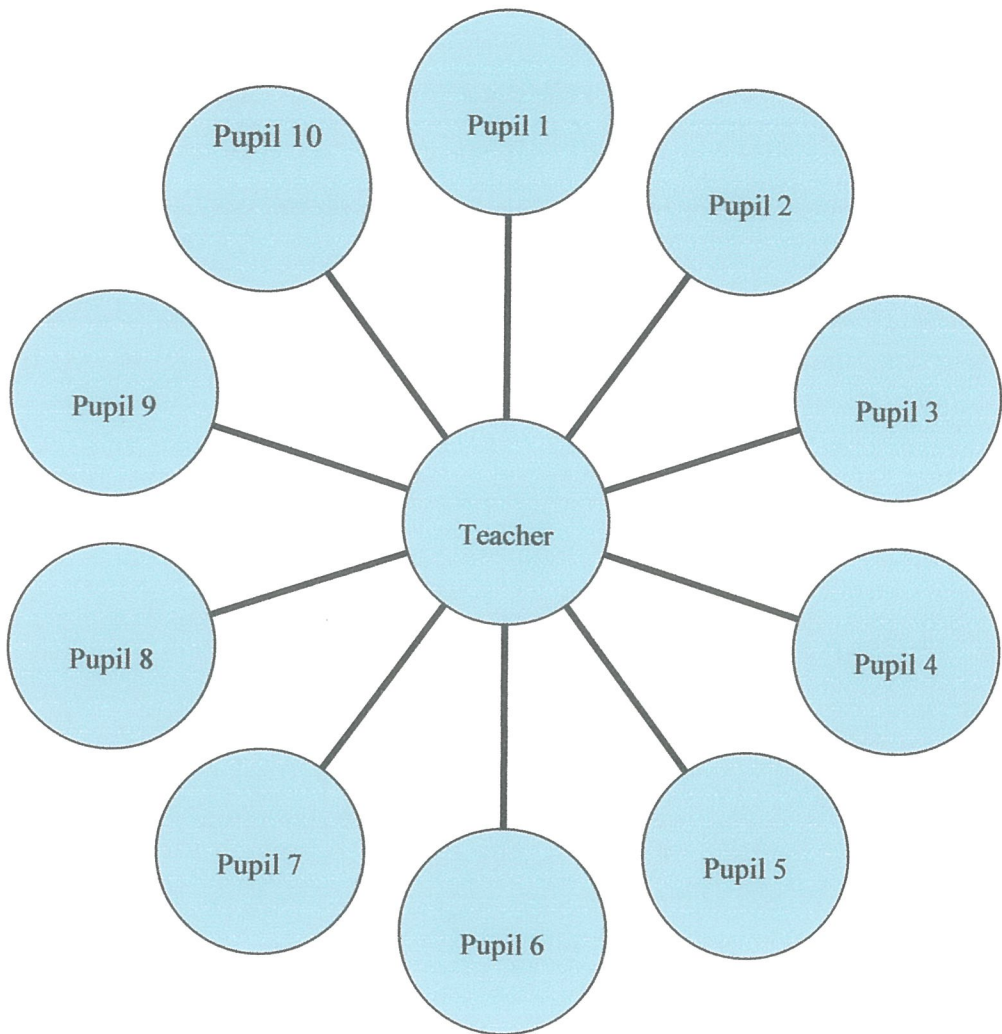
4.3.2.1 The Row-and-Column seating arrangement

Figure 5



4.3.2.2 Circular Seating Arrangement

Figure 6



The above figure represents the seating arrangements of the students, figure (a) is the seating arrangements used in Ruiru division. when pupils are seated in raw and columns , pupils location affects participation. Teachers interact the most with children seated “front and center” Although sociable children tend to choose center desks

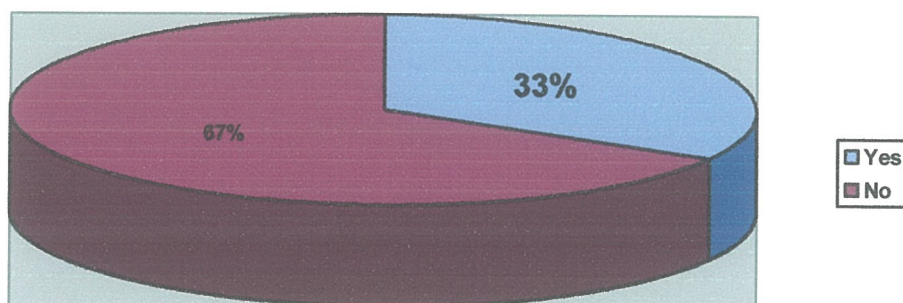
and shy children desks on the outskirts of the classroom, the seating effect is not simply the result of pupil's personality. The circular configuration work best in promoting participation and attention during class.

To test the best seating arrangements the researcher selected 20 questionnaires and cross checked how the question was answered, below is the teachers' response towards this question.

4.3.2.3 Table 8: The Traditional raw-and-columns seating arrangement is effective

Teachers response	Frequency N=6	%=100
Yes	2	33.33
No	4	66.66

Figure 7: Are traditional raw-and-columns seating arrangement effective?



From the above table 33percents of the teachers accepted that raw-and-column method is effective seating arrangement of the students during class lesson. 67 percents disagree that this approach is effective. However, this is the arrangements used in schools selected in Ruiru.

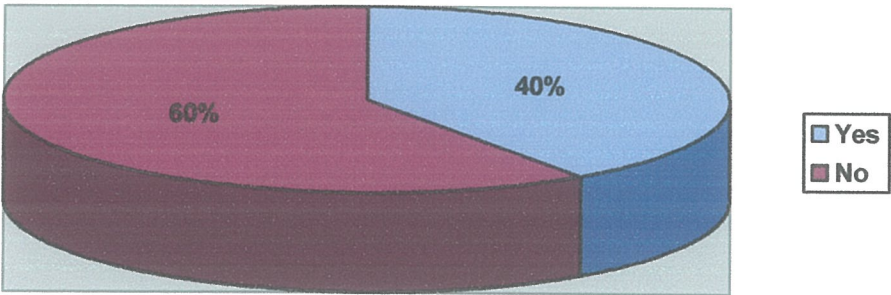
4.3.2.4 Table 9: Pupils’ response towards seating arrangements

Pupils response	Frequency N=120	Percent %=100
Yes	48	40
No	72	60

The response of the pupil’s toward the seating arrangements is reflected in the table above. 40 % of the students felt that the traditional raw-and-column seating arrangement is effective while 60 % felt that the arrangements weren’t effective.

Seating arrangements

Figure 8: Pupils response towards traditional raw-and-columns seating arrangement.



4.3.3 Table 10: HEADTEACHERS' RESPONSE TO THE TEACHING AND PERFORMANCE OF Mathematics

Head teacher's response.	Frequency N=6		Percentage=100	
	Agreed	Disagreed	Agreed	Disagreed
Lack of enough exercises	4	2	67	33
Wrong attitude of the student and the teacher that Mathematics is hard	5	1	83	17
Lack of equipped library	3	3	50	50
Poor foundation of Mathematics	4	2	67	33

From the above Table the head teachers shared the sentiments that Mathematics performance is negatively affected by the fact that pupils are not given enough exercises (67%) thus echoing what the Mathematical teacher and pupils had cited as negatively affecting Performance and teaching of Mathematics subject. The heads of the schools also felt that, the students Attitude towards the subject also affected its performance and teaching. Pupils view Mathematics as very hard subject that needs no regular practice (83%); there was also a poor foundation of Mathematics from primary school level (34%).

SOLUTIONS THAT CAN BE PUT IN PLACE TO IMPROVE THE PERFORMANCE AND TEACHING OF Mathematics

4.4.1 Table 11: Students opinion towards the solution

Students opinion	Frequency N=120		Percentage=100	
	Not in support	In support	Not in support	In support
-Putting more pressure on students to practices. -School Libraries should be equipped with necessary Mathematics books	28	72	40	60
-Teachers should insist changing the seating arrangements to enhance the participation and attention of the students during class discussion -The arrangements should be teacher at the center and children arranged in the circle.	96	24	20	80
-Computers and calculators should be used to enhance the speed during calculations. -pupil's should therefore be taught how to use the computers and calculators in schools	36	84	30	70

On the above suggestion, the pupils suggested that teachers should put pressure to make sure that the pupils do enough practice in order to improve mathematically; this should be adhered to meaning that the teacher role of encouraging the student is greatly valued. They also felt that libraries should be equipped with Mathematics books and the school should allow the use of calculators in classrooms.

4.4.2 Table 12: Teachers opinion towards the solutions to improve Mathematics

Mathematics teachers Response	Frequency N=6		Percentage=100	
	Not support	In support	Not support	In support
Library should be equipped with relevant books of mathematics	4	2	67	33
There should be reform in Mathematics subject and syllabus	2	4	33	67
Seating arrangements should be changed to circular approach	4	2	33	67
Class size body should be changed in order to improve teachers involvement in teaching Mathematics	4	2	67	33

From the table above, Mathematics teachers responded on what can be done to improve the teaching and performance of Mathematics subject. 67% of teachers affirmed that, if library is equipped with the necessary books, the students will be able to do enough exercises

throughout the time they are in school, this can highly improve the performance of Mathematics. Mathematical reform was also seen as a remedy by 67% of the teachers. Change in the seating arrangement from the familiar row-and-columns arrangement to circular approach was also proposed by 67%.

However a few teachers suggested on changing the class size body in order to improve teachers involvement in teaching Mathematics 33% .

CHAPTER 5

5.0 SUMMARY CONCLUSION AND RECOMMENDATION.

5.1 INTRODUCTION

The chapter deals with the summary, conclusion and recommendation of the study.

5.2 SUMMARY OF THE STUDY

The purpose of the study was to investigate relationship between the teaching methods and the performance in Mathematics at secondary school levels (K.C.S.E)

The sample consisted of three secondary schools with six teachers and one hundred and twenty students as respondents. The sample was arrived at through random sampling. Questionnaires with both open ended and close questions were used. Results analysis tables of frequencies and percentage were presented.

Literature review shows that learning of Mathematics has a very important role in Kenya and that the teachers of Mathematics must remind them self of the place they occupy in the life of his student and must at all times endeavor to do their best in teaching . Mbithi (1984) noted that the factors that have caused a drop in Mathematics include negative attitude towards the subject, also limited resources due to rapid expansion of Kenya's education system thus making it hard to cope with the rising population.

5.3 Conclusion.

From the summary above, the researcher arrived at the conclusion that the use of mother tongue and sheng (in general not communicating in English Language all the time) has really affected the teaching and performance of English Language negatively.

Secondly, Lack of equipped Libraries and the tendency of pupils' not reading novels and story books has also affected the teaching of English Language and performance negatively. The pupils poor foundation of English Language from primary school level and lack of adequate exercises in both written and spoken English have had negative effects on teaching and performance of English language in this locality. On the solution that can be put in place to improve the performance and teaching of English Language, use of English language by pupils when communicating was suggested. Setting up and equipping Libraries was also emphasized. However the researcher based his research on a very small area of Kenya and this finding cannot be used to generalize on the teaching and the performance of English Language countrywide.

The mathematics education that most of Africans receive in the past may have been good enough at that time but is unsatisfactory for today's students. Most of the students especially in Ruiru division do not apply mathematics in their day to day life.

5.4 Recommendation.

The researcher recommended that Change in Mathematics should be implemented. There should be a change in what Mathematics is taught, how it is taught and to whom. The Instructional materials and methods used in mathematics education must reflect the shift in content to avoid spoon feeding students recipes for getting answers. Instead student must become more responsible for formulating and solving problems and for thinking about and communicating important mathematical ideas.

There should be emphases on teaching students to take more responsibilities for mathematics thinking requires teachers to do more coaching and facilitating them. It also entails more demanding expectations for performance. Students will have to produce more than answers to prefabricate problems; They will have to use mathematics to investigate, analyses and to interpret realistic situations and although assignments will be more demanding, they must also be more and engaging and accessible to a wider variety of students than assignment given in traditional mathematics program. The researcher also recommends that there should be progression through the mathematics curriculum because it is unfulfilled promises for the majority of pupils from Ruiru. Gender, ethnicity, and poverty often diminish a students chance to advance in Mathematics. Although some individuals overcome the odds, students should be given equal and better chances. The curriculum, teaching and assessments in mathematics education must be reconfigured so all students learn powerful mathematics each year in school.

The filtering effect of the traditional nursery through class eight mathematics program has produce an African public believing that only

a few are good at Mathematics and that is satisfactory for most people to have negative attitude towards Mathematics. The next generations of the public are in our school now. The society must therefore, work with them to create a place for Mathematics in our culture. The beauty, fascination, and usefulness of Mathematics should be made accessible and very important for every student.

In additions computers and calculators are becoming common classroom tools; and innovations in student's assessment such as open ended questions are finding their way in classroom, therefore the schools should make use of computers and calculators and they should teach the students how to use these facilities in order to improve the learning of Mathematics.

The researcher recommended reform, it was noted that in the current programs very few young people leave people mathematically powerful. To address this problem the researcher, asked that teachers and students raise their expectations and expand their vision of what can happen in a Mathematical classroom and what can appear in mathematics instructional materials. All students are capable of the level of good performance, but time, hard work, and courage will be needed to make this vision reality.

The researcher recommended that pupils should endeavor to have positive attitude towards Mathematics. It has been noted that negative attitude towards Mathematics subject largely affect the performance of Mathematics and other subject as well. Teachers should also change their way of thinking, they should see potential pupil's when they are teaching Mathematics but not failures. If this is done, the learners would learn their mistakes and areas of weakness and thus improve. The researcher found out that most teachers believe that their pupils

cannot do well in Mathematics (67%). This is a very bad attitude and they must first change before the pupil's can change as well.

Secondly, there's need to have fully equipped libraries in the schools and teachers of Mathematics should make sure that their pupil's make use of the books in the library. The researcher found out that even if the library is not well equipped, only 12 % of the pupils visit the library daily, 21 % visit weekly, 38 % visit monthly while 29 % never visit the library at all.

It is also important that teachers use as many methods of teaching as possible, Such as lecture method, group discussion, roles playing and dramatization. If possible, use all of them in order to avoid the Teacher dominate the lesson.

It was recommended that teachers should change the seating arrangements from traditional raw-and-column approach to classroom learning to circles of desks approach. This would enhance students attention and concentration.

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APPENDICES
APPENDIX A

TRANSMITTAL LETTER 1

MUNIU PATRICK MWANGI
KAMPALA INTERNATIONAL UNIVERSITY
P.O. BOX 20000 UGANDA

DATE:

TO THE PRINCIPAL

.....

P.O. BOX

KIAMBU

Dear Sir,

RE: REQUEST TO CONDUCT RESEARCH

I am an in-service student at Kampala International University. I am carrying out a Research on teaching methods and academic performance of pupils in mathematics subject at Kenya Certificate of Secondary Education in Ruiru division to be submitted to Institute of Continuing and Distance Studies, faculty of education as a partial fulfillment for the award of degree in ECPE.

I am therefore writing to request you to assist me conduct the research. I will greatly be helped in my quest of collecting the relevant information. I look forward to your co-operation and I promise to keep all the information confidential.

Yours faithfully

Muniu Patrick Mwangi

APPENDIX B

QUESTIONNAIRE 1

Dear respondents,

I am a student of Kampala International University, carrying out a research concerning the effects of Parental Care to the Growth and Development of the child in Alkalou location. I therefore kindly request you to fill the questionnaire below to facilitate my research study to success and of help to the society. Your information will be treated with a lot of confidentiality and will be highly appreciated.

Much regards

HEADTEACHER'S QUESTIONNAIRE

1 Background information school

Sex male () Female ()

2 How did your school perform in the last years K.C.S.E?

☐ Good ☐ better ☐ bad ☐ worse

3 Does your school have equipped library?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

4 Do you have and use computers at your school?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

- 5 Does your school has spacious classrooms?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 6 Do you enroll a good number of students at the beginning of the year?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 7 Do the syllabus of Mathematics subject in your school fulfilling?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 8 Do you encourage teachers to use Mathematical teaching aids in class?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 9 Is the a gap in performance of Mathematics and other subject?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

10 What are the likely solution do you think can be employed to improve Mathematics in your school?

Explain in your own words the likely solution. Your answers should be in points form

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THANK YOU

APPENDIX B

QUESTIONNAIRE 2

Dear respondents,

I am a student of Kampala International University, carrying out a research concerning the effects of Parental Care to the Growth and Development of the child in Alkalou location. I therefore kindly request you to fill the questionnaire below to facilitate my research study to success and of help to the society. Your information will be treated with a lot of confidentiality and will be highly appreciated.

Much regards

MATHEMATICS TEACHERS' QUESTIONNAIRE

1 Background information school

Sex male () Female ()

2 How many pupil's got the following grades in the previous Kenya Certificate if Education at your school? Please indicate the answer in the box below.

A A- B+ B B- C+ C C-
D+ and below

3 Did the boys perform better than girls? Tick the appropriate answer.

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

4 Is there a performance gap between Mathematics, science and other subjects?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

- 5 Which subject does the pupil's pass most?
☐ Mathematics ☐ Science ☐ Others
- 6 Is Mathematics important to you and to any other person?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 7 Do you enjoy teaching Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 8 Do you believe that pupil's can do better in Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 9 Is Mathematics a hard subject?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 10 Does Mathematics subject needs reform?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 11 Does every one need Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

12 Is there any relationship between Mathematics and the day to day life?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

13 Does Mathematics need reform?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

14 Is your school library well equipped?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

15 Do you have and use computers in your school?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

16 Does your school use calculators during calculations?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

17 Are the classrooms well ventilated?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

18 Are these classrooms also spacious enough?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

19 Is Mathematics subject syllabus well framed?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

20 Do you use teaching aids during the class lesson?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

21 Do you scheme your work before the beginning of the lesson?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

22 Is your Mathematics class body size large than normal?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

23 What do you think can be done to improve the teaching methods and performance of Mathematics?
Explain in points form

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THANK YOU

APPENDIX C

QUESTIONNAIRE 3

Dear respondents,

I am a student of Kampala International University, carrying out a research concerning the effects of Parental Care to the Growth and Development of the child in Alkalou location. I therefore kindly request you to fill the questionnaire below to facilitate my research study to success and of help to the society. Your information will be treated with a lot of confidentiality and will be highly appreciated.

Much regards

PUPILS' QUESTIONNAIRES

1 Background information school

Sex male () Female ()

2 Which grade did you obtain in your last mathematical exam?

A ☐ A- ☐ B+ ☐ B ☐ B- ☐ C+ ☐ C ☐ C- ☐
D+ and below ☐

3 Did the boys perform better than girls? Tick the appropriate answer.

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

- 4 Is there a performance gap between Mathematics, science and other subjects?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 5 What do you perform better?
☐ Mathematics ☐ Science ☐ Others, please specify
- 6 Is Mathematics important to you and to any other person?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 7 Do you enjoy doing Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 8 Do you believe that you can do better in Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 9 Is Mathematics a hard subject?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 10 Does every one needs Mathematics?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 11 Is there any relationship between Mathematics and the day to day life?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree
- 12 Is your school library well equipped?
☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

15 How often do you go to the library?

☐ Dairy ☐ Weekly ☐ monthly ☐ Not at all

16 Do you use calculators during calculations?

☐ Agree ☐ Strongly agree ☐ Disagree ☐ Strongly disagree

17 What do you think can be done to improve the teaching methods and performance of Mathematics in your school?

Explain in points form

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THANK YOU

APPENDIX D

**RESEARCH ENVIRONMENT
MAP: CENTRAL PROVINCE,
KENYA.**

