M TEACHING METHODS AND THE ACADEIC PERFORMANCE OF STUDENTS IN MATHEMETICS OF GITHAITHI SECONDARY SCHOOL

> A Research Project Submitted to the Institute of Open and Distance Learning Kampala International University

In Partial Fulfillment for the Award of Bachelor of Education Degree in Science

By

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DECLARATION

I Bernard Nganga Wanyioke do hereby declare that this work is entirely mine and has never been presented to any institution of learning.

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15/07/2008

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APPROVAL

This is to certify that this report has been submitted in partial fulfillment of the requirements for a Bachelor Degree of Education in Science with my approval as the university supervisor.

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DEDICATION

I dedicate this research to my family. I also dedicate this to all my future students in whatever school I might teach in future.

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DEFINATION OF TERMS

The terms used in this study can be defined as follows.

K.C.S.E; This stands for Kenya Certificate of Secondary School Education. This is an examination administered to eligible candidates within Kenya by the District Education officer on behalf of the Kenya National Examination Council and in conforming to the council regulation for the conduct of public examination.

Secondary School; this refers to Educational Institution entered after completing 8 years of primary cycle. It lasts for four years.

Coaching; this refers to tutoring of students for the purpose of preparing them for examination.

Class size; this represents the number of pupil put together in one class for the purpose of teaching.

Performance; The K.C.S.E means score in mathematics as a mean measure of student's performance in the subject.

ABBREVIATIONS

- K.C.P.E: Kenya certificate of primary education
- K.C.S.E: Kenya certificate of secondary education.
- P.G.D.E: Post Graduate Diploma in Education

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ABSTRACT

This study was conducted in Gathaithi secondary school, Githunguri Division, Kiambu District, Kenya. The main purpose of this study was to investigate the impact of teaching methods on the academic performance of learners in mathematics subject in Gathaithi secondary school. The study used teachers and learners of the above school

This book is made up of five chapters. Chapter one deals with introductory part of the research. It gives the general background of the research i.e. background of study, the theory, hypothesis, objectives and significance of the study.

Chapter two is literature review; it gives different views of culture concerning the topics for example, the impact of teaching method and academic performance of students in mathematics, the resources / apparatus necessary in the proper teaching/learning of mathematics, the factors influencing the academic performance in mathematics, the problems faced by students in mathematics learning, impact of school facilities on the academic performance of students in mathematics

Chapter three deals with the research methodology it includes design, environment, data collection procedures and satisfied treatment of data.

Chapter four deals with presentation of the data from the field with the analysis and presentation. Finally chapter five deals with discussion, recommendation and conclusion

CHAPTER ONE

THE PROBLEM AND ITS SCOPE

I.0 Introduction

This chapter examines the problem and its scope. This is done by looking at the rationale of the study and the theory on which the study is based. It also looks at the objectives and hypothesis

1.1 Rationale of the Study

The government acknowledges the importance of mathematics. It is constantly emphasizing on the study at all levels. Infant mathematics is one of the compulsory subjects in both primary and secondary school levels. Students in high levels of Education are encouraged to study some mathematics as a necessary pre-requisite for such subjects like Physics, Chemistry, and Engineering among others. However a big contradiction is seen when performance of students is examined.

Kenya is experiencing a tremendous rate of economic growth. The advance of science and technology are revolutionizing both the amount and the mode of production. The field of technology and professional education require a strong foundation consisting of sound background knowledge of mathematics. This mathematics is of necessity a strategic subject and a prerequisite for studying science and technology. As technology develops and reaches more and more into all levels of industry and commerce, more mathematics will be needed at all these levels. The utilitarian value of mathematics as man develops his technology in indecorous of master the environment does not need further emphasis than had been made before. The application of mathematics in every day's life of majority of the people may not be so obvious or consciously done, but there is no doubt that well qualified mathematics is in short supply. This in effect is an important disability in mathematics related field

World student's good performance in mathematics subject has been greatly emphasized. This is due to the fact that knowledge in this subject is widely applied in such scientific 84

professions like Medicine, Pharmacy, and Agriculture. Knowledge of medicine has enabled doctors to eradicate some of diseases which used to pose a big threat to the human existence. Man has therefore been able to remain healthy with industrialization playing a sign fact role in the economics of most countries in the and productive in terms of manpower output.

The intervention of computers and their applications in many sectors has been a great step foreword in technological development, yet knowledge of mathematics is very crucial to the operations of the computers.

Mathematics has been applied in the development of weapons thus enabling him develop some of the lethal weapons of war. The current education system in Kenya is designed to achieve specific national goods. The recommendations of September 1981, which saw the introduction of the 8-4-4 system of education Kenya is aiming to be fully industrialized by the year 2020 and if this goal is to be achieved, it means better performance in mathematics.

Even though mathematics and its application are so important in life, its performance in the Kenya Certificate of Secondary Education continues to be very poor. It is a matter of concern to both the government and the general public that fewer students like mathematics and perform poorly. Many people have done research in their valid of performance and have come up with different possibilities that could be leading to poor performance. They have come up with suggestions and recommendations on how to overcome the problems and it is not clear why up to now the situation has not changed.

Though mathematics performance is poor in most other Schools, students manage an average performance of C- and above. In Gathaithi Secondary school about 90% of the student's gets D plain and below. The other 10% really get anything better than C-(minus). Poor performance in mathematics is evident in all tests there are given and end of term Exams in all classes.

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1.2 Statement of the Problem

There has been an outcry from the government and the general public on the way students learn and perform in mathematics. Educators at the University blame the poor performance on what they argue as the poor preparation at lower levels of education. They argue that mathematics teaching at lower level is ineffective, facilities are inadequate and the environment for studying the subject is very poor. This is according to G.S Eshwani, 1976:2. Others argues that such factors as social and economic background attitude towards mathematics aspiration and expectation of the student, parental and peer group influence and others could be having a significant effect, on the way students perform in mathematics.

Performances in Mathematics in National Examination in Gathaithi Secondary School have been very poor for the past years. Talking the recent years, since 2002 the mean grade was 1.3, 1.41, and 1.27 for 2002, 2003 and 2004 respectively. Of these the percentage of the students who got E's in mathematics was 62.5%, 78.8% and 89.1% in 2002, 2003, and 2004 respectively. This addresses the factors influencing student's performance in mathematics need an urgent investigation.

1.3 Theoretical Framework

This study is based on Thorndike views of Modern learning and conditioning experiment (Thorndike, 1996) which states that responses which are closely followed by satisfaction to organism, other things being equal are more likely to reoccur while those that are accompanied or closely followed by discomfort to the organizing will other things equal are less likely to reoccur.

Thorndike in his law of exercise states that the connection between stimulus and response is strengthened through use and weakened through disuse. This law put emphases on the importance of practice and its importance in learning process rewards and gets more improvement in performance. Repeating the tasks help in binding response together.

Thorndike's theory will help to guide the researcher to establish whether use or disuse of

rewards have any sign fact effect on academic performance in Mathematics subjects. It helps to establish if attitude towards Mathematics subject affects its performance. Professor Eshiwani (1982) notes that "in Kenya the weakness in scientific and technological development is evident from the fact that there are no qualified people to fill positions required scientific and technological training." The above statements support the fact that very few students have been excelling well in Mathematics.

On 30th June 1996, the former Kenyan president Daniel Arap Moi while addressing university students at Maseno University announced a shortage of 1000 teachers of Mathematics. He stressed that there was a shortage of teacher in the Mathematics subject adding that the government would consider absorbing the graduate teachers higher salary scale. This implies that very few students' pursue Mathematics at university level and this can be attributed to the students' poor performance in Mathematics in KCSE examination.

Teaching and learning of mathematics has been a subject of debate for along time. The debate is centered on what is taught (syllabus, content, relevance). The curriculum developers already prepare over what is taught It suggest the approaches and methodology to be used hence the teacher should use the best teaching method. The methodology depends on the teacher and learners in a particular class and in a particular topic. Therefore good teaching is largely a matter of personal aptitude and requires meticulous planning/preparation and selection of approaches and methods that will result to optimum learning.

The teaching/learning process should involve activities aimed at helping students to arrive at the learning outcome it largely depends on the approaches the teacher uses to the present subject matter and the methods he/she uses to transfer the knowledge to the students in a classroom

Facilities and recourses in a school are also very important textbooks in mathematics are very important to students they help the students to prepare ion advance and to do more exercises. Charts are also very important teaching aids. The teacher should approach the lesson in a way that the students are alert and active to avoid boredom and this will enhance participation. As a result the students enjoy the lesson right from the beginning to the end.

1.4 Objectives

General:

To determine the impact of teaching methods on the academic performance of students in mathematics.

Specific

1. To identify the resources/apparatus necessary in the proper teaching/learning of mathematics

2. To examine the factors influencing the academic performance in mathematics

3. To investigate the problems faced in teaching and learning of mathematics.

4. To determine the impact of school facilities on the academic performance of students in mathematics

5. To investigate impact of teaching methods and academic performance in mathematics \checkmark of Gathaithi school.

1.5 Hypotheses

The following null hypothesis were generated and tested:

HO1: The type of teaching method used does not contribute to poor performance in mathematics.

HO2: Resources / apparatus affect proper teaching/learning of mathematics

HO3: Several factors influence the academic performance in mathematics

HO4: Inadequacy of learning facilities do not influence perform once in mathematics

H05: Problems faced in teaching and learning affects performance in mathematics

1.6 Significance of the Study

The study may be of immediate benefit to the ministry of education in the formation of

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future mathematics policy aimed at enhancing student's achievement in mathematics.

Practically it is significance because it may lead to improved strategy to the teaching of Mathematics not only at Gathaithi Secondary School but also to the entire country.

The teachers shall acquire information on how to teach mathematics subjects and understand what causes student to perform poorly in the subject and devise ways to improve on performance

The students will learn and understand the value of not only mathematics but also other science subjects.

The parents and general public shall be helped to understand their role in effective learning of mathematics

The study will pass the recommendations and future areas of the study. The future researcher shall utilize this research for future researchers on similar topics

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

2.0 Introduction

In this chapter, ideas of different authors are put forward implying that there are some people who first wrote books, journals, articles, newspapers and gave ideas about mathematics subject. This review is represented below.

Different researchers to identify and analyze factors that influence performance of pupils in mathematics and in National Examination in general have done several studies. All these are geared towards the right teaching method and student environment, which is said to improve results; however none of the reviewed literature indicated studies that have been done in Gathaithi Secondary School.

2.1. The Impact of Teaching Method and Academic Performance of Students in Mathematics'

According to Harlaen (1993:136); use of appropriate teaching methods by mathematics teachers should play a very important role in helping children develop their ideas and process skills such as observing, hypothesizing, predicting, investigating, drawing conclusion and communication. The children should also be helped to develop positive attitude towards mathematics. The teacher should use appropriate teaching methods and know his or her subject matter content and the needs of the leaner well. The ideas children bring to a course will influence their activity, the observation they make, and the interpretations they give and even the methods of solving the problem

According to Eshiwani G.S (1983:45), teachers handling a large number of students could be overworked and this affects achievement and performance of the student. With large numbers, the teacher cannot maintain effective teaching and regular marking of the student work. Proper mathematics teaching demands increase amount of time available to

students as a means of time developing their manipulative and mathematical skills in the classroom. It is almost certain that performance in a subject depends on the attitude held towards the subject. It's therefore meaningful that our teachers together with the parents inculcate positive attitude towards all subjects that are taught in our school system .He also says: Relationship between attitude and performance is certainly in that attitudes and performance is certainly the consequence of reciprocal influence in that attitude affect achievement in turn affects attitude

According to Gichuhi P.N. (1999:2), the methodology to be used by a teacher depends on the teacher and the leaner in particular class and in a particular class and in a particular topic. Good teaching is largely a matter of personal aptitude and requires meticulous planning/preparation and a selection of approaches and methods that will results to optimum learning. Teaching/leaning should involve activities aimed at helping students to arrive at the learning outcome; this depends on the method a teacher uses to teach. Teacher should approach his/her lesson in away that students are alert and active to avoid boredom and this will enhance participation.

2.2. The Resources Necessary in the Proper Teaching/Learning of Mathematics

According to Olonyi M.S.(1986:56), the causes of failure in KCSE in Kakamega are;

- 1. Lack of proper lighting was a handicap, as most homes lack supply of electricity. Students depends on kerosene lanterns
- 2. The dependence on family labor as opposed to hired labor which is a characteristic of peasantry, caused students of such homes to spend long hours, looking after their young brothers ,sisters doing home work or manual work. Consequently no time was left for school work.
- 3. Low level of income coupled with high population rate led to lack of school fees, lack of nutritious food and study facilities at home

[2.3 The Factors Influencing the Academic Performance in Mathematics

2.3.1 Attitude

According to Mwangi D.F (1986:23); he observed that there is a very significant

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relationship between expectation in mathematics after completing a course and performance in mathematics. However he found no significant relationship between attitude and difficulties in teaching mathematics place of mathematics on society and attitude towards mathematics teaching. Overall in his finding he noted that even those who had no higher expectation performed well in mathematics. The teaching of mathematics is influenced by a number of factors and these among others, includes student negative attitude to the subject. Shortage of class textbooks, reference materials, poor interpretation of material and syllabus by teachers and the inadequacy use of schemes of work and lesson plan just to mention a few.

2.3.2 Sex

According to Cockcroft (1902:32, quoted findings by Jennema who conducted their research in U.S.A. with children of ages between (10) and fourteen (14) in 1974 stated that -Girls performed better than did in least complex skills (computation) in the 77 tests of more complex cognitive skills. (Comprehension application and analysis) five tests had results that favored girls while 54 tests showed significant differences in favor of boys. The conclusion is escapable that the boys of this population teamed the mathematics measured by this test better than did the girls. In overall performance on test measured mathematics learning there is no significance differences that constituently appear between the learning of boys and girls in the fourth to ninth grade, if a difference does exist, girls had to perform better in test of mathematical computation and boys led to perform better in test of mathematical reasoning. He also noted that: There is no area of knowledge where a teacher has more influence over the attitude as well as the understanding his pupils than he does in mathematics. During his professional life, a teacher of mathematics may influence for good the attitude of mathematics of several thousands of young people and decisively affect many of their career choices. This indicates that teacher's attitude towards mathematics has greater impact of mathematics than any other area of knowledge.

According to Koril.S.T (1980:99) tests do not account for differences in social and economic backgrounds among test-takers; the exams do not accurately assess the

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scholastic performance of female students. Females consistently earn higher grades on average than males in both high school and college, but their average scores on standardized tests are lower. The emphasis on high test scores encourages schools to teach only the material likely to be covered in the tests rather than provide a comprehensive education. Supporters of standardized tests maintain that test scores provide a valid measure of academic aptitude. They also contend that the exams offer a reliable way to impartially compare students from a variety of social and educational backgrounds.

According to Eshwani G.S. (1983:23). Kenya. The problem of performance is attributed to poor teacher, student's ratio. He says that in 1963 the ratio was 1:5 and in 1980 it was 1:2 well today it stands at 1:30. This shows that the number of pupils have been increasing without a corresponding increase in the number of teachers. At secondary school level an acute shortage of qualified science or mathematics teacher is experienced. Teaching is not a popular career among university graduate. Graduate competent to teach mathematics find it easy to get good job elsewhere. Non graduate teachers who trained to teach at lower level often lack motivation and follow the cause for lack of better alternative. Student achievements at secondary school level have also been found to correlate positively with their achievement at primary school level He also quotes mathematics tutors at university the blaming science teachers at the school level as the cause of poor mathematics performance. The question of lack of qualified teachers in most rural Schools has in many of cushions been mentioned as one of the causes of poor performance in National exams. The untrained teachers undertakes teaching as a stepping stone to better employment or as they wait for admission to the university. Such teachers cannot put forward the necessary effort that would enable the learner master the content of a subject.

According to Kepha O.K (1985:67), Kenya. Attitudes are fundamental to the dynamics of behavior. They largely determine what students learn it s therefore clear that attitude, positive or negative will have a lot of influence on students achievement and all stakeholders in education must pray significant roles in molding the attitude of Kenyan

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students towards sciences All over the world, recurring questions for teachers in many countries are, how can I make mathematics more attractive, enjoyable, and relevant and to change the attitude of my students. He concludes that there is an issue of negative attitudes towards mathematics among students and teachers. Attitudes to mathematics are largely formed before the age of 14 and the influence at home, local community and primary school are important. This means that positive attitudes in students must be calculated right from teen ages.

2.3.3 Environment and Discipline

According to Bell F. H (1980:52), Children in school interact with one another depending on their interest. Other children take up other interest in order to cope up with their norms. In this way altitude of children towards mathematics is influenced by the. Environment What we learn in school and how well we learn are very closely tied to our altitudes about the school and the subject that are taught in school and the subjects that are learnt simultaneously through complex interaction There seems then, environment of the student affect performance in mathematics. Discipline problems are major causes of teachers ineffective and many teachers who leave teaching profession are usually influenced by the ability to maintain a disciplined classroom environment. For student to do well in examinations, discipline is almost a must. He also states that: Effective learning requires good discipline in the external process of education and the learner should know that good discipline promote achievement.

2.4 The Problems Faced by Students in Mathematics Learning

According to Kabutu P.W. (1987:31), Poor performance and high dropout rate is attributed to the fact that pupils face many problems while they pursue their education. From the findings of research it was revealed that over 50% of the respondents had the following problems.

- 1. Influence of peer and environment made students undisciplined.
- 2. Poor relationship between teachers and students unstable homes
- 3. Some teachers lack commitment.
- 4. Poor transport which makes students late to and from schools.

5. Lack of textbooks and facilities.

Some of the solutions suggested by teachers and head teachers were:

I. Setting of guidance and counseling until they deal with problems of students.

II. Bursary system to help pay school fees for students from unfortunate homes.

However, the background and statements of the problem did not bring out the aims of research as expected.

According to Oguba M.G. (1984:25); the factors affecting performance were:

1 Lack of interest and commitment to studies on the part of the students.

2 Absenteeism and indiscipline.

3 Lack of adequate facilities including library books, playgrounds and laboratories.

- 4 Poor pupils school attendance especially in day schools.
- 5 Lack of motivation in students, making many not to-do their homework
- 6 Lack of enough science and mathematics teachers.
- 7 Harassment of teachers by parents
- 8 Admission of students to form one with less than 250 marks out of 500 marks.

According to Wanjiru .B W. (1989:89), Mathematics is a way of describing relationships between numbers and other measurable quantities. Mathematics can express simple equations as well as interactions among the smallest particles and the farthest objects in the known universe. Mathematics allows scientists to communicate ideas using universally accepted terminology. It is truly the language of science.

We benefit from the results of mathematical research every day. The fiber-optic network carrying our telephone conversations was designed with the help of mathematics. Our computers are the result of millions of hours of mathematical analysis. Weather prediction, the design of fuel-efficient automobiles and airplanes, traffic control, and medical imaging all depend upon mathematical analysis.

For the most part, mathematics remains behind the scenes. We use the end results without

really thinking about the complexity underlying the technology in our lives. But the phenomenal advances in technology over the last 100 years parallel the rise of mathematics as an independent scientific discipline.

According to Bodley J.F. (1974:156); to convey new ideas, people constantly invent new symbols, such as for mathematical formulas. In addition, people may use one symbol, such as a single word, to represent many different ideas, feelings, or values. Thus, symbols provide a flexible way for people to communicate even very complex thoughts with each other. For example, only through symbols can architects, engineers, and construction workers communicate the information necessary to construct a skyscraper or bridge.

People have the capacity at birth to construct, understand, and communicate through symbols, primarily by using language. Research has shown, for example, that infants have a basic structure of language a sort of universal grammar built into their minds. Infants are thus predisposed to learn the languages spoken by the people around them.

According to Bernard T.D. (1986:230) most people have an intuitive notion of what intelligence is, and many words in the English language distinguish between different levels of intellectual skill: bright, dull, smart, stupid, clever, slow, and so on. Yet no universally accepted definition of intelligence exists, and people continue to debate what, exactly, it is. Fundamental questions remain: Is intelligence one general ability or several independent systems of abilities? Is intelligence a property of the brain, a characteristic of behavior, or a set of knowledge and skills? The simplest definition proposed is that intelligence is whatever intelligence tests measure. But this definition does not characterize the ability well, and it has several problems. First, it is circular: The tests are assumed to verify the existence of intelligence, which in turn is measurable by the tests. Second, many different intelligence tests exist, and they do not all measure the same thing. In fact, the makers of the first intelligence tests did not begin with a precise idea of what they wanted to measure. Finally, the definition says very little about the specific nature of intelligence. The researchers received many different definitions: general

adaptability to new problems in life; ability to engage in abstract thinking; adjustment to the environment; capacity for knowledge and knowledge possessed; general capacity for independence, originality, and productiveness in thinking; capacity to acquire capacity; apprehension of relevant relationships; ability to judge, to understand, and to reason; deduction of relationships; and innate, general cognitive ability. He emphasized cleverness, common sense, practical problem solving ability, verbal ability, and interest in learning. In addition, many people think social competence is an important component of intelligence

2.5 The Impact of School Facilities on the Academic Performance of Students in Mathematics

According to Eggletion H (1977:130), there is significance influence of teaching facilities and mathematics achievement for he says Good education provision and good environment factors will always yield good results. Constrain in public budget have resulted to a serious shortage of funds in secondary schools in Kenya and this has led to deterioration in the quality of learning. Most schools have resulted into sharing of textbooks in discipline such as mathematics and English. The textbook is the core material of homework. If homework is set and done regularly, then each student should have a copy of the textbook. In day schools it is not practical to do the assignment at night as students go to different homes in evening.

According to Kariri G.H. (1984:45), streaming of students was one reason for poor performance in schools. Most schools in Kenya urban areas grouped their pupils according to academic ability. This widens the gap between better and poor students that the number of students expected to do well in KCE is predictably low. Also schools which were rated as having the best facilities and equipment were among the top ten in the province for that period. This pointed out to the fact that the presence or absence of school facilities distinguishes schools. 60%ofthe schools had no format preparation or homework assignment given to the pupils. It was not taken seriously either by pupils or teachers in most schools. Social influence of the communities on schools was cited as one major factor that had effect on the schools performance.

2.6 Gap in Knowledge

This literature review doesn't highlight all important issues concerning the topic, for example it doesn't bring out the impact of school facilities on the impact on teaching • method and academic performance. It creates a space in knowledge that should be filled but concepts provided are still very useful for this study.

CHAPTER THREE 3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology part of the research. Among others, it specifies the research design, research environment, respondents, instrument, and statistical treatment of data collection procedures.

3.2 Research Design

The study employed both the qualitative and quantitative to investigate the impact of teaching methods on the academic performance of learners in mathematics of Gathaithi secondary school this data will be collected from the existing records, questionnaires and interview to supplement for the information required.

3.3 Research Environment

This study was conducted at Gathaithi secondary school in Githunguri Division, Kiambu District Central province of Kenya. It's a mixed day school located in a hilly productive area.

3.4 Respondents

The sample for this study was selected from form one to form four classes. The sample also included teachers and the head of the school. The study utilized a research devised instrument which is a questionnaire. It mainly consisted of respondent's profile, school facilities, and methods of teaching, among others. It had structured and objective questions .Responses have been grouped, and interpreted for conclusions.

3.5 Research Instruments

The research instrument included use of existing record and document. This will help to investigate how teaching method influence student performance in mathematics.

Assessment of student attitude and motivation towards mathematics was done through interview. Teachers, students point of view on achievement in school or National Examination, was investigated using self constructed questionnaires and usual school exams and continuous assessment tests.

The questionnaire mainly sought the opinion of the group to being administered on. A survey of method used in teaching was also carried out and hence performance. One alternative to making field observation test or interview is the use of the questionnaire method.

3.6 Data Collection Procedures

The researcher sent an introductory letter to the head of the school requesting for permission to conduct the study inside the school premises utilizing the staff and learn after that, questionnaire were distributed to the respondents. Data was analyzed and recorded for the final project.

The student questionnaire was administered to all forms. A surprise visit was made and student asked to fill the questionnaire and it was collected after some specified time. The teachers and head teacher questionnaire was administered after an interview and then asked to fill the questionnaire which was also collected after some time. Student interview was made randomly at any free time at break time or after lunch. The Headmaster was requested to give the necessary records in study.

3.7 Statistical Treatment of Data

The frequency and percentage distribution was used to determine the forms of the impact of teaching methods on the academic performance of students in mathematics.

Formula; f/n X 100 where, F=frequency n = total number of respondents 100 = constant.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND PRESENTATION

4.0 Introduction

In this chapter, the researcher presented relevant opinion about the impact of teaching methods and academic performance of students in Gathaithi Secondary School. The data presented here was mainly collected from the field to represent respondents' view.

Questionnaires

Questionnaires were distributed to the respondents and they were intended for secondary school teachers and students. The totals of 80 questioners' were distributed but 71 were answered and returned. This represented 88.8% of the sample population.

4.1 Questionnaire Findings

4.1.1 Profile of respondents

Sex/Gender

The number of the girls was 25 that were 35.2%, the number of boys was 25 that are 35.2% and the teachers were 21 that are 29.6% of the total population. Table 1

Gender status	No of Respondents	Percentage (%)
Boys	25	35
Girls	25	35
Female teachers	14	20
Males teachers	7	10
Total	71	100

Age structure

The youngest category was falling between 10-15 years, 16-20, and the oldest were 24-50 who were teachers. The table below shows the age structure

Table	2
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Respondent Age group	No of Respondents	Percentage (%)
10-15	22	31%
16-20	28	39.%
24-50	21	30%
total	71	100

Education Background (Qualification)

50 respondents (70%) were students with no district qualification as they were students of

Gathaithi secondary school. 17 teachers had Diplomas and only 4 respondents had

Degrees Table 3

Education level	No of Respondents	Percentage (%)
Form one	11	16%
Form two	12	17%
Form three	13	18%
Form four	13	19%
Diploma teachers	17	24%
Graduate teachers	4	6%
Total	71	100%

4.2 Summary of Questionnaire Findings According to Objectives Stated

4.2.1 Impact of teaching methods and academic performance of students in mathematics

Table 4: Analysis of data related to experience and qualification of teachers

Academic/ professional	Number of teachers	% Percentage	
qualification			
Diploma teachers	17	81	
Untrained teachers	2 (mathematics teachers)	9.5	

Graduate teachers	2	9.5
Post graduate teachers	0	0
TOTAL	21	100

Teachers were requested to indicate the teaching method they prefer to use 16 teachers use demonstrations and practical methods while the rest 5 teachers uses lecture and discussion method .Two out of the three mathematics teachers have academic but no professional qualifications. They may have mastered the subject but their methods and speed of delivery may not be good. They may not be having the best teaching methods and this could contribute to poor academic performance in mathematics in the school beside other factors

When asked whether there is an impact on the academic performance of students the majority of the respondent (70 %) said yes while 30% said no. Those who said yes gave the following reason The Method should be well chosen to help in the expected objectives of the lessons. More important the teacher should base his teaching on the students past experience and should be focused on the activities which enable the leaner to relate what is learned to real life experience hence they concluded that teaching methods affects academic performance of mathematics .Two teachers in mathematics have an experience of 7 years they have mastered the concept in mathematics for effective teaching. They may have learnt and acquired various techniques required to assist students' to perform better in their examinations.

The conclusion is that teachers are experienced and experience of teachers may not be a factor that contributes to poor performance in mathematics. Most of the students respondent noted that their mathematics teachers are very boring in class, some never involve their students even by asking questions, they just lecture and then leave us in confusions. Some respondents says that some mathematics teachers are not audible in class, they don't use simple language,

The conclusion is that the teaching methods applied by Gathaithi teachers affect the

performance of students negatively, among other factors. When the respondents were asked whether they like the way teachers teach mathematics. 9.6% of the students were on the inclination that they like the way mathematic teachers teach mathematics however 42% of the student do not like the way mathematic teacher teach mathematics 2.4% were not sure. This shows that there is a poor learning atmosphere created by the teachers and the teachers could be probably the cause of poor performance in mathematics. 15% of the sample disagreed with the statement that mathematics requires memorizing of formulas without understanding them. 50% agreed with the statements while 11% were not sure from the above analysis. It shows that the teachers don't use the right approach in teaching mathematics.

From the above 3 (three) discussion we can accept the null hypothesis that the type of teaching method used result to poor performance in mathematics in this school.

4.2.2 Resources and Apparatus Necessary in the Proper Teaching and Learning of Mathematics.

All the respondents agreed that resources are very important for proper teaching and learning of mathematics in Gathaithi secondary school. Students were requested to indicate the number of students who share one text book in mathematics the table below shows the response

Class	response
Form one	One among 5
Form two	One among 3
Form three	One among 3
Form four	No sharing
Total	50

Table 5. Response on Sharing Learning Resources

The figure in the table indicates majority of the students, constituting more than 40% of the students share one text book between two. This is an indication that there aren't

enough mathematics books in the school which further contributes to the poor performance in mathematics in this school.

Respondents were asked whether lack of mathematics resources contribute to poor performance and the following data was collected.

OPINION	NO	OF	PERCE
	RESPONDENT		NTAGE
1.STRONGLY	18		30
AGREE			
2.AGREE	13		26
3.NOT SURE	4		08
4.DISAGREE	8		16
5.STRONGLY	5		09
DISAGREE			

 TABLE 6. Lack of mathematics resources vs. poor performance



56% of the sample of student was in the opinion that lack of mathematics textbooks contribute to poor performance in mathematics. This is a very big percentage figure. On the other had 25% the sample were on the opinion that lack of mathematic textbooks do not contribute to poor performance in mathematics. Most of the respondents noted that apart from the resources needed in classroom like text books other resources outside classroom also affect learning and performance like library, school clinic, school environment, toilet facilities, dinning facilities, and recreation facilities among others.

87% of the respondent noted that in their school such resources are there but they are not enough and need to be added or upgraded

4.2.3 Factors Influencing Academic Performance in Mathematics

The respondent's views about the factors affecting academic performance in mathematics can be summarized as in the table below

Table 7

NUMBER	IBER FACTORS FREQUENCY		PERCENTAGE
A	Attitude	5	7
В	Environment	5	7
С	Sex	3	4.2
D	Lack of enough resources	13	18.3
Е	Poor teaching methods	12	17
F	Class size too big	5	7
G	Poor evaluate methods	6	8.5
Н	Low intelligence of learners	2	2.8
Ι	Discipline	8	11.3
J	Poor communication skills	7	9.9
К	Lack of coaching	3	4.2
L	Unqualified teachers	2	2.8
	TOTAL	71	100

4.2.4 Problems Faced in Teaching and Learning of Mathematics

The respondents' views on this topic are that mathematics teaching and learning are challenging this are the reasons: Lack of textbooks, negative attitude, and narrow curriculum scope, among others. Students were requested to indicate their feeling towards mathematics. Table above indicate that 60% of the respondents have negative attitude towards mathematics. This is a problem that needs urgent attention.

Respondents indicate that mathematic teaching and learning is challenging and outlined the following as a justification for their stand, Lack of enough teaching learning resources, wide syllabus among others. Other problems or challenges faced during teaching and learning were analyzed as follows according to the respondent.

TABLE 8

Challenges	or Prob	lems Faced	I During	Teaching	Learning	Of Mathematics
Chancinges	OF LIVE		During	a caching	Loaimig	Or maintenance

	PROBLEMS		%
		NUMBER	
	Lack of interest	40	28
•			
	Lack of books/facility	37	27
•			
	Not understanding mathematics	19	14
•	Tooshow booting /bore down to student	15	10
	reachers beating/boredom to student	15	10
•	Teachers not marking mathematics	6	4
	reactions, not marking matteriation		
	Absenteeism of mathematic teacher	5	4
	in lessons		
	A lot of home works	5	5
	Student copying from others	4	3
•			
	Lessons in afternoon	4	3.
•			
	Missing school fees	1	1
	Lack of enough time for	1	1
	mathematics		
-	Lack of enough mathematic teachers 1		
	Lack of coaching 1		1
	Inadequate learning resources		

Poor teaching resource	s	
Poor evaluate methods		
Low intelligence of lea	arners	

To solve the above problems, sample suggested reasons were analyzed using simple statistics and recorded on the table below:

WAYS	NO OF	PERCE
	RESPONDENT	NTAGE
Supply of different type of mathematic text	37	29
books		
Doing more practice	35	27
Increase time and more coaching time	12	9
Good learning atmosphere	11	9
Guiding student on importance of mathematics	7	5
Adding more teachers	8	6
Improving teaching methods	6	6
Discipline improvement in school/class	6	5
Giving prices	7	5
Giving supplementary tests	3	2
Dressing moderately in mathematics	2	2
Being loud and clear/good communication	2	2

Ways of Improving Mathematic Performance

4.2.5 Impact of School Facilities and Academic Performance

Table 10; Physical facilities

Physical facilities in the school	Response
Mathematics per class weekly	7
Library's mathematics shelves	Not well equipped
Equipments	Moderate
Mathematics test per ferm	3
Mathematics department office's	1
Mainemanos ucpariment erriter	

The principle was requested to give information on the Mathematics schedules in the school. The data in the table indicates that mathematics is not given maximum attention as it requires in order for students to enjoy and pass with high marks. The administration tries to provide good and comfortable desks and chairs, comfortable staffroom is well furnished with good reading chairs and a common room for relaxation but teacher's salaries are not enough to motivate them.

When the respondents were asked whether there is an impact of school facilities on the academic performance, the majority (80%) said yes while (20%) said no Respondents continued to give the following as their justifications.

Those who said yes gave the following reasons.

The presence of enough facilities helps students to learn easily as they learn by seeing (visual aids) it also help to do their own revision in their free time (textbooks) Good school environment with specious facilities aids concentration of students. Learning becomes permanent and so students do not forget quickly. Enough materials make learning interesting and meaningful. Those who said no simply reasoned that though some materials is lacking, some students continue to perform well.

Finally, since its objective that had to answer and test the hypothesis, according to the majority (80%) who said, the implication is that there is significant relationship and

impact of school facilities or students academic performance in mathematics subjects. This means that the Null hypothesis was tested wrong.

CHAPTER FIVE

DISCUSSION, RECOMENDATIONS, CONCLUSIONS

5. 0. Introduction

This is the last chapter of this research paper. Ideas presented here were got from different authors of textbooks. The researcher put comparative analysis between them and views from the respondents. Finally, conclusions were drawn after thorough discussion on the ideas above. In this chapter also, the researcher has suggested some areas for more research.

5.1 Discussions.

In this unit, views of different authors in chapter 2 have compared with those collected from the field-basing on the stated objectives.

5.1.1 Impact of Teaching Methods on learners' Performance.

Authors views in the literature indicate that use of appropriate teaching methods by mathematics teachers plays an important role in helping children develop their ideas and process skills. Teachers handling a large number of students could be overworked and this affects achievement and performance of the student. With large numbers, the teacher cannot maintain effective teaching and regular marking of the student work. Proper mathematics teaching demands increase amount of time available to students as a means of time developing their manipulative and mathematical skills in the classroom. Methodology to be used by a teacher depends on the teacher and the leaner in particular class and in a particular topic. Good teaching is largely a matter of personal aptitude and requires meticulous planning/preparation and a selection of approaches and methods that will results to optimum learning. Teaching/leaning should involve activities aimed at helping students to arrive at the learning outcome; this depends on the method a teacher uses to teach. Teacher should approach his/her lesson in away that students are alert and active to avoid boredom and this will enhance participation.

Respondents from Gathaithi secondary did not differ from authors. According to their views, teaching methods contribute in great extent to poor performance in mathematics. However, from this sample, teacher's characteristics which includes attitude towards teaching, mathematics, experience do not contribute to poor performance in mathematic in this particular school but it should be noted that there are no enough mathematic teachers so that team teaching can be done. It was in this base, therefore that the null hypothesis from analysis was accepted.

5.1.2 Resources and Apparatus Necessary for Proper Teaching/Learning of Mathematics

According to the literature available, authors highlight that there is need for availability of resources and apparatus for proper learning and teaching to happen, that learners requires text books in order to pass in exams. Different respondents also agree with the above mentioned author. They listed the following, magazines, radios newspapers, Televisions, Teaching aids, among others. This means that facilities (materials resources) are very important to uplift the academic performance of learners in mathematics

5.1.3 Factors Influencing Academic Performance in Mathematics

Authors view in the literature indicate that certain factors affect student's academic performance especially mathematics, authors mention the attitude, environment, sex, class size. The researcher found that the number of student in class influence student performance in mathematics. A large class will perform poorly than a small class if resources are kept constant. This implies that there should be a fixed number of students in a given mathematic class. The ratio of mathematic teacher and pupils should be at optimum level. This will enable the teacher to concentrate on individual weaknesses and in turn solve these problems in time. The researcher found that discipline of the student affects student performance in mathematics. A disciplined student will be good manager of time i.e. set time to revise mathematic problems, ask teachers questions because they have good relationship with them and in total discipline of the student is reflected in the performance of the student.

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APPENDICES APPENDIX A : TRANSMITTAL LETTER

January 07, 2008

THE PRINCIPAL GATHAITHI SECONDARY SCHOOL P O BOX 798 KIAMBU, KENYA.

Dear Sir/ Madam:

I am a graduating student at Kampala International University pursuing a Bachelor of Education in Science. I hereby write to request you to allow me carry out research in your institution. I am conducting a study on Teaching Methods and academic performance of students in mathematics of Gathaithi secondary school. The response shall be treated with confidentiality.

I will be grateful for your permission and assistance in conducting the study.

Thank you. Yours respectively, Bernard N Wanyoike

Noted by Nankya Oliver

Supervisor

APPENDIX B : QUESTIONARES

HEADTEACHER QUESTIONAIRE

This questionnaire is intended for an academic study under the topic (Impact of teaching methods on the academic performance) .For Bed science Kampala University. It is strictly for academic purpose. Please feel free to complete.

Name...... (Optional) Age..... Sex Academic qualification PART A Please be guided by the following choices below. 4. Agreed (you agree with no doubt at all) 3. Strongly agreed (Agree with some doubt) 2. Disagree (disagree with some doubt) 1. Strong Disagree (disagree with no doubt at all) 0. Not Sure Tick the appropriate box 1. What is the status of your school? Boys Day Mixed Day Mixed Boarding **Girls Boarding** 2. What is the class size in your school? Between 20-30 Between 30-40 More than 50 3. (A) Have you ever noted any impact of teaching methods on academic performance in your school? (B) If so comment 4. List the necessary resources and apparatus in mathematics subject 1)..... 2)..... 3).....

4)
5. What are the problems you face in mathematics instruction?
6. (A) How has the performance of mathematics been for the last four years?
V. Good Good Average Poor
(b)Give reasons for your answer
7 (A) Do you think there is impact of school facilities on the academic performance of
atudents in methometics?
Yes No
(b) Justify your stand

TEACHERS QUESTIONAIRE

This questionnaire is intended for an academic study under the topic (Teaching methods and the academic performance of students in mathematics) .For Bed science Kampala University. It is strictly for academic purpose. Please feel free to complete.

Name	(Optional)
Age	
Sex	
Academic qualification	

PART. A.

Please be guided by the following choices below.

- 4. Agreed (you agree with no doubt at all)
- 3. Strongly agreed (Agree with some doubt)
- 2. Disagree (disagree with some doubt)
- 1. Strong Disagree (disagree with no doubt at all)

0. Not Sure

1. Which teaching methods do you prefer using

- (A) Lecture method
- (B) Teacher demonstration
- (C) Practical work (class experiment)
- (D) Discussion methods
- (E) Excursion methods [
- (F) Project method
- 2. Mathematics is more interesting than any other subjects to teach in this school-----

3 There are enough text books for mathematics in the school.-----

- 4 Mathematics is very hard subject for students to understand-----
- b. Mathematics is not an important subject in this school-----
- 5. Students who are encouraged to study hard in mathematics by teacher, parents, and peer group do well in mathematics -----
- 6. Lack of textbooks have been the major cause of poor performance in mathematics in this school ------

7. Coaching taken during weekend and holidays improves mathematics performance in this school ------

8. Suggest reasons that you think have contributed to poor performance in mathematics in

this school
······
9. Suggest various ways in which mathematics performance can be improved
10. There are enough teaching aids in the school
11. There are enough facilities in the school
12. There are audio-visual aids to motivate the students.
13, There are enough toilets, furniture's, in the school
PART B 14. (A) what are the problems in teaching and learning of mathematics
(B)How can this be overcome?
· · · · · · · · · · · · · · · · · · ·
15. (B) Do you think there is an impact of school facilities on the academic performance of learners?YES NO
(B) Give reasons for your answer
16. Do you think there is impact of teaching method and academic performance? YES NO
(C). Support your answer
•••••••••••••••••••••••••••••••••••••••

STUDENT QUESTIONAIRE.

This questionnaire is intended for an academic study under the topic (Teaching methods and the academic performance of students in mathematics) .For Bed science Kampala University. It is strictly for academic purpose. Please feel free to complete. Name
PART A Please be guided by the following choices below.
4. Agreed (you agree with no doubt at all)3. Strongly agreed (Agree with some doubt)2. Disagree (disagree with some doubt)1. Strong Disagree (disagree with no doubt at all)0. Not Sure
1. Mathematics is a very dull subject
2(a). I like the way mathematics teachers teach mathematics
(b). Mathematics requires memorizing of formulae without understanding them.
3. (A) Mathematics teacher employ varied teaching methods
(b).Mathematic teacher uses simple language
4. Mathematics teacher asks question regularly in class
b. The teacher is audible in class
5 He/she introduces and summarize, the topics at the end of the lessons 6. Lack of resources, like textbooks in mathematics have contributed to poor perform in mathematics in this school
7. Teacher allows students to actively participate in class
8. Do you have a negative attitude towards mathematics?
9. The class is well lit and ventilated
10. The teacher gives test, assignments frequently and encourages group discussion

11. Absence of some facilities affects our learning of mathematics
12. Suggest three reasons, which you think, have contributed to poor performance in mathematics in this school(i.)
(iii)
13. Suggest three ways in which mathematics performance can be improved. (I)
(11) (iii)
14. What challenges or problems do you face in school while learning?
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APPENDIX D

SUMMARY OF RESPONDENTS PROFILE

Category	Frequency	Percentage
Age		
10-15	22	31
16-20	28	39
24-50	21	30
Gender		
Female	39	55
Male	32	45
Education level		
Masters	-	-
Degree	4	6
Diploma	17	24
Secondary and below	50	70
(students)		

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APPENDIX E : CURRICULUM VITAE

PERSONAL BACKGROUD

:	BERNARD NG'ANG'A WANYOIKE
:	BED /10775/61/DF
:	35YRS
:	MALE
:	MARRIED
:	JULY, 7, 1972
JS	: TEACHER
: BOX	K 798, KIAMBU
	: : : : JS : BOX

EDUCATIONAL BACKGROUND

COLLEGE : KAMPALA INTERNATIONAL UNIVERSITY (2006 - 2008) KENYA SCIENCE TEACHERS COLLEGE (1993 – 1995)

SECONDARY: ST JOSEPHS HIGH SCHOOL GITHUNGURI (1988-1991)

RESEARCH EXPERIENCE

TITLE : Impact of Teaching Methods on the Academic Performance Of Students In Mathematics Of Gathaithi Secondary School, Kiambu District, Kenya.

