

FACTORS INFLUENCING STUDENTS PERFORMANCE  
IN SCIENCE SUBJECTS AT SECONDARY  
SCHOOL LEVEL IN KIHARU DIVISION  
MURANG'A DISTRICT. KENYA.

BY  
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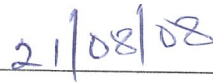


## DECLARATION

This research report is my original work and has never been submitted for any of the study programmes in any university.



**KAGOCHI JULIUS MUIRURI**




**DATE**

## APPROVAL

This research work has been carried out under my supervision. I have approved it for submission to the university.

Supervisor

Mr. Moses Womuzumbu

Sign.....

Date.....

Kampala International University

## DEDICATION

This research work is dedicated to my wife, Martha and daughter Catherine for their understanding, encouragement and support.

## ACKNOWLEDGEMENT

The preparation of a research report calls for co-operative efforts from several key individuals and institutions. However while it might be impractical to mention all of them, some minimum crediting is inevitable.

First and foremost my gratitude goes to my Supervisor, Mr. Moses Womuzunbu of Kampala International University who devoted a lot of time and patience to this study and manuscript preparation, I am particularly very grateful for the extra ordinary advice, guidance and concern accorded by my supervisor. Second, I wish to convey sincere gratitude to principals of the following Secondary Schools, Gaitheri, Mugeka, Mumbi, Murang'a and Kiambu who gave me permission to undertake study in their schools, and spared time to participate in it. Third I thank science teachers and students of the five schools visited for participating in the research

Fourth, the co-operation given by the D.E.O Murang'a district is sincerely acknowledged.

Finally, I want to thank my wife, Martha for her support and encouragement

The author would like to absolve all individuals and institutions mentioned above for any errors. For these the author remains solely responsible

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## ACRONYMS

K.C.P.E	-	Kenya Certificate of Primary Education
K.C.S.E	-	Kenya Certificate of Secondary Education
8.4.4	-	Current system of Education in Kenya; 8 years in primary, 4 years in secondary and 4 years in basic university Education.
K.N.E.C	-	Kenya National Examination Council
P.T.A	-	Parents Teachers Association
Q.A.O	-	Quality Assurance Officer
B.O.G	-	Board of Governors
SMASSE	-	Strengthening mathematic and sciences in secondary school
D.E.O	-	District Education Officer
I.O.D.L	-	Institute of Open and Distance learning.
T.S.C	-	Teachers Services Commission
C.D.F	-	Constituency Development Fund.



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## ABSTRACT

Science education has a critical role in promoting scientific and technological development. However students' performance in these subjects remains quite dismal in many schools. Factors leading to this dismal performance have not been adequately investigated and well understood.

The purpose of this study was to determine factors influencing students' performance in science subjects at Secondary School level in selected secondary schools in Kiharu Division, Murang'a District Kenya. The study explored four specific factors influencing performance in sciences namely, ratio of teachers to students, population of a class, social economic status of family and availability of learning/teaching materials.

The study sampled schools using purposive sampling status and type of school. From the sampled schools, two thirds of the candidates were selected and all science teachers for the study. The principals of all the sampled schools were also included in the study. The Q.A.O, Murang'a district was similarly involved in the study.

Data was collected using questionnaires for students, science teachers and principals. The researcher interviewed the Q.A.O, Murang'a District, Descriptive statistics was the main technique used to analyze data. The major findings were that; shortage of teachers, large classes, poverty and lack of adequate learning/teaching materials contributed to poor performance in sciences.

Based on these findings, it was recommended that, the government of Kenya recruits enough science teachers; principals follow Ministry of Education guidelines when admitting students, government to initiate poverty eradication programmes and the schools' B.O.G. solicit for funds to equip schools with all necessary learning/teaching materials.

# CHAPTER ONE

## INTRODUCTION

### 1.0 BACK GROUND OF THE STUDY

The world today is shifting from traditional lifestyle and tending towards technological advancement. This is inevitable and therefore education at all levels should be relevant to it. There is great importance in improving teaching of sciences and promoting their learning so as to match the technological need of Kenya in years to come. The government put the year 2020 as time when the country will have industrialized; hence all efforts should be geared to realize this. Good performance in sciences would militate towards the country's aspiration to achieve industrialization by the year 2020.

Since the 1970's, there has been need by the government to relate science and technology to national goals for economic development. This was the reason behind education reform and introduction of 8-4-4 Education system. While writing the preface to the booklet on 8-4-4 system implementation in Kenya in 1985, the then minister for education stated "Kenya attained independence twenty years ago, during this period; the government has continually reviewed the education system to ensure that it senses the needs of the beneficiaries. The essential elements of the new system are the improvement of curriculum content with stress to science and technology" (Republic of Kenya, 1961).

Worhan and Sander (1987) observe that in most developed or advanced nations, education is seen as a primary source of solving problems. Schutz and Denson (1961), as quoted by the

World Bank Development Report (1993), showed that education contributes directly to the growth and national income by improving skills and productive qualities of the labour force.

The main way of judging academic performance or achievement is through examination results. In primary level, it is judged through the K.C.P.E, done after eight years of primary education, while in secondary level, it is judged through the KCSE, done after four years of secondary education. Wamai states that the examination results are taken as a valid measure of a pupil's educational achievement, and that Kenyans regard examination as a trustworthy instrument for categorizing students into groups for achievements and non-achievers.

The commission of enquiry chaired by Koech, (TIQUET, 1999) found that poor performance at examination was blamed on poor teaching, absenteeism and inadequacy of the examination system.

KCPE and KCSE examinations are administered by KNEC. Grades attained by students range from E to A. A is the best grade and E is the worst. D is below average, C is average, B is good and A is excellent. Those who get above grade B are regarded as good performers.

## **1.1 STATEMENT OF THE RESEARCH PROBLEM**

Performance of sciences in most public secondary schools has been generally poor and this is brought by both factors within and outside schools. The major factors influencing students' achievements in science subjects are remotely understood. This therefore

limits the abilities of policy makers and teachers to improve on the implementation process of the 8-4-4 systems.

Although it is evident that the restructured 8-4-4. Education system has good and noble gains to the recipient, it is also clear that its proper implementation is highly demanding. Infact the public outcry and concern by the students as well as parents and other stakeholders about poor performance in sciences need urgent investigations (Eshiwani and Orodho, 1996) hence the major concern of this study is to solicit for an answer to this question:

**“WHAT MAJOR FACTORS INFLUENCE STUDENTS’ PERFORMANCE IN SCIENCES AT SECONDARY SCHOOLS LEVEL IN KIHARU DIVISION, MURANG’A DISTRICT, KENYA?”**

## **1.2 PURPOSE OF THE STUDY**

The purpose of this study is to identify and analyze factors that influence

The students’ performance in science subjects at secondary school level in Kiharu Division, Murang’a District, Kenya.

## **1.3 OBJECTIVES OF THE STUDY**

Special objectives of this study includes:-

- (a) To find out whether the ratio of teachers to students, their qualifications, and experiences have any significance on performance of sciences.
- (b) To find out whether the population and composition of gender of a given class have any significant influence on performance in sciences.

- (c) To find out whether the social-economic status of the family contributes significantly to the performance in sciences.
- (d) To find out if the availability of school's resources like laboratories, libraries, textbooks and specimens have any effect on performance in sciences.

#### 1.4 RESEARCH QUESTIONS

The researcher tried to answer the following questions:-

- (a) What kind of relationship exists between ratio of teacher to students, their qualifications, experiences and performance in sciences?
- (b) What kind of relationship exists between population and composition of gender of a given class and performance in sciences?
- (c) What kind of relationship exists between social-economic status of a family and performance in sciences?
- (d) What kind of relationship exists between availability of school's resources like laboratories, libraries, textbooks, specimens and performance in sciences?

#### 1.5 SIGNIFICANCE OF THE STUDY

The findings of the study will help educational managers in Murang's district and the whole country to address factors hindering good performance in sciences in secondary schools. Other stakeholders such as parents, schools' sponsors and B.O.G will use the findings of the study to improve performance in sciences. Good performance in sciences will facilitate Kenya's goal of being industrialized by the year 2020 and also realization of Vision 2030. For industrialization to

be achieved a country must embrace science and technology hence need for good performance in sciences subjects.

#### **1.6 SCOPE OF THE STUDY**

The study contained itself to students, science teachers and administrators of public secondary schools in Kiharu division, Murang'a district, Kenya. Private schools were excluded as they do not enjoy direct government support in provision of education. The teachers and students included were those present at that time. Those absent were not interviewed.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 INTRODUCTION

There is a lot of literature which documents the factors that influence students achievements in sciences. These factors will be examined in this chapter at both local and global overview. Performance trend and factors identified will also form part of this chapter. Related literature organized into four sections, each section addressing each objective of the study in the order indicated in section 1.3 of this report

2.1 Sautie Steban (1976) in his investigation, “ teacher questioning performance and students’ efficiency outcome”, in which he wanted to find out the relationship between the teaching performance and the students’ cognitive and affective domain found that, the student of teachers who were trained to ask questions score higher in a given test than the control group. Study exploring why some students learn more than others and achieve more than others have revealed three theoretical important determinants namely; school resources, teacher’s characteristics and students’ traits. In their review of research on the determinants of school achievements in less industrialized countries, Schiefelbelin and Simmons (1981) and Eshiwani (1982) identified the following policy related factors that may cause poor performance:-

- (a) School resources and processes (eg class size, textbooks, library, laboratory facilities, school administration and management including PTA)
- (b) Teachers characteristics ( ie teachers qualification, experience, training, teacher pupil ratio, professional commitment and transfer index).
- (c) Student’s traits (mainly social characteristics).

Disunity among staff members also causes failure in examinations and that happened where are no collective responsibilities among the teachers (Daily Nation, January 1984). The standard (Vol. 2, 1983) contends that poor results are caused by lack of refresher courses for old teachers as syllabus change and that absenteeism by teachers also leads to inadequate coverage of the syllabus content. Towards this end the government of Kenya started an in-service programme for sciences teachers in 2000 called SMASSE.

2.2 Keere (1972), in his classroom environment study concluded that girls attitude towards sciences was low. Smaller class sizes performed relatively better than bigger class sizes, other factor *ceteris peribus*. He concluded that teachers were able to give individual attention to students of smaller classes, hence better performance. Research carried out in both African and Western countries indicate that an achievement in sciences favors boys to girls. In his study on performance, Banser (1963) found that boys performed better than girls, who in turn did better in tasks involving writing, giving definitions and meaning on words.

Wilkim (1977) surveyed the evidences in problem solving. According to his evidence, both in perceptual and intellectual situation, men tend to be more analytical than women and hence do better in sciences. A study by Jarvis( 1964) revealed that there is general tendency of boys to perform better than girls in sciences while girls seem to do better in tasks that require linguistics task and boys are general stronger and have special aptitudes and do better in tests of arithmetic reasoning.

2.3. Research carried out in 1960's and 1970's in the USA and Britain indicates that society's cultural, economic and political structures are the main determinants of school outcome (Coleman 1966, 1972), Bowles and Gintis (1976). Coleman reported that social economic factors were strongly related to academic achievement that when factors were statistically controlled, school's characteristics accounted for only a small fraction of differences in students' achievement. The findings of survey of British school children agree with the American studies conducted by Jenks (1972) and Coleman (1966) which emphasize that the influence of the home is an important contributor to various academic achievements. It was stated in Plowder study that the schools, teachers and other related factors accounted for 4 and 28 percent respectively in variation of students' achievement.

The home circumstances like availability of books, teaching opportunity, help from experts explain for 20 percent of the variation in performance, Plowder (1967), Orodho (1996). Plowder (1967) further noted that in general, the higher the social-economic group, the more the parents attend schools' open day, concerts and P.T.A meetings and the more often they talked with school heads and class teachers about their children's performance at school. This affirms that the educated and economically stable parents show greater concern for the academic progress of their children than poor parents with low level of education and low paying jobs, (Orodho, 1996)

Khale and his associates (1985) single out poverty as the overriding factor affecting the attitude of many young children towards science. Poverty restricts a range of experience that lays the cognitive groundwork for later interest achievement in sciences. The findings that girls have

more positive attitude than boys in disadvantaged communities have implication that girls have more experience than boys in these communities.

2.4 Studies in a number of African countries have found a strong association between resources and students' achievements. For secondary schools, sciences' teaching/ learning resources, the laboratory occupy a central and distinctive role in education. Studies have been conducted comparing the effects of methods of practical work in laboratory experiments with other instructional method over the past decades. Counter (1996), compared inductive laboratory experiments with inductive demonstration in high school biology. The uniqueness of practical work lies principally in providing students with opportunities to engage in process of investigation and enquiry.

"The laboratory gives students appreciation of the spirit and methods of science ----- promotes problem solving, analytical and general ability ----- provides students with some understanding of the nature of science" Ansabel (1968)

Considering gender differences, some aspects of behaviors of boys and girls in practical lessons have been documented. The findings from Gist -Project reveal that there is a differential participation between boys and girls during practical work in science laboratory and workshops, (Whyte 1984a, 1984b). In a mixed class, boys "hug" apparatus and materials (especially where there is shortage), take risk with equipments that may seem dangerous and get attention of the teacher. In contrast, girls "loose out" in the use of apparatus and materials, in getting attention, hesitate to take risk that may seem dangerous with apparatus (Twoli, 1986). This sort of behavior

and interaction in laboratory is likely to result in differential accomplishment of the laboratory related goals between boys and girls.

Availability of textbooks has been highly associated with performance. Studies conducted in third world countries like Thailand, Ghana, Uganda indicate that access to reading materials were positively related to students' achievement (Farell, 1983). The data from India and Chile indicated that the textbooks scarcity contributes more to poor performance compared to other factors. Majority of science educators believe that supplementary reading materials can improve the quality of science instructions, ( Hard ,1996)

In conclusion, Orodho (2005) illustrates that four composite variables, namely type of schools, school's resources, teacher and students' characteristics influences students' achievements in sciences subjects. By making primary Education free ( by Kenyan Government) from January 2003 and secondary Education free from January 2008, it is hoped that the handicaps that are inherited by being poor have been removed hence improved performance in sciences is expected.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 INTRODUCTION**

This chapter looks at the research design, the target population, the sample and sampling procedures, research instruments and data collection and analysis techniques the researcher intend to use or apply in the study.

#### **3.1 DESIGNS AND LOCALE OF THE STUDY**

This was a case study of performance in secondary schools in Kiharu division, Muranga District, Kenya. The division has a total of 18 secondary schools. Out of these, 1 is boys' boarding school, 2 girls' boarding, 1 mixed boarding and the other 14 are mixed day schools. The researcher interacted with teachers, students and Principals of the sampled schools. The researcher interviewed Q.A.O, Muranga district, Kenya.

#### **3.2 SAMPLE SELECTION AND SIZE**

The study covered 5 schools out of the 18 secondary schools in the division. In these schools the researcher intends to use 22 science teachers, 5 principals and 120 students in the sampled schools. The schools sample was 1 boys' boarding school, 1 girls' boarding, 1 mixed boarding and 2 mixed day schools.

#### **3.3 RESEARCH INSTRUMENTS**

The researcher used mainly two types of research instrument on collection of the data on factors that influence the students' performance in sciences in Kiharu Division, Murang'a

District, Kenya. There was questionnaires to principals, teachers and students and also held an interview with Q.A.O. Murang'a District, Kenya.

### **3.4 DATA COLLECTION PROCEDURES**

The researcher applied for permission from D.E.O Murang'a district to carry out the research in the district. He then applied for appointments from the sampled schools before data collection.

### **3.5 DATA ANALYSIS**

Descriptive statistics was used to analyze data. It involved calculating frequencies and percentages to analyze research questions. The information was then represented graphically using appropriate methods for example pie-charts, bar-graphs, tables among others where need be.

## CHAPTER FOUR

### PRESENTATION AND DISCUSSION OF FINDINGS

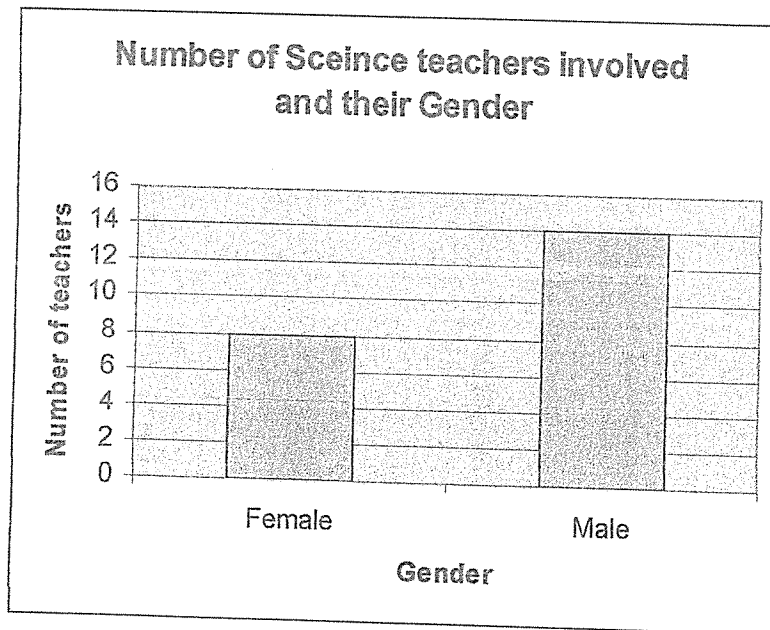
#### 4.0 INTRODUCTION

This chapter deals with analysis of data as the researcher experienced them in the field. The main data analyzed are those relevant to the aims and objectives of the study.

The schools are broken into 3 categories namely:-

- A - District day mixed
- B - District day/ boarding
- C - Provincial boarding school.

##### 4.1.1 Number of sciences teachers involved and their gender.



64% science teachers used in the research were males. This was equivalent to 14 teachers. The remaining 36% accounting for 8 teachers were females

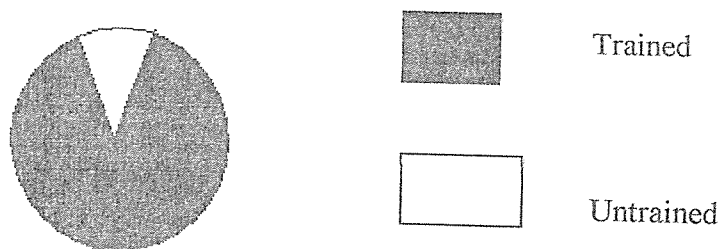


#### 4.1.2. Teachers qualification

Teachers qualification	Percentage %
M (Ed)	0
B E D (Sci)	55
Untrained graduate	5
Diploma	32
S1	8
Total	100

More than half of science teachers were found to be BED (Science) holders whereas 32% of teachers had Diploma qualification. Untrained graduates and S 1 accounted for only 13% of the teachers where as there was no masters qualification in the group used.

#### 4.1.3 Training status of science teachers



Majority of science teachers representing more than 90% were trained. Only a small fraction representing less than 10% were found untrained. The untrained were mainly university graduates from other fields other than teaching

#### 4.1.4 Staffing status according to principal

Type of school	Staffing status	
	Adequate	Inadequate
A		✓
B	✓	
C	✓	

Majority of the schools visited reported that they had adequate number of science teachers. This represented 66%. However about 34% of the principals reported inadequacy of science teachers.

#### 4.1.5. Subject teachers' composition

Subject	Tally	Frequency
Biology	HH HH	10
Chemistry	HH HH II	12
physics	HH I	6
Total		28

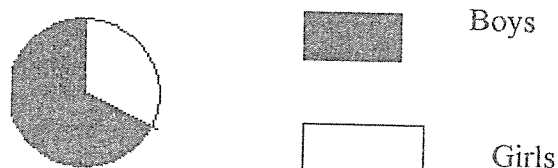
Chemistry had the highest number of teachers (43%), followed by Biology 35% and physics last with 22%. This could explain why many schools offered chemistry to majority of students.

#### 4.1.6. Teaching experience

Experience	Tally	Frequency
0 – 5 years	IIII	4
6 – 10 years	IIII III	8
11 – 15 years	IIII II	7
over 15 years	III	3
Total		22

Majority of teachers representing 68% of them participated in the research had 6-15 years teaching experience. Those with less than 5 years were 4 teachers representing 13% while 18% were over 15 years' experience.

#### 4.2.1 Students involved in the study



About 70% of students in the study were boys while girls accounted for about 30%

#### 4.1.2. Class population in the year 2007

##### 4.1.3.

School type	Class size	Mean size
A	1	50
	2	55
	3	48
B	1	40
	2	42
C	1	45

In school category A, the classes were ranging from 48-55 students and the mean class size was 51 students. The mean for category B was 41 while that of C was 45. Classes above 45 were felt unmanageable while 40 were considered manageable.

#### 4.3.1 Levels of education of parents.

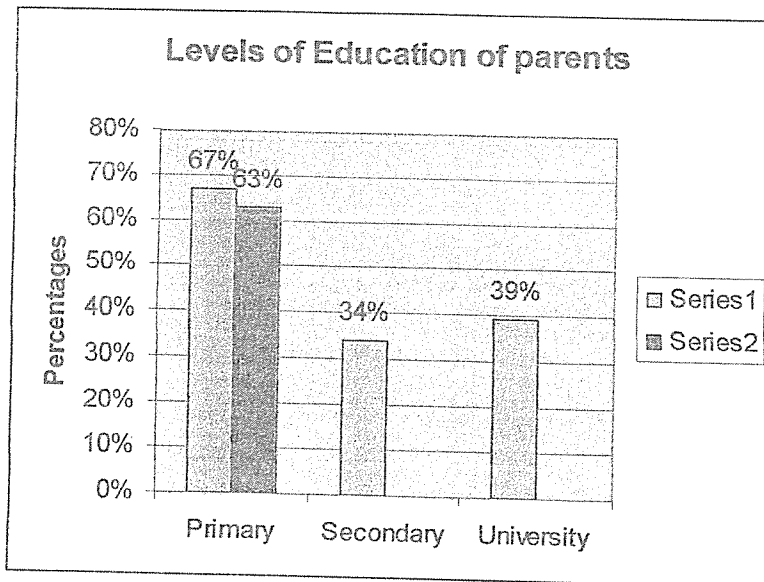
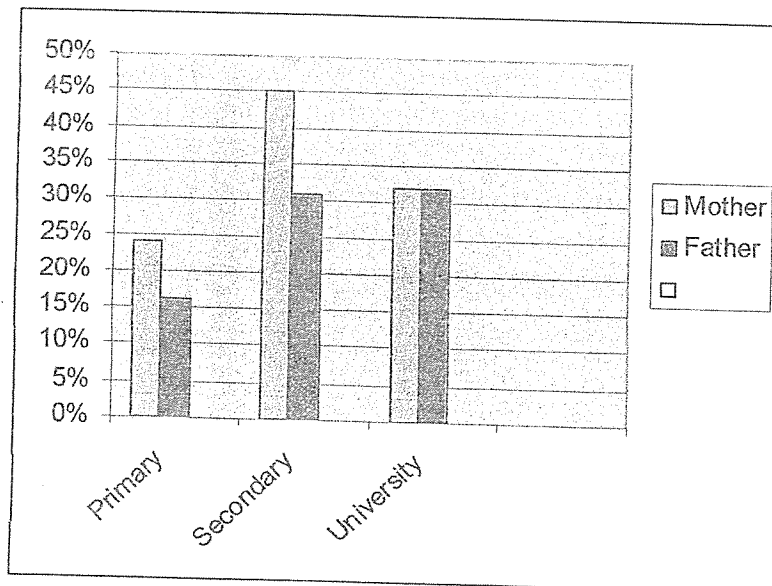
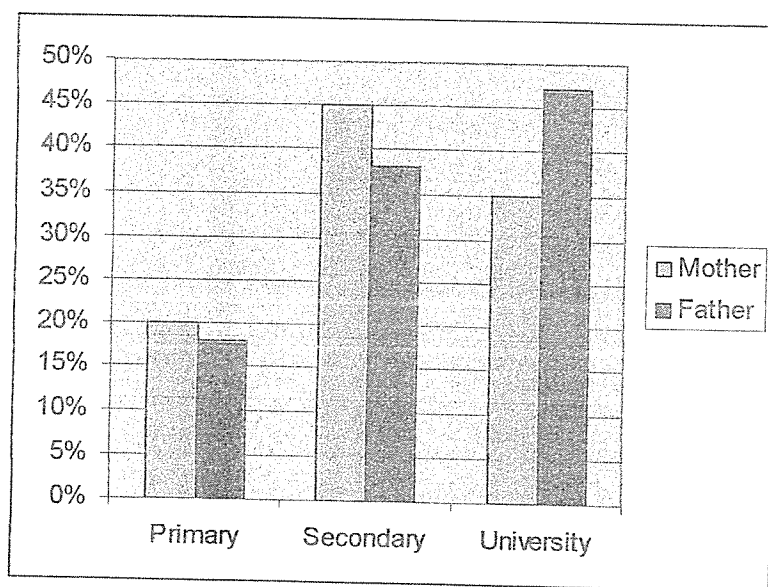


Figure 3(a) – levels of education of parents in school category A.



Primary Secondary University



In school category A, the percentage of fathers and mothers with primary education 68% and 67% respectively whereas fewer mothers (34%) has secondary education category education compared to fathers 39%. In school category B, mothers fared well in primary and secondary and were equal at university level with fathers. In category C fathers were better at universities (47%) compared to mothers 35%.

#### 4.3.2 Parents' attendance to school open days

School category	Attendance Rating %			Total %
	Very good	Good	Poor	
A	21	30	49	100
B	28	34	38	100
C	51	37	11	100

Parents of category C school were generally good in attendance of meetings in schools compared to category B and A. only 11% of category C parents returned poor results compared to 38% (B) and 49% (A)

#### 4.3.3 Private studies at home during holidays?

School category	Students response		
	Yes	No	Total
A	21	79	100
B	41	59	100
C	69	31	100

Majority of Category C students (69%) had private tuition at home compared to 41% for B and 21% for A. this could explain the good performance of students in category C

#### 4.4.1 Textbook to student's ratio.

School type	Chemistry	Biology	Physics
A	1:5	1:4	1:5
B	1:3	1:3	1:2
C	1:2	1:3	1:2

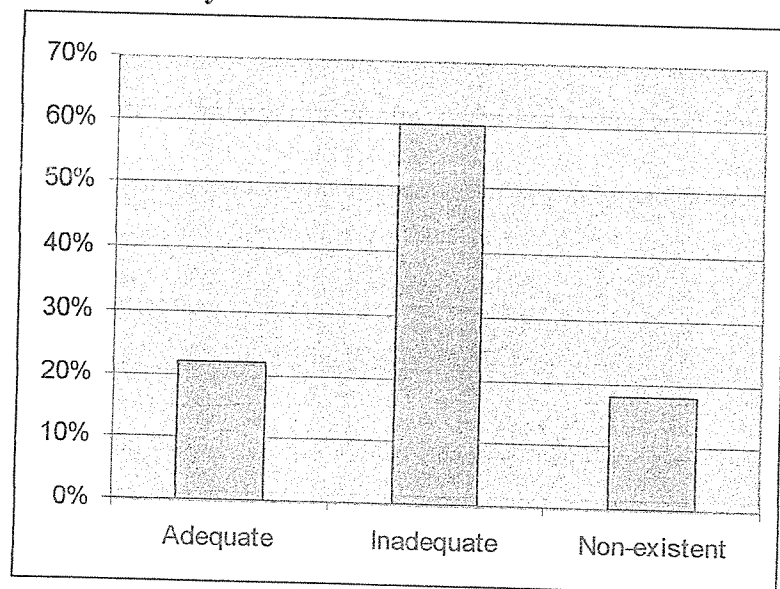
In Chemistry C had the best ratio of 1:2 compared to B of 1:3 and A of 1:5. in Biology C again was the best with 1:3 same as that of B and A was 1:4. B and C had a better ratio in Physics of 1:2 compared to A of 1:5

#### 4.4.2 Status of science laboratory.

School category	Status	Frequency	Existence of water system	Existence of gas system	Existence of fume chamber
C	Well equipped	2	✓ ✓	✓ ✓	✓ X
B1	Semi equipped	2	✓ ✓	✓ ✓	X X
A1	Under equipped	1	X X	X X	X X
A2	Non existence	1	XX	XX	XX

Category A schools laboratories missed essential items for example water systems, gas system and gas chamber, whereas C was well equipped. Category B had gas and water system but not fume chamber

#### 4.4.3. Library



Only 22% of students believed science reference books were adequate while 60% were inadequate and 18% were non-existent

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS

#### 5.0 INTRODUCTION

This chapter deals with summary, interpretations and recommendations made by the researcher as per objective of the study. The researches is suggestion for further research in performance in sciences is also highlighted in this chapter.

#### 5.1 SUMMARY AND CONCLUSION

After analysis of the questionnaires and interview schedules the following factors were found to have contributed to the students performance in sciences in Kiharu division, Murang'a district, Kenya :-

5.1.1 Teachers qualification does not contribute towards the performance in sciences. However the experience of a teacher does contribute to good performance of the science subject one is handling. Where the ratio of teachers to student was favorable, student did better in sciences.

5.1.2 High classroom populations exceeding 50 students do contribute to poor performance in sciences. Given the laboratory facilities inadequacy in most schools the high classroom population cannot be adequately catered for in laboratory lessons hence students end up ill prepared in hands on activities. The teachers are compelled to teaching big classes theoretically during double lessons. When teachers do not handle the practical components of sciences adequately the candidates end up scoring grades lower than C+. Boys generally were found to perform better than girls in sciences. The boys were also reported to handle apparatus in



laboratories much better and courageously than girls .This courage gave them more confidence hence performed better.

5.1.3 The social economic status a family of a student contributes greatly to the performance in sciences. Well up parents and guardians afford extra learning materials ,private tuition, and pay more attention to the progress of their children in school .This result to increased performance in the sciences .Educated parents understand educational issues better hence are more responsive to students needs in schools .These educated parents also motivate their children and their impacts positively in the performance of sciences.

5.1.4 The availability of textbooks and variety of reference books available in schools' libraries strongly contribute to good performance in sciences .In those schools where only one type of textbook was used the students performance in sciences were found to be fairly low. The schools where the ratio of textbooks to students was low, the candidates' quality grades in sciences were many. The existence and facilities adequacy of the laboratories do contribute to good performance in sciences. In those schools where laboratories are well equipped, gas system, water system and fume chamber are operational; the students tend to do well in sciences. In schools where the laboratories are under equipped, water system and gas system are non-existent, most students had low motivation to do science practical ending up to scoring dismally in K.C.S.E

## 5.2 RECOMMENDATIONS

In order to improve sciences' achievement in KCSE examinations in Kiharu division, Murang'a district, Kenya, in future, the researcher wish to propose the following recommendations:-

5.2.1 The government of Kenya through the T.S.C should employ more science teachers to cater for the shortfall as the ratio indicated. The SMASSE in-service courses should be better coordinated. The trainers in these courses should be well trained and well versed with their topics in order to motivate the teachers to avoid absenteeism.

5.2.2 Principals should desist from admitting more than authorized students per class. This will improve the teacher-pupil interaction and the teacher be enabled to give individualized attention where necessary. The teacher will equally be encouraged to give adequate assignments, tests, practical in preparation and readiness for the final examinations. Deliberate efforts should be put in place to motivate girl child to do better in sciences. Lady Counselors, lady professionals in fields of science and others in science related coursed should be invited to talk to girls. The girls will try to emulate them as their role models hence improved performance in sciences.

5.2.3 The Government of Kenya should increase the amount allocated to school bursaries to assist poor families. C.D.F bursary fund should also be increased and their allocation be transparent such that only needy cases are assisted. To ensure transparency, these bursaries should be sent to schools and teachers left to allocate to the government should start a fund to give loans to poor families to start income generating activities in order to support education needs of their children.

5.2.4 The schools' PTA, B.O.G , sponsors and any other agencies should provide adequate laboratory rooms, facilities, chemicals and employ qualified technicians to man the laboratories. The old laboratory rooms should be given a face lift to ensure that the water system, gas system, fume chamber and drainage are fully operational or in place. The school administration with assistance of the local communities and parents should endeavor to expand and improve libraries. The sciences reference books by all the authors in the market should find their place in the libraries. The sciences' encyclopedia and sciences' practical manuals should also be available in the libraries. The schools should ensure that there are adequate revision K.C.S.E past papers, different district mocks papers with their marking schemes in the libraries.

### 5.3 SUGGESTION FOR FURTHER RESEARCH

The researcher would suggest for more research to be done in this area since problems in sciences are dynamic. Other factors other than the ones researcher concentrated on can be researched on e.g. entry behaviour, performance in mathematics, attitude etc. Such research would address future problems more thoroughly.

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## APPENDIX A

### STUDENTS' QUESTIONNAIRE

Please respond to all the questions honestly. Do not indicate your name. Use tick where applicable.

1(a) How many teachers are there in your school in:-

Biology ☐

Chemistry ☐

Physics ☐

(b) How do you rate the teaching of your science teacher in class?

Below average ☐

average ☐

Above average ☐

2(a) How many are you in your class?

1 – 25 ☐

26 – 40 ☐

40 – 50 ☐

Above 50 ☐

(b) What is your gender?

Male ☐

female ☐

(c) Do you perform better in science than other subjects

Yes ☐

No ☐

(d) Are science exercise books regularly marked?

Yes ☐

No ☐

3(a) What is your parents'/guardians' level of education?

Mother: University ☐

Secondary ☐

Primary ☐

Not sure ☐

Father University ☐

Secondary ☐

Primary ☐

Not sure ☐

☐

☐

(b) My parents attendance to school open days is:-

Very good ☐ Good ☐ Poor ☐

(c) I always discuss my report form with my parents:-

Yes ☐ No ☐

(d) Do you have private teachers at home during holidays to assist you improve science?

Yes ☐ No ☐

4(a) Is there ☐ laboratory in your school ☐

Yes ☐ No ☐

(b) During double lessons, we always do practicals in the laboratories:-

Yes ☐ No ☐

(c) Our school has a library:-

Yes ☐ No ☐

(d) What is the status of science reference books in the school library?

Adequate ☐ inadequate ☐ Non-existent ☐

(e) My performance in science at end of year 2007 District examinations were as follows:

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Subject												
Chemistry												
Biology												
Physics												

Thank you for your co-operation

## APPENDIX B: TEACHER'S QUESTIONNAIRE

Please respond to all the questions honestly. Do not indicate your name. Use tick where applicable.

1(a) which science subject(s) do you teach?

Chemistry

☐

Biology

☐

Physics

☐

(b) What is your training status?

Trained

☐

Untrained

☐

(c) What is your teaching experience?

0 – 5 years

☐

6 – 10 years

☐

11 – 15 years

☐

Over 15 years

☐

(d) What is the average ratio of teacher to student in the following classes?

Chemistry

☐

Biology

☐

Physics

☐

(e) What is your teaching load in lessons?

Less than 15

☐

15 – 22

☐

23 – 28

☐

above 28

☐

2(a) What is the average science class size?

1 – 25

☐

41 – 50

☐

26 – 40

☐

Above 50

☐

(b) Comment on the comparison between performance of boys and girls in sciences (if school mixed):-

Boys perform better

☐

Girls perform better

☐

Boys and girls perform equally

☐

3 How does the social economic status of a family of a student affect his/her performance in sciences in your classes? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4(a) What is the status of school laboratory?

Well equipped ☐ under equipped ☐

Semi equipped ☐ Non existent ☐

(b) Are these facilities operational in the laboratory?

Fume chamber: yes ☐ No ☐

Gas system: Yes ☐ No ☐

Water system: Yes ☐ No ☐

(c) What is the status of science reference books in the school library?

Very adequate ☐ Inadequate ☐

Adequate ☐ Non – existent ☐

(d) What is the textbook ratio in your subject ( text book: student)?

Chemistry Biology Physics

(e) Give a summary of performance in sciences in your class in KCSE 2007/District mock 2007.

Grade Subject	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	MEAN	GRADE
Chemistry														
Biology														
Physics														

Thank you for your co-operation



## APPENDIX C: PRINCIPAL'S QUESTIONNAIRE

Please respond to all the questions honestly. Do not indicate your name or the name of your school. Use tick where applicable.

1(a) Indicate the category of your school:-

	Boarding	Day	Day And Boarding
Boys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Girls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mixed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(b) How many science teachers are there in your school?

Chemistry	<input type="checkbox"/>	Biology	<input type="checkbox"/>	Physics	<input type="checkbox"/>
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(c) How many science teachers hold?

Med	<input type="checkbox"/>	Diploma	<input type="checkbox"/>
BEd (sci)	<input type="checkbox"/>	SI	<input type="checkbox"/>
Untrained graduate	<input type="checkbox"/>		

(d) What is the status of science staffing

adequate	<input type="checkbox"/>	inadequate	<input type="checkbox"/>
----------	--------------------------	------------	--------------------------

(e) Does your science teachers and students participate in SMASSE seminars / contest and science congress / contests

Teachers :	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Students	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

2(a) what is the average population per class in your school?

☐

1-25  41-50  
 26-40  above 50

(b) What is the gender composition in your school?

Boys  Girls

(c) How do you compare the performance of boys and girls in science in your school (if school is mixed)?

Boys perform better   
 Girls perform better   
 Boys and Girls perform equally

3(a) indicate the social economic status of your school's parents on average

High income group  Low income group   
 Middle income group  Others (specify) \_\_\_\_\_

(b) Is there holiday or in-school remedial teaching in your school?

Yes  No

(c) How do you rate school's parent in meeting their financial obligations in your school activities:

Very good  Fair   
 Good  Poor

4(a) Indicate the facilities available in your school:-

Library  Computer room   
 Laboratory  Workshop   
 Games field  Other (specify) \_\_\_\_\_

(b) What is the status of science textbooks in your school?

Adequate

☐

Inadequate

☐

(c) Apart from class textbooks, do you get funds to acquire science revision materials in your library?

Yes

☐

No

☐

(d) What were the mean scores in the science subjects for the last four years?

Subject/year	2004	2005	2006	2007
Biology				
Chemistry				
Physics				

Thank you for your co-operation

**APPENDIX D: Q.A.O'S QUESTIONNAIRE**

1(a) What is the total population of science teachers in Kiharu division, Muranga district?

(b) What is the total population of students in the division? \_\_\_\_\_

(c) Comment on the teacher to student ratio in science in Kiharu: \_\_\_\_\_

(d) How do you rate the professional preparedness of science teachers in Kiharu division out of 10 in:

Theory lessons?

Laboratory lessons?

2 (a) What is the average class size in Kiharu division schools?

1 – 25

41 – 50

26 – 40

Above 50

(b) Comment on the gender composition of the classes in Kiharu division: \_\_\_\_\_

(c) How does class size and gender composition influence performance in sciences?

3(a) How do you rate the social economic status of parents in Kiharu division?

High income group

Low income group

Middle income group

others (specify) \_\_\_\_\_

(b) How has social economic status of parents/guardians affected the performance in sciences? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4(a) How do you view the general status of schools' laboratories in Kiharu division?

Well equipped

Fairly equipped

Under equipped

(b) What is the general status of school libraries in Kiharu division?

Adequately stocked

Inadequately stocked

(c) What is your comment on availability of relevant science textbooks and revision materials in Kiharu division?

Adequate

Inadequate

Comment

\_\_\_\_\_

(d) How were the schools' performances in Kiharu division in the year 2007?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## APPENDIX E

PERMISION LETTER:

TO D.E.O, MURANG'A DISTRICT

JULIUS MUIRURI KAGOCHI

BED/ 13440/61/DF

KAMPALA INTERNATIONAL  
UNIVERSITY

17<sup>TH</sup> APRIL 2008

THE D.E.O

MURANG'A DISTRICT

Dear Sir, RE: A SURVEY IN STUDENTS PERFORMANCE IN SCIENCES

I am an undergraduate (in – service) student taking BED (ARTS) in the above mentioned university. I would like to conduct a research in your schools in Kiharu division. I kindly request for your permission.

Thank you

Yours faithfully

KAGOCHI JULIUS MUIRURI

## APPENDIX F

PERMISSION LETTER:

TO THE PRINCIPAL

JULIUS MUIRURI KAGOCHI

BED/13440/61/DF

KAMPALA INTERNATIONAL UNIVERSITY

17<sup>TH</sup> APRIL 2008

Dear Principal

RE: A SURVEY IN STUDENTS PERFORMANCE IN SCIENCES

I am an undergraduate (in-service) student taking BED (ARTS) in the above mentioned university. I would like to conduct a research in your school. I kindly request for your permission.

Thank you

Yours faithfully

KAGOCHI JULIUS MUIRURI



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## **FACULTY OF EDUCATION**

December 11, 2006

### **TO WHOM IT MAY CONCERN**

Dear Sir/Madam,

This is to introduce to you Mr. /Ms. .... Registration No. .... who is a student of our University in the Faculty of Education.

He/She is undertaking a <sup>research</sup> ~~resource~~ project which requires your input as part fulfillment for the completion of his/her programme of study.

I kindly request you to avail him/her with all the necessary assistance.

Thank You.

With kind regards,

**OKIRIMA MICHAEL**  
DEAN, Faculty of Education  
Kampala International University

