

**EDUCATIONAL RESOURCES UTILIZATION AND THEIR EFFECT ON  
STUDENT PERFORMANCE IN PUBLIC SECONDARY SCHOOLS: A CASE  
OF MT. ELGON DISTRICT**

**BY**

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**DECLARATION**

**DECLARATION BY THE CANDIDATE**

This thesis is my original work and no part of this thesis has been presented for any degree in any university.

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## **DEDICATION**

This Thesis is dedicated to my father Aloysius L. Muchinyi for his continued encouragement as to the pecuniary and non-pecuniary benefits of education, to my wife Priscilla N. Mutala for her support and patience during my study and to my children Edwin Wanyangu, Benedict Wanyangu, and Stanslaus Wanyangu for you were a source of inspiration to me.

## ABSTRACT

The purpose of this study was to assess the effect of educational resources utilization on student performance in public secondary schools in the year 2004.

The objectives of the study were to determine the effect of efficient utilization of educational resources, and the effect of teacher qualification and experience on student academic performance in national examinations.

The study adopted a descriptive research design which described the sample in order to determine the current levels of efficiency in public secondary schools. The target population comprised all public secondary schools of Mt. Elgon District. The researcher used the cluster random sampling technique to group the schools into three groups. Simple random sampling was then used to select one group which formed the study sample of six schools out of the twenty. Simple random sampling was used to select a representative sample of 262 (53.4%) respondent students out of 1637 students in the six schools. Purposive sampling was used to include the Head teachers, Deputy Head teachers and Director of Studies among the sample of teachers 39 (48.15%) from the selected schools. The Education production function theory underpinned the study and it relates educational inputs to their outputs. The researcher used questionnaires and an interview schedule to collect information from the subjects. Data was analyzed using both descriptive and inferential statistics, The linear regression model was used to determine the contribution of the independent variables to the dependent variable and to test the hypotheses of the study at the 0.05 significant level.

The findings of this study revealed that 69.2% of the schools had all the text books while 30.8% did not, 43.6% of the schools had the required laboratory facilities while 56.4% did not. 81.5% of the teachers had a teaching experience of more than three years while 18.5% had a teaching experience of less than three years.

The study concluded that there was need for more efficient utilization of educational resources if student performance was to be improved significantly.

The study recommended that because of lack of essential resource inputs in many of the schools, the Government and parents must significantly increase school resources, while low priority should be given to setting up of new schools and instead existing ones should be expanded and the learning facilities greatly enhanced.

## TABLE OF CONTENTS

<b>DEDICATION</b> .....	<b>3</b>
<b>ABSTRACT</b> .....	<b>4</b>
<b>TABLE OF CONTENTS</b> .....	<b>5</b>
<b>LIST OF TABLES</b> .....	<b>8</b>
<b>LIST OF ACRONYMS AND ABBREVIATIONS</b> .....	<b>10</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>11</b>
<b>CHAPTER ONE</b> .....	<b>12</b>
1.0    INTRODUCTION.....	12
1.1    BACKGROUND TO THE STUDY .....	12
1.3    STATEMENT OF THE PROBLEM .....	14
1.4    PURPOSE OF THE STUDY .....	15
1.5    OBJECTIVES OF THE STUDY.....	16
1.6    RESEARCH QUESTIONS .....	16
1.7    HYPOTHESIS .....	16
1.8    THEORETICAL FRAMEWORK.....	17
1.8.1  The Education Production Function Theory .....	17
1.9    CONCEPTUAL FRAMEWORK.....	19
1.9.    JUSTIFICATION OF THE STUDY .....	20
1.9.    JUSTIFICATION OF THE STUDY .....	21
1.10   SIGNIFICANCE OF THE STUDY.....	21
1.11   SCOPE OF THE STUDY .....	22
1.12   LIMITATIONS OF THE STUDY.....	22
1.13   ASSUMPTIONS OF THE STUDY.....	23
1.14   DEFINITION OF TERMS .....	23
1.15   ORGANIZATION OF THE REST OF THE STUDY .....	24
<b>CHAPTER TWO</b> .....	<b>25</b>
<b>2.0    LITERATURE REVIEW</b> .....	<b>25</b>
2.1    INTRODUCTION .....	25

2.2	FINANCING OF EDUCATION .....	25
2.3	OPERATIONAL EFFICIENCY IN SCHOOLS .....	32
2.4	TEACHERS INFLUENCE ON STUDENT PERFORMANCE .....	34
2.5	EFFECT OF TEXTBOOKS ON STUDENT PERFORMANCE .....	36
2.6	EFFECT OF LABORATORY FACILITIES ON STUDENT PERFORMANCE 39	
2.7	STUDENT BACKGROUND AND SCHOOL PERFORMANCE .....	40
<b>CHAPTER THREE.....</b>		<b>43</b>
<b>RESEARCH DESIGN AND METHODOLOGY .....</b>		<b>43</b>
3.1	INTRODUCTION .....	43
3.2	RESEARCH DESIGN .....	43
3.3	TARGET POPULATION .....	43
3.4	SAMPLING DESIGN AND SAMPLING SIZE.....	44
3.5	DATA COLLECTION METHODS .....	46
3.6	VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS .....	46
3.6.1	VALIDITY OF RESEARCH INSTRUMENTS .....	46
3.6.2	RELIABILITY OF RESEARCH INSTRUMENTS .....	47
3.7	DATA ANALYSIS .....	48
<b>CHAPTER FOUR .....</b>		<b>49</b>
<b>4.0 DATA ANALYSIS INTERPRETATION AND PRESENTATION.....</b>		<b>49</b>
4.1	INTRODUCTION .....	49
4.2	DESCRIPTIVE STATISTICS.....	49
4.2.1	Background information on secondary schools of Mt Elgon District. ....	49
4.2.2	STUDENT INFORMATION .....	67
4.2.3	Results of the correlation Analysis .....	72
4.2.4	Analysis of Variables in The Linear Regression Model .....	74
4.3	Hypothesis Testing.....	76
<b>CHAPTER FIVE .....</b>		<b>82</b>
<b>SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS. ....</b>		<b>82</b>
5.1	Introduction .....	82
5.2	Findings of the Study .....	82

5.3 Conclusion of the Study .....	85
5.4 Recommendations of the study.....	88
5.5 Suggestions for further research .....	89
<b>REFERENCES .....</b>	<b>90</b>
<b>APPENDICES .....</b>	<b>95</b>
APPENDIX I.....	95
APPENDIX II.....	98
APPENDIX III .....	100
APPENDIX V .....	102

## LIST OF TABLES

Table 1:Categories of secondary school in the district.....	29
Table 2:Data on school enrolment.....	30
Table 3:Periods when the schools were established.....	34
Table 4:School operations.....	35
Table 5:Category of secondary schools under study.....	35
Table 6:Gender of teachers.....	36
Table 7:Teacher qualification .....	37
Table 8:Teacher experience.....	37
Table 9:Employment of highly qualified teachers.....	38
Table 10:Availability of class textbooks.....	39
Table 11:Availability of other teaching and learning materials.....	40
Table 12:Availability of laboratory facilities.....	41
Table 13:Employment of qualified laboratory technician.....	42
Table 14:Availability of facilities in schools.....	43
Table 15:Admission of students with high KCPE marks.....	44
Table 16:Student absenteeism.....	45
Table 17:Syllabus coverage.....	46
Table 18:Fees payment.....	46
Table 19:Factors causing poor performance in Mt Elgon district.....	48
Table 20:Facilities available in schools.....	50
Table 21:Student gender.....	51
Table 22:Parents status.....	52



Table23:Parents employment status.....	52
Table 24:Students boarding/not boarding status.....	53
Table25:Subject textbook ownership by students.....	54
Table 26:Fees payment by students.....	55
Table29:Simple correlation matrix.....	56
Table 30:Linear regression; the input-output model.....	57
Table31:Hypothesis testing.....	61
Table 32:SPSS-output.....	88

## **LIST OF ACRONYMS AND ABBREVIATIONS**

FPE	-	Free Primary Education
EPF	-	Educational Production Function
MT	-	Mount
KSSHA	-	Kenya Secondary School Heads Association
TSC	-	Teachers Service Commission
KCSE	-	Kenya Certificate of Secondary School Education
KCPE	-	Kenya Certificate of Primary Education
GDP	-	Gross Domestic Product
SPSS	-	Statistical Package for Social Sciences
CEE	-	Central and Eastern European Countries
OECD	-	Organization for Economic Cooperation and Development
MOE	-	Ministry of Education, Kenya
KNEC	-	Kenya National Examination Council
LCDs	-	Less Developed Countries
UNESCO	-	United Nations Educational Scientific and Cultural Organization
BOG	-	Board of Governors of a Secondary school
PTA	-	Parents Teachers Association
CBE	-	Curriculum Based Establishment.

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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

This chapter presents the background to the study, the statement of the problem, the purpose, objectives of the study, the research questions, and hypothesis of the study, the theoretical and conceptual framework, justification, significance, scope and the likely limitations of the study, assumptions and definition of the key terms and the organization of the rest of the study.

### **1.1 BACKGROUND TO THE STUDY**

Good results in examination, is a generally accepted measure of student performance at school. This achievement is as a result of a combination of various educational resources in certain given ratios in order to enable students perform well in both school and national examinations. However persistent poor performances in the Kenya Certificate of Education (KCSE national examinations in Kenya over the years and in particular in mathematics and science subjects has consistently lowered the overall students mean grade. This has given rise to poor examination results in KCSE examination, which is taken at the end of the four-year secondary school cycle.

Student's performance at school has been attributed to many factors such as pupil characteristics, school factors, and teacher characteristics amongst others. (Eshiwani, 1986). Sifuna,(1989) attributes the quality of education in Kenyan schools to the educational background and training of teachers.

Poor performance in KCSE national examination has raised questions about the level, adequacy and quality of educational resources in secondary schools and how these are utilized. Questions as to whether the current level of resource base adequately contributes to better students results, or as to whether it is the way the scarce education resource are combined and used that give rise to such results have been asked. In other words is it the way the available resources are used that give rise to poor performance by students? This then will be a case of the available educational resources not being optimally utilized that is, not efficiently utilized.

As used in education, the term efficiency refers to a relationship of inputs and outputs in an education process or a situation where maximum output is achieved with a given level of resource allocation (Psacharopoulos and woodhall, 1985). This then, calls for an investigation in the way the available educational resources in our secondary school are being utilized and the extent to which they contribute to student performance in national examination. Student achievement in secondary school is directly affected by the level of internal efficiency of the school's operations, which is a situation of achieving a desired level of output at a minimum cost, given a particular level of resource allocation (Psacharopoulos and woodhall 1985). A measure of internal efficiency commonly used is the average cost per unit of output of a given quality, in other words, to what extend do our secondary school produce quality students who score quality grades.

The Kenya Government allocates a substantial portion of the national budget to education because education has been viewed as an engine of economic growth and development, it is therefore imperative that a study be done to determine the internal efficiency of our

secondary schools and how education resources affect student achievement in national examinations considering the national resources devoted to education. For instance in 2004 about 34% of the annual budget was allocated to the education sector, out of this about 80% of this amount went to paying salaries of Ministry of Education ( M.O.E) employees and teachers, and only about 20% was left to cater for learning resources. (Ongwae, 2004). The Secretary to the Teacher' Service Commission (TSC), in a paper presented to the Kenya Secondary Schools Heads Association (KSSHA) National conference held at Kasarani Nairobi reiterated that over the past five years, government allocation of funds to the MOE grew from Kshs. 41.6 billion to Kshs. 78.6 billion in 2004. This amount on average was about 34% of the total government expenditure / national budget and about 6.5% of the Gross Domestic Product (GDP). He further noted that at independence the country had 30,121 students with 1602 teachers in public secondary schools. By 1998 student enrolment in secondary schools had grown to 474,000 against a teacher population of 43,398 teachers. In 2004 the student population in secondary schools stood at 694,000 students against 44,000 teachers in about 3,000 secondary schools across the country. The Government has projected that by 2008; there will be 805, 563 students in secondary schools being manned by about 47,000 teachers. [Ongwae,2004;9].

### **1.3 STATEMENT OF THE PROBLEM**

Poor performance in national examinations in our secondary schools has been a source of concern to parents, politicians, policy makers, educationists and other stakeholders. Good performance in examinations is a judicious mix of physical and human resources. These resources must be utilized judiciously to enhance performance. In our secondary schools

the parents are responsible for the provision of learning materials such as books, desks, classrooms, laboratories, libraries, dormitories and other learning facilities. The government on the other hand hires teachers, provides the curriculum and the necessary policies for schools to run and achieve their mandate. The school administrators viz; the BOG, the PTA and the school principals are vested with the responsibility of ensuring that teaching and learning takes place. The principal in particular has to ensure that, the authorized syllabus by the (M.O.E) is properly covered by the teachers, and the resources provided by parents and government are employed in a manner that the school objectives are attained. This will involve budgeting and utilization of financial inputs that will enhance performance. The human resource, the teachers are also critical in this process and must be efficiently and effectively utilized. Efficient utilization of educational resources invested will no doubt translate to achievement of good examination results among other objectives of the schools.

This study therefore sought to determine the relationship between efficient utilization of educational resources and student academic performance, how the current level of resources in secondary schools contribute to student achievement in national examinations.

#### **1.4 PURPOSE OF THE STUDY**

The purpose of this study was to determine the effect of resource utilization on student academic achievement in public secondary schools of Mt Elgon District and suggest possible ways that would enhance more efficient usage of education resources in secondary schools in the district in order to optimize education outcome.

## **1.5 OBJECTIVES OF THE STUDY**

1. To determine the extent of educational resources utilization on student performance at the secondary school level.
3. To assess the extent to which teacher qualification and years of experience enhance student performance in examinations.
4. To examine the relationship between the student's KCPE entry marks and their school performance
5. To examine the effect of syllabus coverage on student performance in national examinations.

## **1.6 RESEARCH QUESTIONS**

The study sought to answer the following questions.

1. To what extent does educational resource utilization affect student performance in Mt Elgon District ?
2. How does the teachers qualifications and years of experience enhance student performance in examination in Mt. Elgon District ?
3. To what extent does the student's KCPE entry marks determine their school performance. in national examinations ?
4. How does the syllabus coverage affect student performance in national examinations?

## **1.7 HYPOTHESIS**

The hypotheses of the study was stated in the null form as follows :



1. There existed no relationship between efficient utilization of educational resources and student achievement in examinations in Mt Elgon District. ( $H_0$ )

## **1.8 THEORETICAL FRAMEWORK**

### **1.8.1 The Education Production Function Theory**

The Education Production Function [EPF] was used in this study. The EPF theory is derived from the general production function theory, which explains the relationship between inputs and outputs of a firm. The EPF theory states that education outcome(s) is a function of a variety of inputs invested into the education process. The inputs include the innate abilities of the learners, resources such as learning materials, textbooks, teachers, laboratory facilities, and physical facilities e.t.c. The EPF assumes that differences in student achievement results from the quality and quantity of educational inputs in the education process.

In general, the EPF can be expressed as a linear function vis:

$$S_t = f(B, L, T, M, C)$$

Where

$S_t$  = Student achievement at time t.

$B$  = Textbooks and other teaching and learning materials.

$L$  = Laboratory facilities

$T$  = Teacher's qualification and experience.

$M$  = Student's KCPE entry marks

$C$  = Syllabus coverage.

In assessing the outcome of education however, the cumulative effect of all the education inputs was considered. The students' performance in national examination  $V_1$ , represented the dependent variable, while the various school inputs such as textbooks and other learning materials  $V_2$ , laboratory facilities  $V_3$ , teachers qualification and experience  $V_4$ , the student's KCPE entry marks  $V_5$  and syllabus coverage  $V_6$ , represented the independent variables.

The linear regression model thus becomes

$$V_1 = f(V_2, V_3, V_4, V_5, V_6)$$

When constants are introduced we have;

$$V_1 = (aV_2 + bV_3 + cV_4 + dV_5 + eV_6 + K)$$

Where

$V_1$  = Student performance in national examination

$V_2$  = Text books and other learning materials.

$V_3$  = Laboratory facilities available in school.

$V_4$  = Teacher qualification & experience

$V_5$  = Student's KCPE entry marks

$V_6$  = Syllabus coverage.

$K$  = Y – intercept.

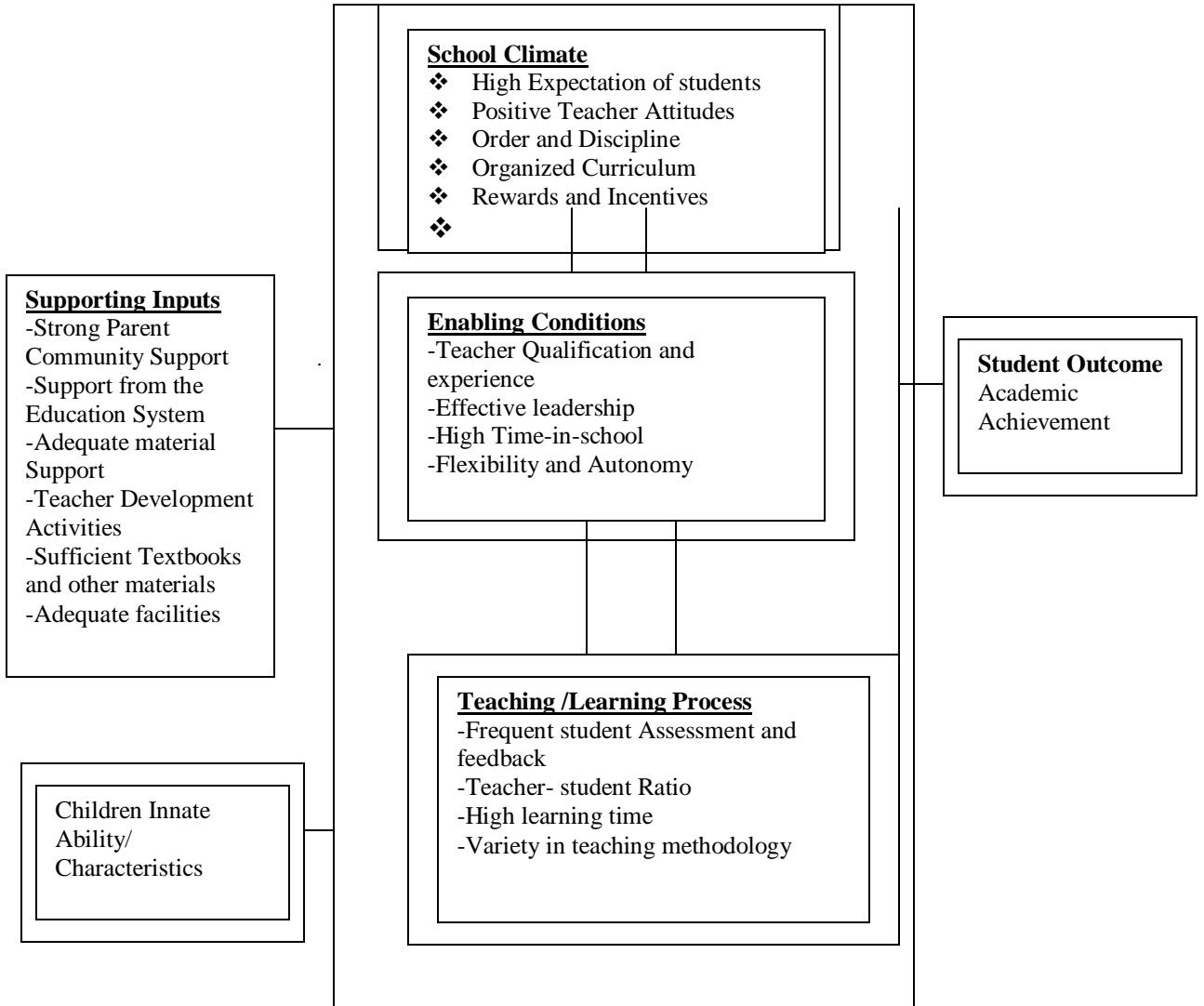
Thus the EPF theory is used to relate and determine the cumulative effect of all the resource inputs that were used in the study in order to determine the student's performance in National examination in Mt. Elgon District, since the theory relates input to output

## **1.9 CONCEPTUAL FRAMEWORK**

The framework consists of a network of sixteen interrelated school factors organized into four groups that influence student outcome.

The figure below shows that, the school itself and its inputs are influenced by the institutional, cultural, economic and political context surrounding it, hence the supporting inputs flow into each school where the enabling condition, school climate and teaching/learning process combine to produce student outcome(s). The student outcome or performance is characterized by student's scores or grades in national examinations.

## Conceptual Framework: Factors That Determine School Effectiveness



## **1.9. JUSTIFICATION OF THE STUDY**

Since public institutions aim at cost savings and improvement of the internal efficiency both technical and economic amid the ever-increasing cost of education and student enrolment, there is need to identify new methods and techniques of utilizing the meager resources more efficiently and effectively. Given this scenario, there is need to seek solutions as to the best way of improving the internal efficiency of secondary schools which in turn would lead to effective teaching and learning. This will enable students improve in their performance in national examinations.

## **1.10 SIGNIFICANCE OF THE STUDY**

The current study is important because of the following;

1. The findings will contribute to the existing body of knowledge with respect to the internal efficiency operations of public secondary schools and in particular on proper resource utilization.
2. The study will offer solutions to the problems of internal efficiency in the use of educational resources in secondary schools.
3. The study will provide an objective assessment of the effect of school inputs at secondary school level on students' performance.
4. The findings will assist school administrators to improve the internal operations of their institutions.

### **1.11 SCOPE OF THE STUDY**

The present study focused on selected public secondary schools in Mt. Elgon District and particularly on the level of school resources available at the time and how this effected student performance in the year 2004.

### **1.12 LIMITATIONS OF THE STUDY**

1. Not all school inputs were included in the study, only data on five variables was captured in the present study and used in the analysis, since it was not possible to include all the school variables in a study like this.

2. The internal efficiency of a school depends to a large extent on the personal characteristics of the individual Head Teacher and as such, it varied from school to school.

3. The study sample was only limited to selected schools in Mt. Elgon District since it was not tenable to carry out a wide study involving a large number of schools beyond the District.

4. The philosophical beliefs of the native community of Mt. Elgon District could influence the native respondents who would not give true and correct information to the researcher. However this aspect was controlled for by the fact that, the researcher has lived in the District for a number of years and so he was able to gain the confidence of the study population through tactful approach and so got the desired information.

### **1.13 ASSUMPTIONS OF THE STUDY**

1.Students' performance in national examinations is an indicator of the quality of education offered by schools.

2.The responded teachers and students were open enough to give the required genuine information.

3.The students learning environment directly affects their school performance.

### **1.14 DEFINITION OF TERMS**

**Education resources** – All resource input in the educational process that facilitate the teaching and learning in schools and include teachers, textbooks, learning materials, laboratory facilities, students, desks, chairs, physical facilities such as laboratories, libraries, classrooms, workshops etc.

**Internal efficiency** – A situation where maximum output is achieved with a given level of educational resource allocation.

**Student performance** – Refers to student out come as measured by grades.

**Grade** – Measurement of student performance on a scale assigned letters A-E and corresponds to 12 – 1 points.

### **1.15 ORGANIZATION OF THE REST OF THE STUDY**

In chapter two literature is reviewed under the following headings: financing of education, Operation efficiency in schools and the effects of education resources on students' performance.

Chapter three contains the research design, target population, sample size and sampling techniques, data collection method, instruments and procedures, validity and reliability of the research instruments and methods of data analysis.

Chapter four contains the results of data analysis and interpretation using descriptive statistics and the hypothesis tested using the t-test of the regression coefficient at 0.05 significant level.

Chapter five contains the discussions, conclusions and recommendations based on the findings of the study.



## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This chapter presents literature related to this study. The review highlights issues such as; financing of education, operational efficiency in schools, effect of educational resources on students performance and student background and school performance. The purpose of literature review is to help the researcher crystallize the problem and show why it is important and hence worthy investigating. The sources of literature review included the following vis: Books, articles, past reports, journals, newspapers, magazines, downloading from the internet among others.

The strength and weakness of these past studies was outlined and hence the position of this study and what it can contribute was established.

#### **2.2 FINANCING OF EDUCATION**

The 1960s and 1970s was a period in which many governments in developing countries were faced with a growing demand for education (Malan,1987). Government particularly in the third world countries were forced to seek financial assistance from developed countries to finance this expansion.

While external assistance to sub-Saharan Africa was geared in the 1960s towards the development of human resource, much of it went into the education sector. With the increase in world population growth over the last thirty years, it followed that expenditure on education was, as a consequence rapidly increased during the same period.

Simons,(1980) observed that: “Halcyon days are over for virtually all educational systems in both industrially advanced and developing nations. In contrast to their favourable ability to levy claims on public resources in the 1950s and 1960s, education managers and their systems would soon be caught in a squeeze between costs and raising budget ceilings.” Todaro, (1988) notes that here has been a tremendous acceleration in public expenditure on education in the Less Developed Countries ( LDCs )during the last three decades. Both the proportion of national income and national budgets spend on education has increased rapidly. In Asia total public expenditure tripled during the 1960s in Africa and Latin America Public expenditure on education more than doubled. By the 1980s educational budget in LDCs were absorbing anywhere between 20% to 30% of total government recurrent expenditure.

Laporte and Ringgold, (1997) in a world bank study in the Central and Eastern European Countries (CEEs) noted that increased educational expenditure has forced governments to adopt different strategies of financing education in their countries. They assert “in order to reduce fiscal burden on central government, countries have opted to privatize and decentralize education systems by devolving fiscal responsibility to households and local governments. Tuition payments have been introduced in some countries while other countries have adopted a mix of public and private financing arrangements” .Studies by OECD, (1968) in Ceylon and Morocco pointed out the need for lowering unit cost in operation of secondary schools. The studies revealed that teacher costs took the largest chunk of total educational costs, for instance teacher cost in primary and secondary education in 1968 alone represented 94% of recurrent expenditure per pupil. The studies

pointed out the need to lower unit costs especially teacher costs, however the studies did not look at the operational efficiency of schools.

Eicher, (1984) in a world Bank study of Sub-Saharan African looked at the potential of reducing unit costs as a way of increasing enrolment within an existing budget and tapping of private resources in order to finance education in the region. The study recommended that there was need to improve the internal efficiency of education systems, if reduction in educational unit costs was to be attained and at the same time maintain quality of education. In other words wastage was to be reduced. The study concluded that though the financial prospects in the poorest countries was bleak, the existing budgets could still be used much more efficiently than at present. This study was at least concerned with improving the internal efficiency of education institutions in order to improve on the quality of education apart from lowering unit cost of education in Sub-Saharan Africa. The current study follows this recommendation.

Todaro (1988) Observes that “Education absorbs the greatest share of LDCs recurrent government expenditure, occupies the time and activities of the greatest number of adults and children that is almost 30 percent of third World population and carries the greatest psychological burden of development aspiration. This then calls for measures that can help reduce the ever-increasing educational cost and at the same time improve the internal efficiency of educational institutions in the third world countries.

Laporte and Ringold, (1997) in their study on social challenges of transition in the CEEs countries found out that during the socialist period, countries in the region established extensive and relatively equitable education and training systems, though they sadly

noted that despite this efforts, efficiency in resource allocation and use was sacrificed at the time. They further noted that expenditure on education as a share of GDP increased throughout the CEEs between 1989-1994 and that spending in the CEEs countries exceeded the OECD mean, for instance in 1993 it was 5.3% of GDP.

Coombs and Hallack,(1972) have argued that education systems all over the world will find themselves increasingly squeezed between resources scarcity and rising unit cost and so they must pursue various courses of action such as:

- i) Introducing modern teaching media
- ii) Utilizing facilities more fully
- iii) Freeing teachers from clerical and housekeeping chores so as to spend more time actually teaching.
- iv) Availing to both teachers and students better tools and materials to use.
- v) Enlarging small classes and educational institutions to more optimum size.

These studies covered a whole country and so were too wide and further the studies never indicated whether their suggestions could be applied to different geographical regions and categories of schools.

Heineman & Loxley, (1983) have observed that since the level of expenditure on education in developing countries is less than in developed countries, it might be expected that this could have a significant impact on school achievement.

The sessional paper No 6 of 1988 pointed out that, Where as the Kenya government spends more than 30% of its recurrent budget on education and training, about 80% of this allocation is spend on administrative and professional Services like paying teachers, Inspectors and development of the curriculum. For instance In 1986/87 financial year the government spend K.shs 5.46 billion about 81% on financing administration and professional services out of the 6.7 billion allocation for the Ministry of Education ( MOE). This left a paltry 19 percent for teaching and learning materials and bursaries for needy students in Secondary schools.

Olembo, J., Okoth, T., and Owiro, K. (1985) in a study on the problems of financing primary education in Kenya noted that in 1967/68, expenditure on primary education was K£.2 million. Which rose to K£ 55.4 million in 1977/78. He further observed that the overall recurrent expenditure of the MOE rose by 45% and 9% between 1979/80 – 1980/81 and 1981/81 – 1981/82 financial years respectively

Olembo (1985) also studied secondary school financing in Kenya. His main focus was on determining the proportional expenditure of both government and parents on such items like tuition fees, development expenditure, boarding fees, maintenance, school uniform and miscellaneous costs. The study found out that where as in 1967/68 the expenditure was K£3.4 million, it rose to K£11.5 in 1977/78. In 1993 expenditure on secondary education had reached a staggering Kshs 18.8 billion (K£ 1.04 million)).

Ongwae,(2004) observed that in the year 2000 the MOE budgetary allocation was Kshs. 41.6 billion (K£ 2.08 billion) and this increased to K.shs 78.6 billion (K£ 3.93 billion) in the year 2004, this represented 34% of the National budget and about 6.5% of the Gross

Domestic Product ( GDD). It's clear from the forgoing figures that, public expenditure on education in Kenya has steadily and considerably been on the increase since independence in absolute amounts as well, as a proportion of the national budget. These amounts cannot be allowed to continue increasing indefinitely hence measures to improve internal efficiency of educational institutions with the aim of bringing down the average unit cost for education should be sought.

The Kenya government through the sessional paper number 6 of 1988 expressed concern on the ever increasing share of education in the national budget. The government saw that in order not to seriously reduce the resources available to meet the growth targets of the economy, the education share in the recurrent budget be reduced to 30% and the gap so created be financed through cost sharing among all the beneficiaries of education. However, the paper did not suggest strategies of coping with the reduced budgetary allocations by schools apart from cost sharing, it never suggested measures that education institutions could adopt in order to improve efficiency in their operations as a result of the reduced budgetary allocation.

Gravenir, (1991) in a study of trends in public financing of education in Kenya from the time of independence to the contemporary period, observed a general trend of a consistent increase in budgetary allocation especially from the national budget to education. The study revealed that total allocation to education as measured in constant prices that are in terms of purchasing power was growing. This meant that students were getting more facilities and increasingly better quality education. However the study warns that, a combination of alternative methods of financing education including cost sharing

and the generation of funds by schools was inevitable. The study was silent on how educational institutions, particularly secondary schools in Kenya can utilize their resources more efficiently in order to lower unit cost of education. The current study focuses on efficient use of educational resources

The Kamunge report of (1988) recommended the need for cost sharing in education as a way of raising additional funds to finance education in Kenya, and since then cost sharing has been introduced in Kenya. Cost sharing is the only option viable of easing the burden of financing public education, therefore the beneficiaries of education must contribute to its funding (Rono, 1988).

Muiya,(1991) pointed out that apart from cost sharing being taken as an alternative source of funds for secondary school financing, there is need for efficient utilization of these educational resources. His study recommended that in order to lower operating costs of secondary schools, students themselves could do such chores as cleaning rooms and dormitories. Though the study did not look at the implications of such strategies on learning.

The (1989-1993) Development Plan points out that

“further studies will be undertaken to establish the cost effectiveness of primary, secondary and tertiary education and the internal consistency, efficiency of the entire education system” (Republic of Kenya 1989-1993;61, Muiya,1991)

From the above statement, this study is quite relevant.

### **2.3 OPERATIONAL EFFICIENCY IN SCHOOLS**

Todaro,(1988:252) observes that in many LDCs, the quality of education offered is low at all levels as noted by a former Deputy Director-General of UNESCO who asserts that learning techniques remain the same: the rote method, the technique of cramming and once the examination menace is passed, of forgetting all the useless impedimenta .....Looked at as a business enterprise, the school and College present a woebegone spectacle. We find in education antediluvian technology, which would not survive for an instant in any other economic sector. The teaching methods and learning techniques are rusty, cranky and antiquated. In other words, differences in methods and curriculum implementation are closely related to inadequate competence and motivation of many teachers who are often underpaid without incentive or opportunity to learn any more themselves than they took in at their start. This situation is no better among education administrators. The Director -General's observation though right at the time, current technological developments have improved both the training of teachers, production of teaching and learning materials and learning methods in most LDCs. In Kenya, new avenues of learning and further training are now available to teachers and education administrators willing to improve on their work skills. The current study aims at suggesting ways of improving on areas of weakness in the school curriculum implementation by suggesting ways of improving on the internal efficiency.

Kiragu, (1986) in a study on efficiency, pointed out the various internal and external efficiency indicators of an education system. In a countrywide study of students' performance in Kenya certificate of education examination for five years (1980-1984), it emerged that failure rates were very high. This indicated internal inefficiencies of the



education system. The study concluded that, there was need for studies on internal and external efficiency of the education system. The current study thus follows this recommendation.

Hartman, (1988) suggests that cost reduction through improved efficiencies does not affect the delivery of instructional programs as the reductions are simply cost saving, which result directly from changes in operating procedures that have little direct impact on student services at least in the short run.

Laporte and Ringold, (1997) in their study on transition in CEEs countries, noted that teacher time was inefficiently allocated through small teaching loads, over specialization of subjects, high number of single subject teachers and teachers relying on supplementary jobs outside the education system. This study however did not suggest ways of improving teacher efficiency as an educational resource.

Psacharopoulos and Woodhall ,(1985:209) suggest that one way of improving the internal efficiency of education in developing countries, is by reducing wastage and repetition. Though they caution that quality as well as quantity must be improved.

Palard and Rumberger, (2004) in a study on effects of school size on student learning, suggest that small schools (less than 600 students) tend to produce higher student achievement and lower dropout rates compared to larger schools (between 601-1200 students).

Arrigazzi and Simons, (1972)) in a study at a time when the Chilean government in the face of limited resources wanted to increase enrolment at secondary level and in technical education from 1218 to 1411. From the survey done on these institutions, it revealed under enrolment of classes and that 13% of teacher hours were spent on non-teaching tasks. It emerged that, there was an urgent need to expand class enrolment and re-deploy or balance teachers. The study clearly revealed that, better management of the limited resources and not more funds to the institutions was the right thing to do towards achieving greater efficiency.

Waihenya, (2001) noted that the cost of running education institutions was exorbitant, and therefore all avenues must be explored for a quick reduction in these costs. Therefore the government's attempt to expand secondary schools from single to double and triple stream was welcome since it would bring in economies of scale and improve internal efficiency of schools.

## **2.4 TEACHERS INFLUENCE ON STUDENT PERFORMANCE**

McMeekin,(1995) and Beebout,(1972) in a world Bank study on determinants of academic achievement, demonstrated that variations in input do affect educational output and among the most important factors are teachers and textbooks.

Husen et al, (1978) in a review of studies in 32 LDCs found evidence that teacher qualification is important and that trained teachers do make a difference.).

Darling and Hammond, (2004) content that teacher training has a significant effect on student performance since teacher content knowledge is the largest and most important

factor when it comes to teaching. Loxley,(1984) found a notable correlation between the length of teacher training and experience, on student performance.

Darling and Hammond,(2004) in a study of high school student performance in mathematics and sciences in the USA, found that fully trained and certified teachers had a statistically significant positive impact on student test scores relative to untrained teachers. He further noted that, inexperienced teachers (those with less than three years of experience) are typically less effective than more senior teachers though the benefits of experience appear to level off after about five years. A possible cause being that older teachers do not grow and learn and may get tired in their jobs.

Eshiwani, (1986) in a study on causes of poor performance in private schools in Kenya found a strong link between lack of trained and experienced teachers and poor student performance. Maundu (1986) concluded that there was a significant correlation between teacher qualification and student achievement in science and mathematics. This was attributed to good instruction given by qualified teachers.

Psacharopoulos and Woodhall, (1985) in a study by the World Bank conducted in Latin America, concluded that students do almost as well when studying under teachers trained in normal schools as they do when taught by University graduates. The study though concluded that, trained teachers do make a difference and in particular, teacher qualification, experience and amount of education and knowledge are positively related to student achievement. This fact is further supported by data collected on student achievement in science in Chile and India which suggested that, if the level of teacher training was increased, the average test scores of pupils in secondary schools would

improve and hence investment in teacher training programs helps to improve the quality of output in terms of student cognitive scores (Husen et al, 1978).

Fuller, (1986) in his study on education in developing countries, noted that in developing countries simple inputs especially those central to instructional process are consistently associated with higher student achievement; and that the quality of third world teachers are related to student attainment, particularly the number of years of tertiary education and teacher training.

Sanders & Rivers, (1996) in a study on effects of teachers on study achievement observed that differences in student achievement of fifty percent points was observed as a result of teacher sequence after only three years, and that the effect of teachers on student achievement are both additive and cumulative. They further noted that as teacher effectiveness increases, lower achieving students are the first to benefit and that teachers facilitate appropriate to excellent gains for students of all achievement levels.

The current study however seeks to determine how, and to what extent do teachers make a difference in student achievement in Mt Elgon District. This is because, some factors that affect learning include, the commitment of teachers.

## **2.5 EFFECT OF TEXTBOOKS ON STUDENT PERFORMANCE**

Eicher,(1984) suggests that student performance in school is affected by the quality of material input offered by the school. This quality can be measured in monetary indices that is to say expenditure per student per class, the teacher – Pupil ratio and the number of pupils per class.

Heyneman et al, (1981) concluded from studies in ten LDCs that achievement is more closely correlated with textbook availability than with other measures of school inputs such as class size or expenditure on teachers' salaries. A study in Peru concluded that school management variables are important along with teacher attributes and physical facilities such as availability of libraries, visual aids and basic equipment such as tables and chairs (Arriagada, 1983)

Fuller, (1986) found out that greater availability of textbooks and reading materials raises the quality of learning activities and leads to an increase in student achievement.

Schiefelbein and Farrel,(1973) in a study on the relationship between textbooks and student performance concluded that availability of textbooks was closely related with academic achievement.

Heyneman et al, (1981) in their studies on the relationship between pupil achievement and the availability of textbooks revealed a very high correlation than between pupil achievement and other variables such as teacher training, class size, teacher salaries, boarding facilities, grade repetition and so on.

In Mexico, the provision of textbooks for primary school pupils is an important part of government policy to improve educational efficiency and equity. The policy was started in 1959 and by 1987 every primary school child in Mexico had free textbooks. This is because the Mexican government believes that the use of textbooks raises academic standards and increases the efficiency of the school system (Psacharoporlos & woodhall, 1985)

Heynaman et al, (1981) in a World Bank project on textbooks in the Philipines, noted that when the ratio between textbooks and pupils was improved from 1:10 to 1:2 coupled with teacher training in the use of textbooks and the effects monitored and pupils given achievement tests before and after the project, which initially concentrated on science, mathematics and language textbooks. According to the cognitive test scores, the increase in the number of textbooks had a sizable impact on pupil achievement in these areas. These gains were observed all over the country, however these studies were too wide and did not consider the costs and effectiveness of alternative combinations of other educational inputs.

Moul et al, (1988) in a study in Kenya on textbooks and test scores concluded that increased expenditure on education in LDCs on provision of textbooks can substantially increase test scores. They observed that in a program through which a Dutch NGO provided textbooks to 25 rural primary schools in Kenya chosen at random out of 100 primary schools showed that after only one year, average test scores did not differ substantially between program and comparison schools. However for those students in the top quintile of the distribution of initial academic achievement, the program raised test scores by at least 0.2 standard deviation. The current study therefore seeks to assess the contribution of textbooks on student achievement in Mt Elgon District.

Earthman,(2002) in a study on facility conditions and student academic achievement found out that conditions of schools facilities have an important impact on student performance and teacher effectiveness. A number of studies have measured overall building conditions and its effect on student academic achievement; these have

consistently shown that students attending school in better conditions outperform students in substandard buildings by several percentage points. It is important to note further that comfortable classroom temperatures are vital for efficient student performance and that the age of the school building is a useful proxy in this regard since older facilities often have problems with thermal environment and noise level. Therefore there is need to consistently upgrade school facilities regularly if student achievement is to improve. This should be done within the current budget constraints.

## **2.6 EFFECT OF LABORATORY FACILITIES ON STUDENT PERFORMANCE**

Maundu,(1986) in a study on performance between provincial and harambee secondary schools in mathematics and sciences, concluded that provincial schools perform well in sciences than in mathematics compared to Harambee schools because of availability of laboratory facilities, which had a direct effect on student performance in sciences.

The KNEC report of 2003 on performance of KCSE examination revealed that poor performance in science resulted from the students' inability to use science apparatus, make accurate observations, draw conclusions and interpret data. This was attributed to the fact that, many students were denied the use of apparatus during tuition and that many candidates saw the apparatus for the first time during the examination time. The implication of the report was that access to well equipped laboratory by students had a positive effect on performance in science.

Fuller,(1986) concludes that despite the high cost of constructing a laboratory, in the long run the benefits outweigh the cost of building and equipping the laboratory.

## **2.7 STUDENT BACKGROUND AND SCHOOL PERFORMANCE**

Todaro, (1985:255) observed that

“early factors in the life of a child such as the health and feeding habits of its mother during pregnancy, the child’s own health and nutritional status during its first few years of life, the family’s income and living conditions e.t.c. Can determine whether or not the child will perform well in school and in later life. He further notes, that early malnutrition and diseases not only adversely affects the child’s ability to read, write, perform arithmetic operations and think clearly and logically in school but also affects the child’s later life as an adult”. He concludes by asserting, “children from poor families with low level of living conditions are often placed at a competitive disadvantage vis-à-vis the economically better of children in school activities “

Studies in the United States of America suggest that family socioeconomic background and individual personalities are more important determinants of student achievement than school variables such as teacher qualification or expenditure on books (Alexander, Leigh & Simmons,1975). Jenks,(1972:256) asserts

“ the characteristics of a school’s output depend largely on a simple input namely the characteristics of the entering child. Everything else, the school budget, its policies and the characteristics of the teachers – is either secondary or completely irrelevant..” This study however ignored the fact that, other teaching and learning resources greatly contributes to student achievement in examinations.

Schiefelbein & Simmons, (1981) in their review based on 25 studies in developing countries, stressed that among the 123 statistically significant determinants of school



achievement, variables related to student characteristics seemed to provide more consistent results than either teacher or school characteristics. Alexander, Leigh & Simmons, (1975) in their extensive review of work in both developed and developing countries concluded that

“The consensus of findings from both developed and developing countries is that the student’s socio-economic background is the major determinant of his academic achievement throughout all levels of schooling except the upper secondary grades. Its’ contribution is smaller in developing countries, while the contribution of some schooling variables to achievement is larger in developing countries in several subjects like sciences. However, the impact of those schooling variables which are subject to policy control ..... is generally insignificant in the upper secondary grades.”

However some studies have revealed a completely different scenario from the above-mentioned studies. Studies in more than twenty LDCs including (Kenya, Ghana, Papua New Guinea) as well as World Bank evaluations on education projects in Kenya and Somalia (Heyneman, 1980; Heyneman & Loxley, 1983) have concluded that wealthy school children do not perform better in achievement tests and thus suggest that family socioeconomic background has much less effect on pupil achievement in LDCs than developed countries (Phacharopoulos & Woodhall, 1985:217). Schiefelbein and Simons, (1978) in a study on factors affecting academic achievement of school children concluded that, the less developed a society, the smaller the influence of home background on achievement and the greater the effect of school variables.

Chavez,(2002) says that schools size is considered an important variable in student academic performance since the 1950s, and researchers have found relationships albeit inconsistent in nature between school size and student academic achievement and school climate. In some studies, students have been found to perform better in small schools, whereas in other studies students have been found to perform better in large schools.

Howley,(2000) carried out studies in California, which described school performance at four grade levels. The study concluded that, smaller school size (350 students for elementary schools) benefited school performance in impoverished communities, but large size benefited school performance in affluent communities.

Psacharopoulos and Woodhall, (1985:209) noted that “Dropout and repetition appear to be very common among students from low socioeconomic background and among females than among males. Causes range from poverty, illness, malnutrition, absenteeism and the high opportunity cost for schooling for poor families, cultural factors which affect girls in particular, inappropriate curriculum and examinations which are excessively academic designed to prepare a minority of pupils for upper secondary and higher education, badly trained teachers, lack of textbooks and materials, overcrowded schools and a shortage of secondary school places which lead to repetition at primary school level.” Though they suggest ways of improving on the flow of pupils through primary and secondary schools, they do not suggest ways of improving on the internal efficiency of schools.

These studies however, covered very large geographical area and the results may not conclusively be applied to a small region like Mt Elgon District.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter describes the research design and methodology that was used, target population, sample size and sampling techniques, methods of data collection, data collection instruments and procedures used, validity and reliability of research instruments and data analysis techniques.

#### **3.2 RESEARCH DESIGN**

Descriptive research survey was adopted for this study. In descriptive research, data is collected in order to answer questions concerning the status of the study population. Descriptive research was adopted in order to meaningfully describe the distribution of measurements using frequency distribution tables and standard deviations so as to determine and report on the current status of the study population.

#### **3.3 TARGET POPULATION**

The target population comprised registered public secondary schools of Mt. Elgon District, which was carved from the old Bungoma district in 1992 and currently has 20 registered public secondary schools

Category of secondary schools in the district.

The District has the following categories of secondary schools as indicated in the table 1 below

Table 1, Categories of Secondary Schools in the district.

School Category	Frequency
girls boarding schools	2
boys boarding schools	2
Mixed day/boarding schools	7
Mixed day schools	9
TOTAL	20

### 3.4 SAMPLING DESIGN AND SAMPLING SIZE

The study employed cluster sampling technique in which the schools were divided into three clusters of six schools each. A cluster comprised of boys or girls boarding schools, mixed day/boarding and mixed day schools. Thereafter simple random sampling was used to select one cluster of six schools out of twenty which formed the study population which was thirty percent. 262 students out of 1637 were selected forming fifty three percent the study population. The students were stratified into male and female then simple random sampling was used to select the final sample. Purposive sampling was used to include the Head Teachers, Deputy Head teachers and the Director of Studies among the teachers sampled 39 (48%) out of 81 teachers. The other teachers included in the sample were stratified into male and female then simple random sampling was used to select the final sample. A sample population must be at least thirty percent or more for the results of the study to valid. (Kerlinger,1973).

Data on school enrolment for the year 2004

Table 2, shows the school enrolment data and the sampled population

**Table 2, Data on school enrolment for The Year 2004**

School	Student Enrolment	Form 3 and 4 Enrolment(N)	Sample 53.4% of N	Number of Teachers in schools under study	Sample 48.15% of Teachers
A	151	45	24	14	7
B	340	102	54	13	6
C	249	75	40	11	5
D	240	72	38	12	6
E	337	101	54	17	8
F	320	96	52	14	7
<b>TOTAL</b>	<b>1637</b>	<b>491</b>	<b>262</b>	<b>81</b>	<b>39</b>

### **3.5 DATA COLLECTION METHODS**

Questionnaires and an interview schedule were used to collect data. Two different types of questionnaires were used, one for the teachers, which captured information on their personal details, the use of school resources and the operations of the school. The other questionnaire for the students captured information on student's background and their schooling. The questionnaires contained both open and closed ended questions, they helped the researcher to collect large amounts of information pertinent to the study. Interview schedule were used to obtain and to verify information given by the teachers.

A permit was obtained from the Ministry of Education, and a letter was written to the selected schools which formed the study population to request for their participation in the study. The researcher informed the respondents that information collected was confidential and that the data would only be used for purposes of the study only and that their identity would not be revealed hence they were requested not to write their names on the questionnaires. The researcher administered the questionnaires to the Teachers and the students. Interview schedules were administered at the convenience of the selected teachers and written notes were only taken with the respondent's permission.

### **3.6 VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS**

#### **3.6.1 VALIDITY OF RESEARCH INSTRUMENTS**

Moser and Kalton, (1971) define validity as the success of a scale in measuring what it is set to measure so that differences in individual scores can be taken as representing the true differences in the characteristics under study.

Mugenda & Mugenda, (1999:30) assert that:

“validity is the accuracy and meaningfulness of references which are based on the research results”,

While Kerlinger,(1973) suggest that validity of an instrument refers to asking the right questions framed in the least ambiguous way.

In order to ensure the validity of the questionnaires and the interview guide, the instruments were given to the supervisor for comments and or validation. Frankel (1993) argues that Instruments should be given to individuals who can be expected to render an intelligent judgment about the adequacy of the instruments, which are then amended according to the expert’s comments before being administered.

Piloting of the research instruments was done to ensure that ambiguous questions were removed and the level of language used was appropriate and suitable.

### **3.6.2 RELIABILITY OF RESEARCH INSTRUMENTS**

Mugenda and Mugenda ,(1999) define reliability as the measure of the degree to which a research instrument yields consistent results or data after repeated trials.

The research instruments were administered to the teachers, and a selected number of students in two schools. The two schools were however excluded from the actual study.

The researcher administered the instruments the first time, and then went back again after two weeks to administer the instruments again. A reliability analysis was then calculated using the Pearson product moment correlation coefficient.

A correlation coefficient of 0.6 was obtained and this was considered adequate to declare the instruments reliable, thus the design of the research was to provide credible conclusions and was to be highly reliable if  $r$  was more than 0.5

### **3.7 DATA ANALYSIS**

The data collected was coded and organized under different variables. Descriptive statistical techniques was used to calculate frequencies, means, maximum and minimum values, and the standard deviations in order to answer the research questions. The t-test of the regression coefficient at 0.05 significant level was applied to test the hypothesis of the study.



## **CHAPTER FOUR**

### **4.0 DATA ANALYSIS INTERPRETATION AND PRESENTATION.**

#### **4.1 INTRODUCTION**

This chapter provides the main findings of the study on the basis of the data collected. The purpose of the study was to determine the impact of resource utilization on student academic achievement in public secondary schools of Mt Elgon District during the year 2004. The chapter is divided into two sections. In the first section, descriptive statistics are used to provide analysis of background information on secondary schools and students background in the schools under study, while the second section provides regression analysis results on the use of educational resources in determining student performance. and answers the main research question;

To what extent does the use of educational resources affect student performance in examinations in Mt Elgon District?

Finally, it provides results of the test of significance in respect of the hypotheses stated in chapter one.

#### **4.2 DESCRIPTIVE STATISTICS**

##### **4.2.1 Background information on secondary schools of Mt Elgon District.**

This section provides information on the characteristics of secondary schools under study in order to gain an understanding of the nature of the schools under investigation

### **Periods when the schools were established**

Years when the schools were established are shown in table 3.

**Table 3: Year when the schools were established**

Year	Number	Percentage
1965-1980	3	50.0
1981-1990	2	33.3
1991-2000	1	16.7
Total	6	100.0

Table 3 above shows that majority of the schools in the sample, that is 3 (50%) were established between 1965-1980, while between 1981-1990, 2 (33.3%) of the schools were established and between 1991-2000, only 1 (16.7%) of the schools were established. The establishment of many schools after independence was necessitated by the need for manpower to run the economy. (Muiya, 1991).

Bogonko, (1992) observed that “ In Kenya between 1947-1957 ; Africans who comprised 97 percent of the population received only 38 percent of the education vote, while the alien races accounting for only 3 percent of the population received 62 percent of the education vote “. There was need to therefore, change this trend by availing more learning opportunities to Africans after independence.

Table 3 above further indicates that, a big proportion of the schools were established when the 8-4-4 system of education was introduced. This high number may be as a result

of the objectives of 8-4-4 system of education of self reliance, creativity and innovation. (Republic of Kenya, 1985).

All the schools in the study were public secondary schools, and all were government maintained public schools.

### **Category of School**

Table 4 below shows the category of the schools under study.

**Table 4: Schools operations**

Year	Frequency	Percentage
Day	1	17.0
Day/Boarding	4	66.0
Boarding	1	17.0
Total	6	100.0

Table 4 above shows that a high proportion of secondary schools in the sample were day/boarding schools<sup>4</sup> (66%), while 1 (17%) were full day schools and another 1 (17%) were full boarding schools.

The introduction of boarding facilities in many schools can be attributed to the fact that most parts of the District are remote, and the schools are located far away from one another which makes it difficult for students to commute to and from school. It was further realized that with the introduction of boarding facilities, students would spend

more time in school actually studying and this would translate into good academic scores for the students.

### **Category of secondary schools.**

Table 5 below shows the category of secondary schools in the sample under study

**Table 5: Category of Secondary School**

Category	Frequency	Percentage
Girls only	1	16.7
Mixed (Boys and Girls)	5	83.3
Total	6	100.0

Table 5 above shows that only 1 (16.7%) of the schools are pure girls schools, while mixed schools which comprise boys and girls account for 5 (83.3%) of all the schools in the sample. The reason why majority of the schools are mixed could be because mixed schools are easy to establish since they serve both boys and girls hence saving the community the trouble of building separate schools for boys and girls which is expensive. The schools also admit students from their immediate neighbourhood, while for students who come from far, are taken into the boarding section.

### **The Gender of teachers in the schools under study**

Table 6 below shows the gender of teachers in the district

**Table 6: Gender of Teachers in schools under study**

Gender	Frequency	Percentage
Male	67.00	82.7
Female	14.00	17.3
Total	81.00	100.0

Table 6 above indicates that 67 (82.7%) of the teachers in the schools under study were male, while only 14 (17.3%) were female. The above difference can be attributed to the fact that majority of the schools in the district are located in remote areas of the district and that most male teachers can persevere the harsh environmental conditions much easier than the females, hence the big variation.

Teacher qualification.

Table 7 below shows teacher qualification in the district.

**Table 7: Teacher Qualification**

Qualification	Frequency	Percentage
B.ED Degree	59	72.8
Diploma in Education	22	27.2
Total	81	100.00

Table 7 above shows that majority of the teachers in the schools under study were qualified to teach at secondary level. The statistics indicate that 59 (72.8%) of the teachers had a bachelors degree in education , 22 (27.2%) of the teachers had a diploma

in education. This high number of trained teachers is as a result of government placing a lot of emphasis on teacher training and the need for providing quality education at all levels as outlined in the policy document on education in Kenya. (Republic of Kenya,1999).

### **Teacher experience**

Teacher experience in the district is shown in table 8 below.

**Table 8: Teacher experience**

Service period	Frequency	Percentage
Three years & above	66	81.5
Two years & below	15	18.5
Total	81	100.0

Table 8 shows the teacher experience in the schools under study. The experience was determined by the number of years a teacher had served since employment . All teachers who had served for at least three years in the profession were considered experienced , while those who had served for less than two years were considered inexperienced. This aspect of determining experience is borrowed from the Teacher’s Service Commission Code of Conduct for Teachers revised in 2005 which states that a teacher can be confirmed in his/her employment to be permanent and pensionable after completing two years of continuous service and that a teacher can be promoted to the next job group after completing three years in the current job group.

Therefore table 8 shows that 66 (81.5%) of the teachers in the district had served for more than three years and therefore experienced, while only 15 (18.5%) had served for less than three years and therefore inexperienced.

### **Employment of highly qualified teachers**

The study further sought opinions of Teachers on the factors affecting performance in their schools table 9 indicates their opinions on the employment of qualified teachers in their schools.

**Table 9, Employment of Highly Qualified Teachers**

Response	Frequency	Percentage
Strongly agree	17	43.6
Agree	21	53.8
Undecided	1	2.6
Total	39	100.0

Table 9 indicates that a good proportion of teachers who participated in the study agree that employing highly qualified teachers in the school greatly improves performance. Of the teachers 17 (43.6%) strongly agree, while 21 (53.8%) agree that highly qualified teachers make a difference in improving school performance., while only 1 (2.6%) were undecided whether qualified teachers improved school performance. This is in line with the assertion of Darling and Hammond, (2000) who conclude that teacher training has a significant effect on student achievement, since teacher content knowledge is the largest and most important factor when it comes to teaching.

### Availability of class textbooks

The study also sought to assess the availability of class textbooks. The responses are contained in table 11 below

**Table 10: Availability of Class Textbooks**

Response	Frequency	Percentage
Strongly Agree	7	17.9
Agree	20	51.4
Undecided	5	12.8
Disagree	5	12.8
Strongly Disagree	2	5.1
Total	39	100.0

Data in table 10 shows that of the teachers in the sample, 7 (17.9%) strongly agree, 20 (51.4%) agree that there are adequate relevant class textbooks in the sampled schools, while 5 (12.8%) did not agree that their schools had adequate class textbooks in all subjects another 5 (12.8%) were undecided. Lack of adequate textbooks in all subjects could be one of the reasons why some schools perform poorly in KCSE examinations. Therefore, there is need to increase the textbook/student ratio in all subjects in schools, since it is generally accepted that students learn more when they interact with their environment which is made up of textbooks and other teaching and learning materials which eventually leads to good class performance. Heyneman, Janison & Montenegro, (1984) in a World Bank study on textbooks in the Philippines acknowledged that an increase in the number of textbooks positively improves students academic scores.



## Availability of teaching aids and materials in schools

Table 11 below gives the responses of teachers regarding the adequacy of teaching aids and materials in the school under study

**Table 11, Availability of other teaching aids and materials**

Response	Frequency	Percentage
Agree	8	20.5
Undecided	9	23.1
Disagree	17	43.6
Strongly Disagree	5	12.8
Total	39	100.0

Table 11 indicates that while 8 (20.5%) of the teachers who participated in the study agree to the fact that their schools have adequate teaching aids and other learning materials, 9 (23.1%) were undecided while 17 (43.6%) disagreed and 5 (12.8%) strongly disagreed that their schools have all the required teaching aids and materials. Like the textbooks, other teaching aids and materials enhance student understanding and subsequently leads to improved student performance. Students understand better when they visualize the ideas and concepts by seeing when teaching aids are used during teaching in the classroom. Arriagada, (1983) concluded that other school variables enhance learning particularly availability of physical facilities like libraries, visual aids and basic equipment such as tables and chairs . It is therefore crucial that the issue of teaching aids and materials be addressed . because teachers should not be in a position

where they are unable to decide about their adequacy. This does not auger well for academic performance in the district.

### **Availability of laboratory facilities**

The study also inquired about the availability of adequate laboratory facilities in the schools under study. The responses are contained in table 12 below

**Table 12 Availability of Laboratories facilities**

Response	Frequency	Percentage
Strongly Agree	5	12.8
Agree	12	30.8
Undecided	7	17.9
Disagree	11	28.2
Strongly Disagree	4	10.3
Total	39	100.0

As indicated by table 12, 12 (38.5%) of the teachers do not consider their schools to have adequate laboratory facilities while 7 (17.9%) were undecided. Laboratory facilities in a school positively affect student performance particularly in the science subjects, this is because students will regularly practice handling laboratory apparatus on there own when carrying out practical lessons in the laboratory. The K.N.E.C report of 1989 on performance of K.C.S.E examinations concluded that, the availability of a well equipped laboratory had a positive effect on the performance of sciences.

### **Employment of a qualified laboratory technician**

Table 13 below outlines the responses of teachers as to whether their schools have employed a trained laboratory technician

**Table 13, Employment of a Qualified Laboratory Technician**

Response	Frequency	Percentage
Strongly Agree	7	17.9
Agree	4	10.3
Undecided	4	10.3
Disagree	10	25.6
Strongly Disagree	14	35.9
Total	39	100.0

Table 13 above indicates that the fact that, 24 (61.5%) of the respondent teachers do not agree generally that their schools have employed a qualified laboratory technician is serious enough and needs to be addressed by the schools if academic performance in schools have to be improved.

### **Availability of facilities in schools**

The study also assessed the availability of facilities in schools, the responses are contained in table 14 below

**Table 14, Availability of Facilities in Schools**

Variable	Minimum	Maximum	Mean	Std Dev
Textbooks in all subjects	1	5	2.58	1.10
Teaching & learning materials	2	5	3.67	0.98
Library facilities	0	1	0.5	0.55
Laboratory facilities	1	5	3.21	1.35
Qualified Laboratory Technician	1	5	3.75	1.26

material and library facilities with standard variations of 0.98 and 0.55 respectively, while the most varied were subject textbooks, laboratory facilities and the employment by schools of a qualified laboratory technician.

Teachers responses indicated that most schools in the sample did vary much in terms of the availability of subject textbook and the teaching and learning materials. The teachers also agreed that most of the schools in the sample differed greatly in terms of the available library facilities, the responses from the teachers also showed that, most of the schools in the sample had not employed a qualified Laboratory Technician.

### **Admission of students with high KCPE marks**

The study also sought the opinion of teachers on whether their schools admitted students with high KCPE scores. The responses are shown in table 15 below

**Table 15, Admission of students with high KCPE scores**

Responses	Frequency	Percentage
Strongly agree	1	2.6
Agree	5	12.8
Undecided	7	17.9
Disagree	16	41.1
Strongly Disagree	10	25.6
Total	39	100.0

Table 15 reveals that 26 (66.7%) of the teachers disagreed that the schools admitted students with high scores. This trend is not good and schools should strive to admit students who scored high marks in KCPE examinations. Jenks,(1972) concluded that the characteristics of the school's output depend largely on a single input namely the characteristics of the entering child, thus a strong significant relationship exists between student entry scores and their respective performance in school.

### **Student absenteeism**

Teachers who took part in the study also gave their responses regarding student absenteeism from school as indicated in table 16 below

**Table 16: Student Absenteeism**

Response	Frequency	Percentage
Agree	9	23.1
Undecided	5	12.8
Disagree	15	38.5
Strongly Disagree	10	25.6
Total	39	100.0

Table 16 reveals that 25 (64.1%) of the Teachers who participated in the study disagreed to the fact that their schools experienced high student absenteeism which meant that most students in their schools attended school regularly while 5 (12.8%) of the teachers were undecided and 9 (23.1%) agreed that students did not attend school regularly.

### **Syllabus coverage**

Table 17 below give the responses of teachers as to the completion of the school syllabus.

**Table 17: Syllabus coverage**

Response	Frequency	Percentage
Strongly Agree	7	17.9
Agree	21	53.8
Undecided	7	17.9
Disagree	4	10.4
Total	39	100.0

Table 17 reveals that 28 (71.7%) of the teachers involved in the study agreed that the schools complete the school syllabus in good time and so got plenty of time for revision before the candidates sat for their KCSE examinations. 7 (17.9%) of the teachers were undecided, while 4 (10.4%) disagree to finishing the syllabus early.

**Fees payment by parents**

The responses of teachers regarding fees payment by parents are outlined in table 18 below

**Table 18: Fees Payment By Parent**

Response	Frequency	Percentage
Undecided	6	15.4
Disagree	7	17.9
Strongly disagree	24	61.6
Total	39	100.0

Table 18 shows that 31 (79.5%) of the teachers in the study disagreed that parents pay all the required fees for their children. The table points to the fact that, schools do not collect all the fees from students as required by MOE. This impacts negatively in the running of school programmes since planning cannot be done as required at the beginning of the year and could be one of the reasons schools in Mt Elgon district perform poorly in national examinations.

### **Factors causing poor performance in Mt Elgon**

Table 19 below, displays the opinions of teachers in the sampled schools on the major factors which contribute to poor performance in the district.



**Table 19: Factors Causing Poor Performance in Mt Elgon**

Causes	Frequency	Percentage
Admitting students with low marks	6	13.3
Absenteeism	5	11.1
Indiscipline	4	8.9
Inadequate textbooks	4	8.9
Inadequate facilities	6	13.3
Low teacher/student motivation	5	11.1
Negative attitude towards learning	6	13.3
Inadequate laboratory facilities	5	11.1
Poor syllabus coverage	3	6.7
Lack of qualified & experienced staff	2	4.5
<b>Total</b>	<b>45</b>	<b>100.0</b>

Table 19 reveals that, among the causes of poor examination performance in the schools under study were, admitting students with low KCPE marks, inadequate facilities and negative attitude towards learning each contribute 6 (13.3%), absenteeism and low teacher/student motivation each contribute 5 (11.1%) while inadequate laboratory facilities, scarcity of textbooks and indiscipline each account for 4 (8.9%). Poor syllabus coverage and lack of qualified and experienced staff account for 3 (6.7%) and 2 (4.5%) respectively.

### Facilities available in schools under study

The study also sought to assess the availability of various facilities in schools in the year of study as shown in table 20

**Table 20: Facilities Available in Schools Under Study.**

Learning Facilities	Availability	Frequency	Percentage
Library	Yes	3	50
	No	3	50
	Total	6	100
Science Laboratory	Yes	5	83.3
	No	1	16.7
	Total	6	100.0
Textbooks For All Subjects	Yes	5	83.3
	No	1	16.7
	Total	6	100.0
Laboratory Technician	Yes	1	16.7
	No	5	83.3
	Total	6	100.0
Students Toilets	Adequate	2	33.3
	Inadequate	4	66.7
	Total	6	100.0
Dormitories	Adequate	2	33.3
	Inadequate	4	66.7
	Total	6	100.0
Teaching Aids in All Subjects	Adequate	2	33.3
	Inadequate	4	66.7
	Total	6	100.0

Analysis of table 20 reveals that of the schools under study, only 3 (50%) had a library, 5 (83.3%) had a laboratory, while a further 5 (83.3%) had textbooks in all subjects while only one school, that is 1 (16.7%) had employed a qualified Laboratory Technician. The table further revealed that only 2 (33.3%) of the schools had adequate student toilets and a further 2 (33.3%) had adequate teaching and learning aids in all subjects.

The data revealed that, either facilities are completely lacking in most schools, or where the facilities are available, they maybe inadequate. This translates to poor performance in examinations by students since schools do not possess the most essential facilities that can enhance proper student learning and self discovery within the school environment.

#### **4.2.2 STUDENT INFORMATION**

##### **Gender of student.**

The table below show the gender of the students in the study sample.

**Table 21: Gender of student**

Gender	Frequency	Percentage
Male	112	42.70
Female	250	57.30
Total	262	100.00

Table 21 reveals that out of the students who took part in the study, 112 (42.7%) were males while 250 (57.3%) were females. The high number of female students could be as

a result of the current awareness campaign through out the country which aims at the promotion of the girl child education.

### **Parents living status**

Table 22 below outlines the living status of the students parents.

**Table 22, Parents Status**

Status	Frequency	Percentage
Father alive & mother dead	12	4.60
Mother alive & father dead	40	15.30
Both parents dead	5	1.90
Both parents alive	205	78.20
Total	262	100.00

Table 22 reveals that, the mothers of 12 (4.6%) of the students who participated in the study were dead and only their fathers were alive, 40 (15.3%) of the students had their mothers alive and fathers deceased, while 5 (1.9%) of the students in the sample had both their parents deceased and so relied on well wishers or guardians to finance their schooling, while 205 (78.2%) of the students had both parents alive.

### **Parents employment status**

Table 23 below shows the employment status of the students parents

**Table 23, Parents Employment**

Status	Frequency	Percentage
Employed	86	33.0
Unemployed	175	67.0
Total	261	100.0

Table 23 reveals that for the students who were sampled, the parent of 83 (33%) of them had formal employment while 175 (67%) had no formal employment and so had problems in paying school fees for their children in secondary schools.

**Student boarding/Not boarding status**

Table 26 below reveals the status of the students regarding being boarders and or day scholars

**Table24: Student Boarding/Not boarding status**

Status	Frequency	Percentage
Boarders	172	65.60
Day scholars	90	34.40
Total	262	100.00

Table 24 shows the status of students at school, whether boarders or day scholars. The table reveals that majority of the students 172 (65.6%) were boarders while 90 (34.4%) were day scholars. This high number of boarders could be attributed to the fact that,

many parents have realized that when students board in school, they spend more time studying and this leads to improved class performance.

Subject text book ownership by students.

The study also sought to investigate textbook ownership by students, table 25 below indicates the results

**Table 25: Subject Textbook Ownership By Students**

Possession of subject textbooks	Frequency	Percentage
All subjects	1	0.40
Few subjects	149	56.90
None of the subjects	112	42.70
Total	262	100.00

Table 25 shows the nature of textbook ownership by students as bought by parents. The table reveals a gloomy picture of the purchase of subject textbooks for students by parents. The table shows that only 1 (0.4%) of the students interviewed had all subject textbooks bought by parents, 149 (56.9%) of the students had two or three subject textbooks bought by parents especially the compulsory subjects that is mathematics, English and kiswahili subjects. 112 (42.7%) of the students had no subject textbooks bought for them by their parents. This state of affairs should be reversed if academic performance has to be improved, Head Teachers should sensitize the parents to buy subject textbooks for their children. This is the only way to improve class performance.

Heyneman, et al, (1981) concluded from studies in 10 LDCs that, achievement is more closely correlated with textbook availability than with other measures of school inputs.

### **School fees payment**

Table 26 shows fees payment trends by the students interviewed.

**Table 26: School Fees Payment By Students**

Amount owing in shillings	Frequency	Percentage
Cleared fees	51	19.80
Owing below 5,000.00	85	32.90
Owing between 5,000.00-10,000.00	64	24.80
Owing above 10,000.00	58	22.50
Total	258	100.00

Table 26 reveals that by the time the data was collected from the sampled schools, only 51 (19.8%) of the students had cleared the required school fees and 207 (80.2%) of the students were still owing the school fees balance. This shows a poor trend of fees payment by parents, and this is likely to impact negatively on the academic performance of the students and could be one of the reasons why most of the schools in the district perform dismally. When parents don't pay fees in good time, the Head Teachers cannot plan for the required teaching and learning materials in good time. This eventually may translate to poor performance by students in national examinations.

### 4.2.3 Results of the correlation Analysis

This section utilizes the spearman's rho ( $r$ ) in evaluating the relationship of the independent variables (Textbooks, laboratory facilities, Qualification & teacher experience, student's KCPE entry marks and syllabus coverage.) to the dependent variable school performance. It was also used to determine the strength, direction and extend of association among the variables. The results are shown in table 27 below.

**Table 27: Simple Correlation Matrix**

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>
V <sub>1</sub>	1.00 sig -	-	-	-	-	-
V <sub>2</sub>	-1.23 sig 0.455	1.00 -	-	-	-	-
V <sub>3</sub>	-0.417 sig 0.008	-0.118 0.474	1.00 -	-	-	-
V <sub>4</sub>	-0.224 sig 0.17	-0.043 0.797	0.173 0.292	1.00 -	-	-
V <sub>5</sub>	-0.367 sig 0.022	0.19 0.246	0.070 0.672	0.094 0.571	1.00 -	-
V <sub>6</sub>	-0.466 sig 0.003	0.179 0.276	0.234 0.151	-0.079 0.633	0.27 0.87	1.00 -



Table 27 shows the calculated coefficients for the relationship between the independent variables (Subject textbooks, teacher qualification & experience and students KCPE entry marks) and the dependent variable school performance, a weak negative correlation which were not significant were found with coefficients of 0.123 , 0.224 and 0.367 and  $p > 0.455$  ,  $p > 0.170$  and  $p > 0.220$  respectively. The relationship between the independent variables (laboratory facilities and syllabus coverage) was found to have a strong and negative correlation to the dependent variable school performance with coefficients of 0.417 and 0.466 with  $p < 0.008$  and  $p < 0.003$  respectively. This implies that inadequate laboratory facilities and poor syllabus coverage leads to poor performance in Mt Elgon district. Therefore there is need for schools to improve their laboratory facilities that is, the science apparatus, equipment and chemicals . This will help the schools to improve in the performance of science subjects this will help to improve the overall performance by the schools.

Maundu, (1986) concluded that provincial schools performed better in national examinations compared to the harambee schools because of availability of laboratory facilities which directly affected the students performance.

#### **4.2.4 Analysis of Variables in The Linear Regression Model**

This section utilizes the regression equation derived from the education production function model in chapter one. The regression statistical technique was used to fit the equation already derived to evaluate the relationship of the independent variables (Subject textbooks, laboratory facilities, teacher qualification & experience, students KCPE entry marks and syllabus coverage) to the dependent variable school performance in national examination. It was also used to establish the direction, strength and the extend of association among these variables.

The coefficients in the regression model and the t-statistic for each variable used in the model as derived from the responses given by teachers who were sampled are shown in the table 28;

## Linear Regression; Input-Output Model

N = 39(Teachers)

**Table 28: Dependent variable; school performance**

Variable	Coefficient	t-statistic	Sign.
Availability of textbooks in all subjects	-5.690	-0.487	0.630
Adequate laboratory facilities	-0.257	-2.649	0.012
Highly qualified & experienced teachers	-0.261	-1.227	0.228
Students with high KCPE marks	-0.301	-2.727	0.010
Excellent syllabus coverage	-0.340	-2.354	0.025
<b>Constant</b>	<b>8.105</b>	<b>12.485</b>	<b>0.000</b>

Coefficient of multiple determination  $R^2 = 0.466$

F – ratio = 5.762

Degrees of freedom = 5 and 33

Significant at 0.05 level

Variables shown in the table 30 above can be represented in an equation form as indicated below;

$$V_1 = 8.105 - 5.69V_2 - 0.257V_3 - 0.261V_4 - 0.301V_5 - 0.34V_6$$

From our prediction equation above, where responses are coded as 1-strongly agree, 2-agree, 3-undecided, 4-disagree and 5-strongly disagree. In a case where all responses for the above variable are positive that is 1-strongly agree, then the prediction is thus

$$V_1 = 8.105 - 5.69(1) - 0.257(1) - 0.261(1) - 0.301(1) - 0.340(1)$$

$$V_1=8.105 - 6.489$$

$$V_1=1.256 \text{ (school performance)}$$

Given the standard error of estimation = 0.7087 , then 95% of the time for strongly agree responses with respect to the independent variables (subject textbooks, laboratory facilities, teacher qualification & experience, students KCPE entry marks and syllabus coverage ) will have the school performance improved by a factor of 2.6734 points (1.256 + 0.7087) if these facilities are adequate, or school performance will decline by a factor of -0.1614 points (1.256 – 0.7087) if the facilities are inadequate.

The regression equation above was significant with  $p < 0.05$  and the coefficient of multiple determination ( $R^2$ ) = 0.466 implying that the independent variables in the regression model accounted for 47% of the variability in the school performance. Though the unexplained variability was high, it could be accounted for by errors in data collection, deficiencies in the variables or causal factors not included in the model (Muiya,1991; Ngala,1996;Kosgei,2001) or variations in the availability of learning resources in the schools under study.

### **4.3 Hypothesis Testing**

In order to test the hypothesis stated in chapter one, the t-test of the regression coefficient was used to assess whether or not each independent variable helped to predict the dependent variable at 0.05 significant level.

The procedure followed was as stated below;

a) Determine the null and alternate hypothesis

$H_0: a_0 = 0$ : null hypothesis

$H_A: a_0 \neq 0$ : alternative hypothesis

b) Desired level of significance is 0.05

c) Defining the degrees of freedom, thereby defining the critical region , acceptance and rejection regions.

In this study, a two tailed t- test was chosen because of the way the alternative hypothesis were framed. To reject or not to reject the null hypotheses depended on the following rules;

I. .If the computed alpha (p) value was equal to or less than 0.05 , the null hypothesis was rejected.

II. .Consequently, if the computed alpha (p) value was greater than 0.05 , we fail to reject the null hypothesis.

Data in table 29, Hypothesis Testing for Various Coefficients of p on Use of School Resources

Hypothesis testing

N =39 (Teacher sample)

**Table 29: Hypothesis testing; Dependent variable; school performance**

<b>Variable</b>	<b>Coefficient</b>	<b>t-statistic</b>	<b>Alpha (p)</b>	<b>Remarks</b>
Availability of textbooks in all subjects	-5.690	-0.487	0.630	Not reject
Adequate laboratory facilities	-0.257	-2.649	0.012	Reject
Highly qualified & experienced teachers	-0.261	-1.227	0.228	Not reject
Students with high KCPE marks	-0.301	-2.727	0.010	Reject
Excellent syllabus coverage	-0.340	-2.354	0.025	Reject
<b>Constant</b>	<b>8.105</b>	<b>12.485</b>	<b>0.000</b>	

The results of the tested hypotheses were as follows with respect to the use of school resources as shown in table 31 above.

1. There existed no relationship between efficient utilization of educational resources and student performance .

a) There existed no relationship between textbooks and student performance.

Ho : A = 0, and Ha:A ≠ 0

The calculated p =0.630

Therefore, since p = 0.630 is greater than 0.05 the significance level, we fail to reject the null hypothesis. This implies that there existed no significant relationship between

textbooks and student performance.. Therefore textbooks are not a significant predictor of student performance.

b) There existed no relationship between laboratory facilities and student performance.

Ho:  $B = 0$ , and Ha:  $B \neq 0$

The calculated  $P = 0.012$

Therefore, since  $p = 0.012$  is less than 0.05 the significance level, we reject the null hypothesis that there existed no significant relationship between laboratory facilities and student performance and instead we accept the alternative hypothesis that, there existed a direct and significant relationship between laboratory facilities and student performance. Therefore laboratory facilities is a significant predictor of student performance.

c) There existed no relationship between teacher's qualification and experience and student performance.

Ho;  $C = 0$ , and Ha :  $C \neq 0$

The calculated  $P = 0.228$

Therefore, since  $p = 0.228$  is greater than 0.05 the significance level, we fail to reject the null hypothesis that there existed no relationship between teacher's qualification and experience and student performance. Therefore the teacher's qualification and experience is not a significant predictor of student performance.

d) There existed no relationship between the student's KCPE entry marks and their school performance.

Ho:  $D = 0$ , and Ha:  $D \neq 0$

The calculated  $P = 0.010$

Therefore, since  $p = 0.010$  is less than 0.05 the significance level, we reject the null hypothesis that there existed no relationship between the student's KCPE entry marks and their performance at school, and instead accept the alternative hypothesis that there existed a direct and significant relationship between the student's KCPE entry marks and their performance at school. Therefore the student's entry marks is a significant predictor of their school performance.

e) There existed no relationship between syllabus coverage and student performance.

Ho:  $E = 0$ , and Ha:  $E \neq 0$

The calculated  $P = 0.025$

Therefore,  $p = 0.025$  is less than 0.05 the significant level, we reject the null hypothesis that there existed no relationship between syllabus coverage and student performance and instead we accept the alternative hypothesis that there existed a direct and significant relationship between syllabus coverage and student performance. Therefore syllabus coverage is a significant predictor of student performance.



Therefore, the results of the tested hypotheses above reveals that in this study, the main determinants of efficient resource utilization in schools in Mt Elgon district were; laboratory facilities, the student's KCPE entry marks and syllabus coverage. This variables have a significant relationship with student performance in national examinations.

However subject textbooks and teacher qualification and experience had an insignificant relationship with student performance in the schools under study.

We therefore reject the null hypothesis that;

There existed no relationship between efficient utilization of educational resources and student performance in examinations in Mt Elgon District, we instead accept the alternative hypothesis that;

There existed a direct and significant relationship between efficient utilization of educational resources and student performance in examinations in Mt Elgon District. Therefore efficient/inefficient use of school resource has a direct and significant impact on student performance in national examinations.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.**

#### **5.1 Introduction**

This chapter summarizes the previous chapters with comprehensive discussions based on the findings of the study. It also presents a number of recommendations for improving performance in secondary schools as well as areas that are related to this study that need further research.

#### **5.2 Findings of the Study**

The findings of this study reveals that 50% of the schools under study were started after the commencement of the 8-4-4 system of education this could be due to the nature of the 8-4-4 education system of self-reliant creativity and innovation.( Republic of Kenya ,1985). Majority 66% were day/boarding schools, while 83.3% were mixed schools. The high proportion of mixed schools could be due to the preference for co-education institutions which would avoid the cost of constructing single sex schools one for males and one for females. (Ngala, 1996).

The study also revealed that 82.7% of the teachers in the schools under study were males while only 17.3% were females, the reason for such a big disparity could be that because of the remote nature of most parts of the district the male teachers are likely to adopt much more easily than the female teachers to difficult environmental conditions. The results of the study further revealed that 81.5% of the teachers in the schools under study had taught for more than three years hence experienced according to the TSC code of

conduct for teachers. Only 18.5% of the teachers had taught for less than three years and were considered inexperienced.(TSC Code of Conduct For Teachers, 2005)

The study also found that 69.2% of the schools under study had all the required textbooks in all subjects, and only 30.8% did not have all the required textbooks. Of the schools, only 20.5% had all the required teaching aids and learning materials while 79.5% of the schools did not have the necessary teaching aids and learning materials.

The study also revealed that 43.6% of the schools had the necessary laboratory facilities, while 56.4% of the schools under study did not have the required science facilities and only 28.2% of the schools had employed a trained and qualified laboratory technician while 71.8% employed unqualified laboratory technician or did not employ anybody in that area.

For the teachers who took part in the study only 12.8% agreed that their schools admitted students with high KCPE marks, while 87.2% disagreed. Further, 23.1% of the teachers agreed that their schools did not experience frequent student absenteeism, but 76.9% disagreed and attributed absenteeism to the cause of poor performance by the students. 71.7% the teachers agreed that their schools completed the syllabus early which gave them enough time to revise with the students, this they attributed to good performance. 28.3% of the teachers disagreed that their schools finished the syllabus early.

All the teachers who took part in the study agreed that fees payment in their schools was very poor and significantly contributed to the poor performance by students in examinations.

The study further revealed that 42.7% of the students who took part in the study were male, while 57.3% were females. This is an indication of near parity between sexes. The study also indicated that of the students who participated in the study 33% had parents who were employed while 67% had unemployed parents. This could be the main reason why the schools experienced poor fees payment by students since the study also revealed that only 19.8% of the students had cleared their school fees payment while 80.2% still had fees arrears. This is one of the reasons that leads to inefficient use of other school resources because when students are send home for school fees, the school resources will not be optimally used since many of the student will be away from school ,some for longer periods than initially anticipated when they were first send home to bring school fees.

Regression analysis revealed that among the most significant variables that contributed to school performance were laboratory facilities, the students KCPE entry marks and syllabus coverage which were significant with negative coefficients of 2.649 ,2.727 and 2.354, with  $p = 0.012$  ,  $p = 0.010$  and  $p = 0.025$  respectively all were less than the 0.05 significance level. Textbooks with negative coefficient of 0.487 and  $p=0.63$ , and qualified and experienced teachers with negative coefficient of 1.227 and  $p=0.228$  were not significant at the 0.05 level of significance.

For the students socio-economic background, the most significant variables with inverse contributions were; the parents employment status, boarding in school and fees payment with coefficients of 0.296, 0.346 and 9.192 with  $p = 0.002$ , 0.000 and 0.029 respectively which were significant at the 0.05 level.

Further the regression analysis revealed that textbooks and teacher qualification and experience were not significant contributors to student performance.. This two variables had inverse significance with coefficient of 5.69 and 0.261 with  $p = 0.630$  and  $0.228$  respectively hence not significant at the 0.05 level. This is probably an indication that textbooks and teachers are not efficiently being utilized by the schools under study since their contribution to student performance is not significant

The independent variables in the input-output model on student performance accounted for 46.6 % of the variability in student performance in the secondary schools under study. This indicated that a fairly high percentage of the variability was accounted for by the factors included in the student performance regression model.

The independent variables in the input-output model on the students family background accounted for 15.9 % of the variability in the students performance. This indicated that a low percentage of variability was accounted for by the factors included in the socio-economic regression model. The implication is that the school factors contribute much more to student performance than the socio-economic factors in this study.

### **5.3 Conclusion of the Study**

The need to utilize resources efficiently is paramount as shown by the results of the study. The findings of the study show that there is great potential of improving in academic performance by students in Mt Elgon district, laboratory facilities and lack of a laboratory room had a strong and significant inverse relationship with student performance. This implies that if each school can construct a laboratory and increase laboratory facilities, school performance will significantly improve. Thus student performance in national

examinations particularly in the science subjects was hindered by lack of properly equipped laboratories in most schools in Mt Elgon district.

The study further revealed that most schools did not employ a trained and qualified laboratory technician and instead relied on untrained personnel or the science teachers to prepare and conduct the practical lessons despite the fact that the teachers have other teaching and school duties. This consequently leads to inefficient use of the laboratory resource since the teachers may not have enough time to prepare for the practical lessons thoroughly compared to if a laboratory technician would be available. This had a significant and inverse contribution to school performance. The implication here is that, lack of a trained and qualified laboratory technician in a school declined school performance particularly in the science subjects significantly. Therefore there is need for secondary schools in Mt Elgon District to employ trained and qualified laboratory technicians if student performance in science subjects is to improve substantially and hence lead to overall improvement in school performance in national examinations.

The study also revealed that syllabus coverage and admitting students with low KCPE marks had a strong and significant inverse contribution to school performance. The implication is that teachers should finish covering the school syllabus in good time to enable them get enough time for revision with their students, and schools should admit students with good KCPE examination scores.

The study also revealed that lack of personal school textbooks by student had a strong and significant inverse contribution to student performance. This means that parents

should be enlightened on the need of purchasing personal school textbooks for their children in order to improve their school performance.

Highly qualified and experienced teachers had a strong and insignificant contribution to school performance. This was attributed to the fact that, the schools had inadequate resources, admitted students with low marks, rampant student absenteeism, student indiscipline, and negative attitude towards learning, which greatly affected the teacher performance during the year under study 2004.

There is dire need to reverse most factors causing poor performance in the district, and at the same time the government and parents must strive to increase school facilities in order to enable teachers contribute positively to school performance. It was evident from the study that all the teachers in the schools under study were properly qualified with either a Bachelor's Degree in Education or a Diploma in education. Further the study revealed that 81.5% of the teachers were considered experienced as per the TSC code of conduct for teachers. Thus, the teachers should be able to contribute positively to student achievement in national examinations.

Therefore, there is need for school B.O.Gs and Head Teachers to improve on the management of schools in Mt Elgon District if the schools have to record improved performance in future.

#### **5.4 Recommendations of the study**

The following recommendations are derived from the findings of the study;

Due to lack of essential resources inputs in most schools in Mt Elgon, the government and the parents should strive to increase the physical facilities particularly construction of laboratories and libraries, increase subject textbooks and teaching aids and materials in all school.

As a result of poor performance, schools in Mt Elgon district should, admit students with high KCPE marks, cover the syllabus in good time, employ trained laboratory technicians and utilize the teachers and textbooks more efficiently if student performance is to improve significantly.

Low priority should be given to setting up of new schools and instead existing ones should be expanded and the learning facilities greatly enhanced.

There is need to in-service and train Head Teachers in proper human resource management and in financial management.

There is also need for facility sharing in the district among neighbouring schools in order to improve school performance.

Since members of the BOGs have been empowered by the MOE and TSC to play a central role in secondary school management, such members should be highly educated and be preferably trained professionals in different fields in order to contribute positively to school development or have a minimum of form four education with good passes.

Nomination to secondary school BOGs should purely be on merit.



## **5.5 Suggestions for further research**

This research did not exhaust all that is required as far as internal operation and efficiency of secondary schools is concerned. Due to its limited scope, the following are recommended for further research

1. Studies similar to this one on efficiency implications of educational resource utilization in secondary schools in other districts, at provincial and at a national level.
2. Studies be carried out which will use the input-output model at a different level of education like primary or tertiary levels.

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## APPENDICES

### APPENDIX I

#### TEACHER QUESTIONNAIRE

Do not write your name or the name of the school anywhere on this questionnaire

Please tick (✓) whichever applies to you

1. Gender: Male ( ) Female ( )
2. Age (years): Below 30 ( ), 30 – 35 ( ), 36- 40 ( ) 41 – 45 ( ), above 45 ( ).
3. Teaching experience (years) Below 4 ( ), 4-10 ( ), 10-15 ( ), 16-20 ( ), Above 20 ( ).
4. Please indicate your highest Education qualification
  - Diploma in Education/S1 ( )
  - Bachelor of Education ( )
  - B A or BSC plus PGDE ( )
  - Masters in Education ( )
5. In which year was your school founded .....
6. What category is your school? Provincial ( ) District ( )
7. What type is your school? Boys only ( ) Girls only ( ) Mixed ( )
8. .Your school is ? Pure day ( ) Pure boarding( ) Day/boarding ( )
9. .How many streams does your school have? 1 ( ) 2 ( ) 3( ) above 4 ( )
10. .What is the total acreage of the school land?
  - Below 2 acres ( )
  - 3 – 5 acres ( )
  - 6 – 9 acres ( )
  - 10 – 20 acres ( )
  - above 20 acres ( )
11. . What was the school enrolment by sex in the years indicated below
 

	2004	2003	2002
Boys	.....	.....	.....
Girls	.....	.....	.....
TOTAL	.....	.....	.....
12. Please indicate how the students performed in KCSE Examinations in the years below
 

MEAN GRADE	2004	2003	2002
No. of students	No. of students	No. of students	No. of students
A- to A	.....	.....	.....
B- to B+	.....	.....	.....
C- to C+	.....	.....	.....
D- to D+	.....	.....	.....
E	.....	.....	.....
TOTAL	.....	.....	.....
SCHOOL MEAN.....			

13. .What do you think was the cause of such examination results. (Briefly explain)

14. .What do you think can be done to improve school performance in KCSE examination in your school ?. (Briefly explain)

15. How many Continuous Assessment Tests (CATS) do you administer in any given school term? (Tick (✓) appropriately)

CAT ( ) 2 CATS ( ) 3 CATS ( ) NONE ( )

16. If no CAT is administered, (Briefly explain why)

17. Do you administer an end term exam every end of term? Yes ( ) No ( )  
If Not, (Briefly explain)

18. How many teachers are currently on duty ?

Male..... Female..... TOTAL.....

19. Indicate the number of teachers on your staff with the qualifications below

(a) Bachelor of Education and above .....

(b) BA/BSC plus PGDE .....

(c) Diploma in Education/S1 .....

(d) Certificate Course .....

TOTAL .....

22. Indicate below the teaching experience of your teachers

Taught for more than three years.....

Taught for less than three years.....

TOTAL .....

23. In which subjects do you experience a critical shortage of teachers?

24. Please tick (✓) all the facilities available in your school in the year 2004 out of the list below and list the number

		Number
Maths room	( )	.....
Geography room	( )	.....
Agricultural Workshop	( )	.....
Library	( )	.....
Laboratory	( )	.....
Home Science room	( )	.....
Dormitories	( )	.....
Student Toilets	( )	.....
Teachers Toilets	( )	.....
Staff room	( )	.....
Head of Department Offices	( )	.....
Dining Hall	( )	.....
Classrooms	( )	.....



25. Use the scale below to rate the items that follow with respect to the current status of your school (Tick (✓) appropriately)

Strongly Agree – SA, Agree – A, Undecided – U, Disagree – D, Strongly Disagree – SD

	SA	A	U	D	SD
i) Textbooks in all Subjects are available	( )	( )	( )	( )	( )
ii) Laboratory facilities are adequate	( )	( )	( )	( )	( )
iii) We have highly experienced teachers	( )	( )	( )	( )	( )
iv) We admit students with high scores	( )	( )	( )	( )	( )
v) School Fees payment is excellent	( )	( )	( )	( )	( )
vi) We have highly qualified teachers	( )	( )	( )	( )	( )
vii) Absenteeism among students is very low	( )	( )	( )	( )	( )
viii) Coverage and completion of syllabus is Excellent	( )	( )	( )	( )	( )
x) Teaching aids and materials in all subjects are available	( )	( )	( )	( )	( )
xi) The school has a trained Laboratory Assistant.	( )	( )	( )	( )	( )

26. How many times have the Quality Assurance and Standards Officers (QASO) visited your school this year for inspection?

Once ( ) Twice ( ) Thrice ( ) None ( )

## APPENDIX II

### STUDENT QUESTIONNAIRE

Please tick (✓) whichever applies to you

1. Gender: Male ( ) Female ( )

2. Your class: F3 ( ) F4 ( )

3. How many of your siblings are in school? please indicate below

Primary School: Brothers ..... Sisters ..... Total .....

Secondary School: Brothers ..... Sisters ..... Total .....

5. Are both your parents alive? Yes ( ) No ( ). If the answer is No, please answer question 6, and if the answer is yes go to question 7

6. Please indicate below with a tick appropriately.

(a) My parent who is alive is; Father ( ) Mother ( )

(b) Both my parents are dead ( )

7. Is your parent / guardian employed? Yes ( ) No ( )

8. Who pays your fees? Father ( ) Mother ( ) Guardian ( )

9. Are you a Boarder or a Day scholar? Tick appropriately: Boarder ( ) Day scholar ( ).

If you are Boarder go question 12, and if you are a Day scholar go to question 10

10. If you are a day scholar, how many kilometers do you cover when going to school (please tick (✓) below)

Less than 1 km ( ) 2-4km ( ) 5-8km ( ) above 9km ( )

11. How long do you take to reach school (please tick ( ) below)

Less than 1 hour ( ) 2 hours ( ) above 3 hours ( )

12. How many textbooks have your parents/guardian bought for you in the following subjects (please tick (✓) the number of textbooks)

b)	Subject	Number	of	textbooks
	None			
	Maths	1 ( )	2 ( )	3 ( ) ( )
	English	1 ( )	2 ( )	3 ( ) ( )
	Kiswahili	1 ( )	2 ( )	3 ( ) ( )
	History	1 ( )	2 ( )	3 ( ) ( )
	Biology	1 ( )	2 ( )	3 ( ) ( )
	Chemistry	1 ( )	2 ( )	3 ( ) ( )
	Agriculture	1 ( )	2 ( )	3 ( ) ( )
	Business Education	1 ( )	2 ( )	3 ( ) ( )
	Physics	1 ( )	2 ( )	3 ( ) ( )
	Geography	1 ( )	2 ( )	3 ( ) ( )
	Others (specify) .....			

13 Use the scale below to rate the items that follow with respect to the current status of your school (Tick (✓) appropriately)

Strongly Agree – SA, Agree – A, Undecided – U, Disagree – D, Strongly Disagree – SD

		SA	A	U	D	SD
i)	Textbooks in all Subjects are available	( )	( )	( )	( )	( )

- ii) Laboratory facilities are adequate ( ) ( ) ( ) ( ) ( )
- iii) We have highly experienced teachers ( ) ( ) ( ) ( ) ( )
- iv) School Fees payment is good ( ) ( ) ( ) ( ) ( )
- v) Absenteeism among students is low ( ) ( ) ( ) ( ) ( )
- vi) Coverage and completion of syllabus is Excellent ( ) ( ) ( ) ( ) ( )
- vii) CATS and exams are marked and revised immediately. ( ) ( ) ( ) ( ) ( )
- viii) Class assignments are given daily and marked ( ) ( ) ( ) ( ) ( )
- ix) Class work is marked occasionally ( ) ( ) ( ) ( ) ( )
- xv) Teaching aids and materials in all subjects are available ( ) ( ) ( ) ( ) ( )
- xvi) The school has a Laboratory Assistant. ( ) ( ) ( ) ( ) ( )

14. How many pairs of school uniform do you have? Tick below

1 ( ) 2 ( ) None ( ) I have part of the uniform ( )

15. Do you get lunch at school? Yes ( ) No ( )

16. Have you cleared school fees for this term? Yes ( ) No ( ) if no, answer question 16

17. What is your fees balance / arrears this term

< Kshs. 5,000 ( ) Kshs. 5,000-10,000 ( ) Kshs. 11,000-19,000 ( ) > Kshs. 20,000 ( )

18. Why is your parent /guardian unable to pay your fees in good time? (Briefly explain below).....

19. Do you get time to revise at home? Yes ( ) No ( )

If the answer is yes what do you use? Tick below, If the answer is no go to question 21

Electricity ( ) Paraffin lamp ( ) I Read during the day ( )

20. Your mode of revision (please tick below)

Revise everyday ( ) Revise sometimes ( )

21. Please indicate your position and marks below for the year 2005

	Total marks	Position
First term	.....	.....
Second term	.....	.....
Third term	.....	.....

22. Briefly explain why you do not revise at home-----

---

23. Do you do all your class assignments as given to you by your teachers?

Yes ( ) No ( ) if the answer is no go to question 23

24. Briefly explain why you do not do all class assignment? -----

**APPENDIX III**

**INTERVIEW SCHEDULE FOR TEACHERS**

1. a) How has the fees payment in your school affected the implementation of school programs?  
.....  
.....
2. What are some of the none-cash modes of fees payment that you accept from parents  
.....  
.....
3. How do you utilize the none-monitory resources collected in improving academic performance.....  
.....
4. If there is any, how do you cover up for the shortfall in the payment of fees by students?  
.....  
.....
5. What are some of the factors that lead to poor KCSE performance that you consider unique to your school?  
.....  
.....
6. How have you tried to overcome these problems?  
.....  
.....
7. Given the Free Primary Education and the Government's requirement that secondary schools increase their enrolment, what contingency measures have you put in place as a school with regard to educational resources that will carter for the increase in school enrolment?  
.....  
.....
8. As a school, how do you ensure optimal use of the school resources by both students and teachers?  
.....  
.....
9. What are the nature of disciplinary cases you experience in school?  
.....  
.....
10. What are some of the causes of these disciplinary cases?  
.....  
.....
11. How do you handle the disciplinary cases when they arise?  
.....  
.....

12. What is the nature of the rewards and incentives if any, do you offer your teachers students and school workers in order to encourage them to achieve good examination results

Teachers:.....

...

Students:.....

.....

Workers:.....

.....

13. To what extent do you think these rewards and incentives help in improving academic performance

.....

.....

**APPENDIX V**

**SPSS OUTPUT-LINEAR REGRESSION MODEL**

**Variables Entered/Removed**

Model	Variables Entered	Variables Removed	Method
1	school has adequate laboratory facilities, students with high KCPE marks admitted, school has highly qualified & experienced teachers, excellent syllabus coverage by teachers, textbooks available in all subjects	.	Enter

a All requested variables entered.

b Dependent Variable: school KCSE performance 2004

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change in R Square	F	df1	df2	Sig. F Change
1	.683	.466	.385	.70870	.466	5.762	5	33	.001

a Predictors: (Constant), school has adequate laboratory facilities, students with high KCPE marks admitted, school has highly qualified & experienced teachers, excellent syllabus coverage by teachers, textbooks available in all subjects

**ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	14.470	5	2.894	5.762	.001
Residual	16.575	33	.502		
Total	31.045	38			

a Predictors: (Constant), school has adequate laboratory facilities, students with high KCPE marks admitted, school has highly qualified & experienced teachers, excellent syllabus coverage by teachers, textbooks available in all subjects

b Dependent Variable: school KCSE performance 2004

**Coefficients**

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
1 (Constant)	8.105		12.485	.000
school has highly qualified & experienced	-.261	-.158	-1.227	.228

ed teachers	-5.690E- 02	.117	-.068	-.487	.630
textbooks available in all subjects					
students with high KCPE marks admitted excellent syllabus coverage by teachers	-.301	.110	-.356	-2.727	.010
school has adequate laboratory facilities	-.340	.145	-.325	-2.354	.025
	-.257	.097	-.353	-2.649	.012

a Dependent Variable: school KCSE performance 2004