INFLUENCE OF TEACHING AND LEARNING RESOURCES ON STUDENTS' PERFORMANCE IN KENYA CERTIFICATE OF SECONDARY EDUCATION IN FREE DAY SECONDARY EDUCATION IN EMBAKASI DISTRICT, KENYA

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DECLARATION

This project is my original work and has not been presented for a degree in any other university

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E55/72710/2008

This project has been submitted for examination with my approval as university supervisor

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This research work is dedicated to my loving daughters; Tumi, Lynn and Dana.

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LIST OF ABBREVIATIONS AND ACRONYMS

B.O.G	Board of Governors
DPs	Development Partners
E.F.A	Education for All
F.D.S.E	Free Day Secondary Education
K.C.S.E	Kenya Certificate for Secondary Education
MoE	Ministry of Education
NGO	Non-governmental organization
PTA	Parents Teachers Association
SPSS	Statistical Package for Social scientists
STR	Students-Teacher Ratio
TLR	Teaching and Learning Resources
UNESCO	United Nations Educational, Scientific and Cultural Organization

ABSTRACT

Education is a fundamental human right, and a key input in production and development of an economy. This explains why countries worldwide plan for and increase budgetary allocations to fund various educational programmes each financial year. There is however concern on the quality of education offered and performance of students in national examinations. The purpose of this study was to examine the influence of teaching and learning resources on students' performance in KCSE in FDSE in Embakasi district. Four objectives were formulated to guide the study; the objectives of the study were to determine how availability of teaching and learning materials used in FDSS affect students' performance, which was done by determining the availability of learning materials utilized in schools, the study also established how adequacy of physical facilities and human resources influence students' performance and also assessed the extent of resource utilization and its effect on students' performance in KCSE in FDSE in Embakasi district, following provision of teaching and learning resources by the government to the public day secondary schools. The study used descriptive study design, and data was collected using three sets of questionnaires for the head teachers, teachers and students. The target population consisted of all the Free day secondary schools in the district, their head teachers, teachers and students. The sample consisted of 6 principals, 18 class teachers and 240 students. Data was analyzed using descriptive statistics, using Statistical Package for Social Sciences (SPSS), the analyzed data was then presented using frequency tables, means, percentages, pie charts and bar graphs. The study found out that teaching and learning materials were available and are utilized in schools, especially those used in classroom instruction, like chalks, dusters and charts except physical facilities are lacking and there's gross inadequacy of human resources. This resulted to overstretched resources with annual increase in enrolment rates thus compromising the quality of education. Therefore the government should allocate more funds for TLR provision to improve the status and condition of physical facilities and employment of more teachers for the FDSE to be effective. Based on the study findings, it is recommended that similar research could be carried out in other parts of Kenya since different parts of the country have different characteristics. Further research could also include a study on Integration of ICT and e-learning to complement human resources.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Education, according to Coombs (1970), consists of two components, inputs and outputs. Inputs consist of human and material resources and outputs are the goals and outcomes of the educational process. Both the input and output form a dynamic organic whole and if one wants to investigate and assess the educational system in order to improve its performance, effects of one component on the other must be examined.

Availability of teaching and learning resources (TLR) enhances the effectiveness of schools as these are basic things that can bring about good academic performance in the students. Maicibi (2003) opined that all institutions or organization are made up of human beings (workers) and other non-human resources. He further asserts that when the right quantity and quality of human resources is brought together, it can manipulate other resources towards realizing institutional goals and objectives. Consequently, every institution should strive to attract and retain the best of human resource. The economic austerity in recent times, coupled with the need for expansion of access to education, have combined to present educational planners worldwide with increasingly difficult choices in the allocation of available resources.

According to Department for International Development (DFID) in (Guidance note, a DFID practice paper, 2007) research evidence confirms that the most consistent characteristics in improving student performance are the availability of (a) textbooks and supplementary Teaching and Learning Materials (TLM), (b) well trained, prepared, supervised and motivated teachers (human resources and (c) Adequate physical facilities. DFID further asserts that most African countries like Malawi and Zimbabwe continues with monopolistic state primary textbook provision for TLM via the Malawi Institute of Education, with the active support of the donor community. Tanzania on the other hand is on the verge of re-introducing sole source textbook supply from the private sector and perhaps re-creating a new state textbook provision system. In Kenya, the government is considering a proposal from the Kenya Institute of Curriculum Development (KICD) formerly Kenya Institute of Education (KIE) to form itself into an educational publishing parastatal. Development Partners (DPs) have recently supported sole source textbook supply monopolies from the private sector in Ethiopia and at secondary level in Uganda. Sole source supply is often justified on the basis of lower costs and has on the other hand strongly contributed to complaints by schools with regard to poor quality textbooks and irregular, inaccurate and ineffective book distribution **(**DFID, 2007).

In recent years, access to computers and the internet has generated interest in the provision of e-materials. Where the internet is unavailable, unreliable or unaffordable, the development of local school networks and the provision of

e-materials to schools on compact disks (CDs/ flash disks can support e-learning via school servers and networks. But e-based learning in many developing countries and transitional economies have proved to be very expensive. TLM are often seriously underfunded alongside physical facilities and human resources. It is not surprising; therefore, that literacy has become a major problem in many countries when students and teachers have so little to read (The World Bank, 2001). The physical, material, human and financial resources invested in schools influence not only the education provided to students but also aspects of teachers and student motivation and consequently the educational outcomes.

The Organization for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) shows that resource shortages hinder instruction and lower student performance (OECD, 2007). In addition, inequalities in student's educational performance often reflect disparities in the resources invested in schools (OECD, 2008). Johan (2004) states that educational outcomes in schools are closely linked to utilization and adequacy of teaching and learning resources in different ways; poor utilization, underutilization, unqualified educators brings forth low educational achievement. The inadequacy of physical and material resources in schools is a major factor responsible for learning outcome of students. Schools that do not have adequate facilities such as workshops, laboratories, classrooms, teaching learning materials are unlikely to post good results.

Studies done in the past on the relationship between TLR and performance include, Likoko, Mutsotso & Nasongo (2013) in the study on adequacy of instructional materials and physical facilities and their effect on quality of teacher preparation in colleges in Bungoma county and a study done by Mbaria (2006) on the relationship between learning resources and performance in secondary schools in Ndaragwa district. All the above studies indicate that TLR were higher in higher performing schools than in low performing schools and that there is a significant difference in resource availability in the higher performing schools and low performing schools. Also indicate that most institutions are faced with challenges such as lack of adequate facilities like libraries and inadequate instructional materials and these factors tend to have a negative effect on the quality of graduates produced. Adan (2011) in the study on challenges faced by head teachers in implementing FDSE program in Wajir also posits that there is a major challenge on adequacy of physical facilities in most schools in the district, the only adequate materials available are textbooks, but the schools are in dire need of facilities like classrooms, toilets, desks. Chairs, laboratories as well teaching aids, and recommended that a larger percentage of FDSE funds be diverted to cater for TLR.

Provision and utilization of facilities is the responsibility of stake holders in education. (National Policy on Education, 2012). The Kenyan government ensures the implementation of the national policy on education by providing an enabling environment. Parents are also involved in purchase of resources in schools and

more so in putting up physical facilities through what is popularly referred to as Parents Teachers Association (PTA) projects. With the introduction of FDSE, the government has experienced challenges with provision of TLR in schools. The Kamunge report (1988) recommended the establishment of public day secondary schools as a way of expanding quality day secondary education, despite all these, planning and provision for TLR has remained a challenge in today's FDSE with low learning outcomes over the years.

1.2 Statement of the problem

Teaching and learning resources (TLR) are the most visible components of government educational provision and their absence is often noted by stakeholders. The Kenyan government has taken a number of measures in the previous years to improve and promote FDSE, this is evident in the increased expenditure channeled to this program. One of the policy statements is that a great proportion of education expenditure should be channeled to TLR. (National Policy of Education (NPE), 2012). If this policy were properly planned for and implemented, there should be enough TLR in most if not all secondary schools.

TLR play a paramount role in the teaching and learning process and inevitably the student's academic performance. This calls for provision of adequate TLR in FDSS. The FDSS are faced with a mirage of problems which include inadequate provision of TLR as a result of poor planning and also FDSE

program embarked on existing TLR in schools with increased enrolment since inception in 2008. The impact of FDSE resulted into the intended increase on enrollment on its first year of implementation and this immediately led to constrain on existing TLR such as teachers, classrooms, teaching and learning materials (Gatende, 2010).There has been a public outcry about poor performance in FDSE, especially in Nairobi County which has a total of 81 public secondary schools of which 59 are FDSS. In a world of international competition, academic performance in Embakasi has been on the decline characterized by poor performance in the Kenya Certificate of Secondary Education.

Embakasi district in Nairobi county has six out of seven schools being FDSS and according to K.C.S.E performance rating index, performance of the district in the past five years has been at a mean grade of D (plain) as shown in table 1.1

Table 1.1 Embakasi District performance index for the last five years (2009-2013)

Year	Performance Index (%)
2009	37.0
2010	33.4
2011	36.3
2012	27.73
2013	24.79
Mean	**31.84**

Source: DEO's office, Embakasi district (April 2014)

Table 1.1 shows the performance of Embakasi district with an average mean standard grade of D (plain) over the past five years. It is in reference to this performance that this research aims to find out the influence of TLR on students' KCSE performance in FDSE in Embakasi district in Nairobi County with a view to improving adequacy of TLR in schools and addressing the disparity in academic performance in Nairobi County.

1.3 Purpose of the study

The purpose of the study is to examine the influence of teaching and learning resources on students' performance in K.C.S.E in Free Day Secondary Education in Embakasi District, Nairobi County, Kenya.

1.4 Objectives of the study

i. To determine how availability of teaching and learning materials used in teaching and learning in FDSS in Embakasi district affect students' performance in KCSE.

ii. To establish how adequacy of physical facilities influence students' performance in KCSE in Embakasi district.

iii. To establish how adequacy of human resource influence students' performance in KCSE in FDSE in Embakasi district.

iv. To assess extent of resource utilization and its effect on students' performance in KCSE in FDSE in Embakasi district.

1.5 Research questions

The research questions of the study are:

i. In what ways does availability of TLM used in FDSE in Embakasi district affect students' performance in KCSE?

ii. How does adequacy of physical facilities influence students' performance in KCSE in FDSE in Embakasi district?

iii. How does adequacy of human resource influence students' performance in KCSE in FDSE in Embakasi district?

iv. What is the extent of resource utilization in FDSE in Embakasi district?

1.6 Significance of the study

The research aimed at assessing the influence of TLR on students' performance in KCSE in FDSE whose results may be useful to various institutions and education authorities involved in policy formulation, development, implementation and more so personnel in the MoEST in formulating policies to improve adequacy of TLR in schools. It is also hoped that the study will consequently increase literature on availability of TLR to assist education evaluators establish ongoing education quality monitoring networks and improvement processes, to guide teachers to improve use of TLM by using instructional strategies for appropriate delivery of curriculum; hence inform policies in teacher education. The research findings may also be used to form a basis for further research involved in planning for TLR used in schools

1.7 Limitations of the study

Limitations are factors which may affect the study (Nachmias & Nachmias, 2009). Since the study aims at finding out the influence of TLR on students' performance in KCSE in FDSS, respondents had reservations to share information with regard to adequacy of resources in their schools in relation to performance since they mistook the researcher to be on a fault finding mission. But the researcher physically visited the schools and explained that the study's aim was only for academic purposes.

1.8 Delimitation of the study

The study covered all FDSS in Embakasi District, Nairobi County in Kenya. Secondly the study was only carried out in FDSS leaving out boarding schools. This was based on the fact that FDSS have been performing poorly in national examinations compared to public boarding secondary schools. Though there may have been other factors that influence performance in the FDSS, the study concentrated only on availability of TLM, adequacy of physical facilities and human resources and the extent of utilization of all TLR.

1.9 Assumptions of the study

The following assumptions were made in this study; that FDSS met the required standards by the Ministry of Education to offer secondary education; that students admitted in these schools had met the minimum entry requirements and; that the schools have qualified teachers as per the requirements of the Ministry of Education.

1.10 Definitions of significant terms

This section gives definition of all significant terms as were used in the study.

Academic performance refers to school mean score in KCSE performance

Academic qualification refers to the highest level of schooling attained by a teacher

Access refers to making education affordable or available to the targeted groups

Adequacy refers to sufficiency of TLR for teaching and learning process

Assess refers to making judgment of TLR or evaluate the nature and quality of school resources.

Effectiveness refers to maximizing utilization of resources provided

Finance refers to management of revenues used to pay for TLR in schools

Free Day Secondary Education refers to the education provided by the government in the second cycle of a school system, the parent does not incur tuition and boarding expenses since the former is paid by the government and the student goes back home after school.

Human resources refers to personnel or a workforce of an institution that implements a school program so as to meet set goals

Influence refers to the power to affect or have an effect on something

In-service training refers to training of teachers once employed

Physical facilities refers to plants and equipment that schools use to meet goals

Resource utilization refers to use of teaching and learning items, physical facilities and human resources to meet goals.

Students performance tests/ examinations refers to educational achievements of students

Teaching and learning resources (TLR) refers to all human and non human resources that aid the teaching and learning process and include TLM (material resources) physical facilities and human resources (teachers)

Teaching materials refers to equipment and facilities used in the teaching and learning process like charts, chemicals and equipment

1.11 Organization of the study

The study has five chapters. Chapter one is an introduction of the whole study and includes the background to the study, statement of the problem, the objectives, research questions, purpose of the study, limitations and delimitations of the study, significance and assumptions of the study and definition of significant terms. Chapter two consists of literature review of previous publications relevant to the study; it contains the concept of TLR, to include TLM, physical facilities, human resources, extent of TLR utilization and the influence of utilization of TLR on students' performance in KCSE, theoretical framework, conceptual framework and summary of literature review, while chapter three covers a detailed description of research methodology, design, target population, sampling techniques and sample size, research instruments, validity and reliability, data collection procedures and analysis techniques. Chapter four involves data analysis, interpretation and discussion of research findings. Chapter five provides summary of findings, conclusion, recommendations and areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the study variables, hence deals with the concept of teaching and learning resources, their availability and adequacy in FDSS and extent of utilization and the influence of utilization of TLR on students' KCSE performance. The literature review gives an evaluation of the TLR in use in the current FDSE and makes references to studies that have been done in the past in the study area.

2.2 Concept of teaching and learning resources

Adequacy of TLR refers to satisfactory or acceptable quality and quantities of material resources, physical facilities and human resources. According to DFID (2007), adequacy of instructional materials such as textbooks which is the main instruction material is the most cost effective input affecting student performance. In this context adequate supply is usually assumed to be a minimum of one textbook per three students, and at primary level enough reading books so that every child has the opportunity to read at least one new book every week.

Adequacy of TLR determines an educational system's efficiency, according to Padmanabhan (2001). For effective teaching and learning, textbook and resource materials are basic tools, their absence or inadequacy makes teachers handle subjects in an abstract manner, portraying it a dry and non exciting. It is also

important to have appropriate personnel plan for adequate instructional materials and physical facilities to support educational effort. Therefore Scarcity of textbooks, libraries and physical facilities according to Coombs (1970), will constraint educational system from responding more fully to new demands. In order to raise the quality of education, its efficiency and productivity, better learning materials (TLM), physical facilities and human resources are needed. This research will look into the adequacy of TLR in FDSS since the implementation of FDSE in public education.

2.3 Teaching and learning resources and performance

TLR comprises basically three components: material resources, physical facilities and human resources (DFID, 2007) Studies done in the past with regard to availability of TLR in education reveal that TLR are not always available in schools. This inadequacy of TLR has been of serious concern to educators. According to Lyons (2012) learning is a complex activity that involves interplay of students' motivation, physical facilities, teaching resources, and skills of teaching and curriculum demands. Availability of TLR therefore enhances the effectiveness of schools as they are the basic resources that bring about good academic performance in the students. The necessary resources that should be available for teaching and learning include material resources, human resource such as teachers and support staff and, physical facilities such as laboratories, libraries and classrooms.

TLR help improve access and educational outcomes since students are less likely to be absent from schools that provide interesting, meaningful and relevant experiences to them. These resources should be provided in quality and quantity in schools for effective teaching-learning process. Several studies have been conducted on the impact of instructional materials on education. Momoh (2010) conducted a research on the effects of instructional resources on students' performance in West Africa School Certificate Examinations (WASCE). The achievements of students in WASCE were related to the resources available for teaching. He concluded that material resources have a significant effect on student's achievement since they facilitate the learning of abstract concepts and ideas and discourage rote-learning. When TLR are inadequate education is compromised and this inevitably is reflected in low academic achievement, high dropout rates, problem behaviors, poor teacher motivation and unmet educational goals. The study focuses on the influence of TLR on students' KCSE performance since the introduction of FDSE in Embakasi District.

2.3.1 Influence of availability of Teaching and learning materials on students' performance in KCSE

Material resources include textbooks, charts, maps, audiovisual and electronic instructional materials such as radio, tape recorder, television and video tape recorder. Other category of material resources consist of paper supplies and writing materials such as pens, eraser, exercise books, crayon, chalk, drawing books, notebooks, pencil, ruler, slate, workbooks and so on (Atkinson, 2000).

Adeogun (2001) discovered a very strong positive significant relationship between instructional resources and academic performance. According to Adeogun, schools endowed with more materials performed better than schools that are less endowed. This corroborated the study by Babayomi (1999) that private schools performed better than public schools because of the availability and adequacy of teaching and learning materials. Mwiria (1985) also supports that students performance is affected by the quality and quantity of teaching and learning materials. The author noted that institutions with adequate facilities such as textbooks stand a better chance of performing well in examination than poorly equipped ones. Therefore, poor performance could be attributed to inadequate teaching and learning materials and equipment. The study will look into the adequacy of TLM in FDSE in Embakasi district.

2.3.2 Influence of adequacy of physical facilities on students' performance in KCSE

The development and maintenance of physical facilities in educational institutions by communities, parents, and sponsors should continue to be encouraged. This is because lack of such facilities interferes with learning process (Republic of Kenya, 1988a). DFID (2007) indicates the importance of school facilities in relation to quality education. Difference in school facilities would be seen to account for difference in achievement. Physical facilities include classrooms, lecture theatres, auditoriums, administrative block, libraries, laboratories, workshops, play grounds,

assembly halls, and special rooms like clinics, staff quarters, students' hostels, kitchen, cafeteria, and toilet amongst others.

He further asserts that learning experiences are fruitful when there are adequate quantity and quality of physical resources; and that unattractive school buildings, crowded classrooms, non availability of playing ground and surroundings that have no aesthetic beauty can contribute to poor academic performance. Fonseca and Conboy (2006) posit that the physical conditions and organization of schools facilitate or inhibit construction of a culture of success.

Ministry of Education Science and Technology, MOEST (2005) explains the importance of ensuring that there are adequate and appropriate facilities for teaching and learning so that educational programmes could be implemented effectively. The research focuses on availability of TLR. The study will look into the adequacy of physical facilities in FDSE in Embakasi District.

2.3.3 Influence of adequacy of human resources on students' performance in KCSE

The adequacy of TLR determines the success or failure of the educational system. A method of determining the extent of teacher's adequacy is through Students-Teacher ratio (STR) which is the number of students assigned to teachers for teaching. STR is used to determine the number of students that are to be allocated to a teacher in a given educational level. The STR shows a teacher's workload at a particular level of education. It also helps in determining the number of teaching

manpower needed for a projected student's enrolment. Thus, it could be used to determine either teachers are over-utilized or underutilized (Afolabi, 2005).

An educational institution's human resources consist of teachers and other support staff who engage in the process of teaching and learning. They include, laboratory assistants, cooks amongst others. There should be optimum use of the available human resource especially teachers if good performance is to be achieved. Republic of Kenya (RoK, 2005) where teacher shortage exists, the head teacher and Board of Management (BOM) should hire on temporary basis, as there are very many trained but unemployed teachers. The study will find out the adequacy of human resources in FDSE in Embakasi district.

2.3.4 Extent of utilization of TLR in FDSE

The utilization of resources in education brings about fruitful learning outcomes since resources stimulate students learning as well as motivating them. A common way to examine the utilization of education resources is to analyze school expenditure. This is because school expenditures constitute the bulk of all resources devoted to schooling and they are tractable instruments of education policy (Meghir, 2002). Since the inception of FDSE policy, access to secondary education has gone up with the number of students enrolling in secondary education rising from 1.3 million in 2009 and 2.1 million students this year, raising the transition rate from 64% to 77% over the period.("FDSE', 2014) led to overcrowded classrooms and overutilization on existing TLR. (KESSP, 2010)

According to SACMEQ (2003) Survey revealed that few schools provided libraries or reading corner to enable literate environment UNESCO (2007).

A school should adequately utilize the available facilities to advance learning opportunities offered to pupils. It is the responsibility of the head teacher to ensure that there is adequate classroom space to enable teaching learning process to take place and should ensure that all facilities are efficiently and effectively utilized so as to achieve educational goals and improve learning outcomes..

2.4 Summary of literature review

In conclusion, the provision of FDSE in public schools has created the need for an evaluation of the adequacy of TLR which seems to be over stretched, hence has an effect on the performance of the schools in Embakasi district. World bank (2013) indicates that resource availability in schools is inadequate in terms of student text book distribution, infrastructure availability and pupil teacher ratio. This study therefore aims at putting measures in place to check on the availability of teaching and learning materials, physical facilities and human resources necessary so as to improve the performance of FDSS in the district.

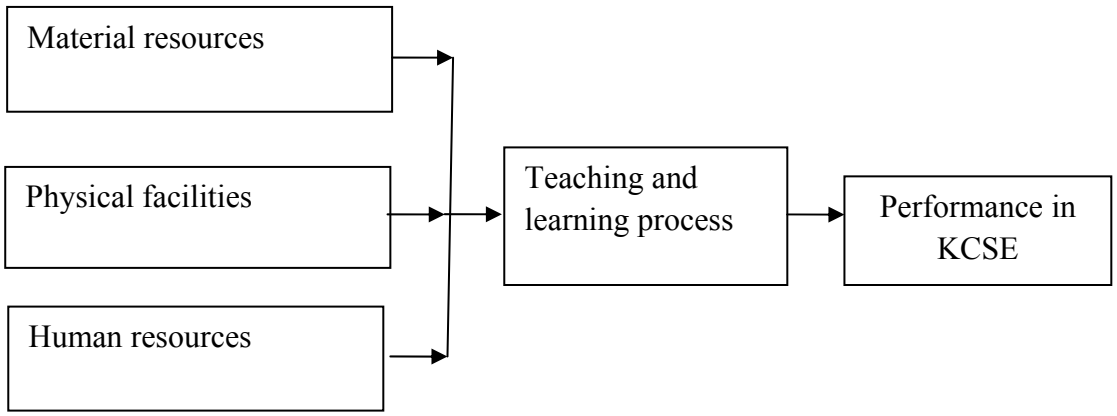
2.5 Theoretical framework of the study

The study employs Education Production Theory (EPT). There is little consensus in the definition of and measurements of inputs and outputs of education. However, the issue seems to arise from lack of agreed goal of education that can be translated to operational and measurable objectives, hence there is no

standardized unit of outputs and inputs. Thus inputs are all TLR to include TLM, qualified teachers and the school physical facilities. The end result, the output is the students' performance and achievement. In this study measures such as head teachers' and teachers' experience and qualifications, physical facilities, and all material resources used in teaching and learning are used as inputs while specific measures of outputs are grades attained by the students at examinations. The problem with the input measures are the qualitative dimensions which are hard to define and difficult to measure. However, after all the inputs have been used, their success is then measured by the result of the KCSE examination of given standards.

2.6 Conceptual framework of the study

Figure 2.1 Representation of interaction between variables of the study



The conceptual framework illustrates the influence of TLR on students' KCSE performance. The independent variables are the adequate TLM, physical facilities and qualified teachers being able to influence learning outcomes (dependent variable).

The TLM include textbooks, teachers' guides, reference books, models, excursions/field trips, charts, calculators, computers and internet. Their availability enables learners to complete assignments, cover the syllabus adequately and consequently improved academic results. Physical facilities include desks and chairs, dormitories, dining halls, offices, laboratories, library, agriculture rooms, home science rooms, computer rooms, play grounds, stores, toilets/latrines recreational facilities which help in creating a conducive learning environment while others directly affect curriculum implementation. A school that is well endowed with adequate physical facilities is likely to attain better educational outcomes than one that is deprived of these facilities. The teachers and other human resources are therefore expected to utilize the TLM and available physical facilities to achieve set goals and improve learning outcomes.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology used in carrying out the research. It highlights the research design, target population, sampling techniques and sample size, research instruments, reliability and validity of the research instrument, data collection procedures and data analysis techniques.

3.2 Research design

The study was carried out using a descriptive research survey design. Orodho (2005) notes that a descriptive research survey design is an appropriate way of evaluating educational programmes as educational activities operate in a social context. According to Krishnaswami (2001), this design is a fact finding study which involves collecting data directly from a population thereof at a particular time. This design is ideal for this study because the study was conducted in a setting that requires direct responses from the respondents while investigating existing phenomenon without manipulating the variables. The design also allows the participants to describe and provide their opinions regarding the variables being studied in detail.

3.3 Target population

Nachmias and Nachmias (2009) define the target population as the entire set of relevant units of analysis or data. The target population of this study comprised of all the 6 FDSS in Embakasi district, their principals and teachers. There are about 2400 students and a total of 90 class teachers in the district and the study targeted all of them. (DEO, Embakasi district) The principals are the supervisors of TLR and implementers of F.D.S.E in their specific schools and were able to supply accurate information with regard to availability of TLR in their schools. The class teachers on the other hand, are the implementers of the FDSE hence directly utilized the available TLR and were therefore in the best position to provide reliable information on TLR availability, utilization and adequacy. The students also indicated their interaction with the available TLR in their schools.

3.4 Sampling techniques and sample size

Sampling refers to selecting a given number of subjects from a target population so as to represent that population (Kombo & Tromp, 2005). In this study, a census was used as all FDSS in the district were studied. While simple random sampling was used in selecting the students and teachers in each school. Kombo & Tromp further state that in simple random sampling all the individuals in the defined population have an equal and independent chance of being selected as a member of the sample size. The two methods were used in this study. According to Gay (1992) 20% is adequate enough to represent a small population while 10% to represent a large population. Random sampling was used to ensure a fair

representation of all the groups. The researcher chose form three students since they have stayed long enough in the school compared to form one students and two students and form four students were left out so as to allow them prepare for their K.C.S.E exams.

Table 3.1 Sample size

Target population	N	Sample size (n)	%
Principals	6	6	100
Class teachers	90	18	20
Students	2400	240	10
Total	**2496**	**264**	**10**

Source: DEO's office, Embakasi district

3.5 Research instruments

Mugenda and Mugenda (2003) observe that the use of questionnaires is a popular method of data collection in education because of the relative ease of cost effectiveness with which they are constructed and administered to the large samples. Observations, questionnaires and content analysis were the methods of data collection; observations were done on physical facilities for teaching and learning. A questionnaire was generated with both open and close ended questions to the head teachers, class teachers and students.

The research had three categories of questionnaires; the principals' questionnaire included basic demographic data on their gender, length of service and qualification; school demographic characteristics like, school enrolment and K.C.S.E performance for the last five years, information on availability, adequacy and frequency of use of TLR. The teachers' questionnaire as well included basic demographic data on teachers' gender, length of service and qualification and teaching subject; availability of TLR in their schools and extent of resource utilization while the students' questionnaires also included basic demographic data on age, also evaluated the presence, condition and size of physical facilities in their schools, availability and adequacy of TLM, in their school and availability of human resources and expected grade at the end of the programme. Document analysis involved sourcing secondary data on results of K.C.S.E for the period 2009- 2013 which was obtained from the DEO's office and analyzed with regard to performance.

3.5.1 Validity of the instrument

Mugenda and Mugenda (2003) says validity has to do with how accurately the data obtained in the study represent the variables of the study. Construct validity is the degree to which a test measures what it claims to measure, that is giving a legitimate operationalization in a study in relation to the theoretical constructs. To ensure validity, expert judgment was sought where the researcher availed the instruments to experts to analyze. The advice given was used to improve the instruments. This was conducted prior to the actual research where two schools

were involved; these two schools were not included in the sample study and were randomly selected from the neighboring Kamukunji district which has similar characteristic of schools as those in Embakasi. Based on the analysis of the piloting, modification and removal of ambiguous or unclean items such as questions, inaccurate responses or indicated weaknesses was done to attract appropriate responses from the respondents.

3.5.2 Reliability of the instrument

Reliability concerns the degree to which a particular procedure gives similar results over a number of repeated trials (Orodho, 2009). The instruments in this category were the same for piloting and actual study. Test retest was conducted in the piloting schools in a span of two weeks apart, a correlation coefficient between the first and second results were computed using the Pearson product correlation coefficient which was generated using the statistical package for social scientist (SPSS) software to determine reliability. According to Nachmias and Nachmias (2009) positive coefficient of over 0.7 is considered to be reliable, and the higher the coefficient the more reliable the instruments. The computation showed the correlation coefficient (r) to be 0.86, 0.89 and 0.87 for the head teachers', teachers' and students' questionnaires respectively, hence showing all the instruments were reliable tools.

The formula used for the calculation of r is

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum(xy^2) - (\sum x^2)][N\sum(y^2) - (\sum x)^2]}}$$

Where

r = pearsons correlation coefficient

x = values in first set of data

y = values in second set of data

N = total number of scores

(Kombo & Tromp, 2006)

3.6 Data collection procedures

A research permit to conduct the study was sought from the National Commission for Science, Technology and Innovation (NACOSTI), the researcher also sought consent of the Embakasi District Education Officer (D.E.O) so as to carry out the study in the district. Thereafter the researcher visited the sampled schools to introduce herself to the principals to seek consent to carry out research in their schools and also arrange on when to interview the principals. The questionnaires were then delivered by the researcher to the respondents in their respective schools for self administration. For accuracy and consistency the respondents completed the questionnaires as the researcher waited and collected on completion.

3.7 Data analysis techniques

Data analysis refers to the process of evaluating data analytically and logically so as to examine each component of the data that is collected using the research instruments. After data collection, the instruments were checked for completeness and errors, the questionnaires were then be arranged, coded and entered into the computer using Statistical Package for Social Science (SPSS) where it was analyzed. Descriptive statistics was used to analyze quantitative data by filling frequencies and percentages presented in table, charts, and graphs. Open ended questions and observations were analyzed qualitatively in narrative form and also presented in form of tables.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter contains the findings of the data analysis of the study together with their interpretations. All themes discussing the same research questions were presented and analyzed together. The chapter begins with the demographic information of the respondents and schools followed by analysis, presentations, interpretation and discussions of research findings based on the respondents' and schools' demographic characteristics, followed by research questions. Tables, bar graphs and pie charts are used to present the findings while frequencies, means and percentages are used to discuss the findings.

4.2 Questionnaire return rate

Completion rate is the proportion of the sample that participated as intended in all the research procedures. All the 6 head teachers, 18 class teachers and 240 students sampled, filled out and returned the questionnaires, which was a 100% return rate respectively. It is usually assumed that the higher the response rate, the more likely the results are representative of the population provided the sampling is appropriate, hence 100% return rate is deemed as an accurate representation of

the population responses (Mulusa, 1988). A summary of the questionnaire return rate is shown in the Table 4.1.

Table 4.1: Questionnaire completion rate

Respondents	Expected responses	Actual responses	Percent
Head teachers	6	6	100.0
Class teachers	18	18	100.0
Students	240	240	100.0
Total	**264**	**264**	**100.0**

4.3 Demographic information of the respondents and schools

The demographic information of the head teachers and teachers was based on their gender, academic qualification and length of service in the current school and duration of teaching for the teachers. The demographic characteristics of students covered in this section include their age and duration in current school, while the demographics of the school include the schools' enrolment trends, KCSE performance for the last five years, number of streams and number of students per class. Demographic characteristics give a clear understanding of the respondents and institutions included in the study.

4.3.1 Head teachers' and teachers' gender

The head teachers and class teachers were asked to indicate their gender. The data is presented in Table 4.2

Table 4.2: Head teachers' and class teachers' gender

Gender	Head teachers		Class teachers	
	F	**Percent**	**F**	**Percent**
Male	0	0	6	33.3
Female	6	100	12	66.7
Total	6	100	18	100

Data on the gender of the head teachers indicated that 6(100%) were female while 0% was male. Data on class teachers shows that 12(66.7%) were female while 6(33.3%) were male. This shows there is an appropriate gender distribution among class teachers but there were no males among the head teachers. Their gender distribution was deemed appropriate and would not have in any way affected the researcher in gathering information about adequacy of TLR and FDSE policy in their schools.

4.3.2 Head teachers' and teachers' academic qualifications

The head teachers and class teachers were asked to indicate their highest academic qualifications. The data is presented in Table 4.3.

Table 4.3: Distribution of head teachers' and class teachers' responses on academic qualifications

Qualification	Head teachers		Class teachers	
	F	**Percent**	**F**	**Percent**
Phd.	-	-	-	-
Master of Education	2	33.3	-	-
Bachelor of Education	4	66.7	16	88.9
Diploma of Education	-	-	2	11.1
Total	**6**	**100**	**18**	**100**

Findings indicated that the majority of the head teachers, 4(66.7%), had a bachelor of education degree while 2(33.3%) had master of education. Although most teachers, 16(88.9%), had a bachelor of education, 2(11.1%) had diploma of education. These findings indicate that the head teachers and class teachers in the district were professionally qualified hence they had the best skills to implement FDSE and also cope with their teaching tasks. Also the high number of teachers who had B. Ed level of qualifications was probably due to the fact that most universities have opened up opportunities for further learning such as school based

programmes at an affordable cost. This has provided the diploma teachers with an opportunity to join the ranks of the B.Ed teachers. Again most of the diploma teachers training colleges have been upgraded to university campuses and therefore very few diploma teachers are annually employed by the TSC. None of the teacher respondents had a master of education degree, probably because a substantial number of teachers were comfortable with the B.Ed level of qualification hence do not find the need to pursue masters degrees. This was perhaps due to the fact that they perceived masters programme to be quite expensive and time consuming and after all not accompanied by a substantial pay hike.

4.3.3 Head teachers' length of service in current school

The head teachers were asked to indicate their length of service in the current school. The data is tabulated in Table 4.4.

Table 4.4: Head teachers' length of service in the current school

Length of service	Head teachers	
	F	**Percent**
1 -3 years	2	33.3
4-6 years	3	50
7-9 years	-	-
Over 9 years	1	16.7
Total	**6**	**100**

Findings in Table 4.4 revealed that half of the head teachers population in the district 3(50%) had between 4-6 years experience on managing their current schools on the other hand 2(33.3%) of them had managed their schools for 1-3 years. Only 1(16.7%) had stayed in the school for over 9 years. Based on these results, it can be concluded that majority of the respondents had worked at current stations long enough, so they had enough experience, and were in a position to give useful insights into the analysis of TLR available in their schools and challenges experienced in the implementation of free day secondary education.

4.3.4 Teachers' length of service

Teachers were asked to indicate their length of service. The findings are shown in figure figure 4.1

Figure 4.1: Teachers' length of service

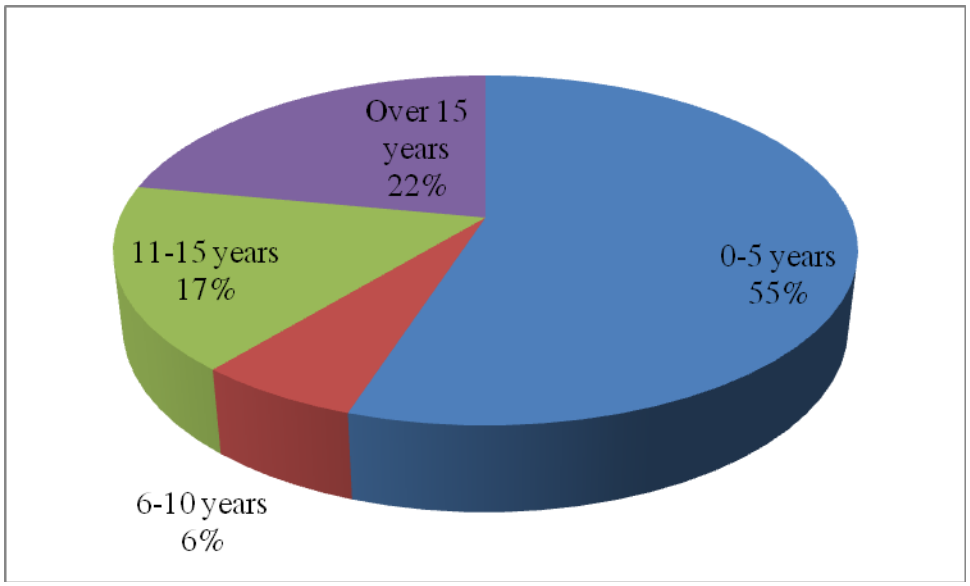


Figure 4.1 indicates that the majority of teachers 10(55.6%) had a teaching experience of 0-5 years; this was followed by 4(22.2%) who had over 15 years, 3(16.7%) had 11-15 years and only 1(5. 6%) had 6-10 years teaching experience. This indicates that the teachers had ample work experience to handle their teaching tasks effectively.

4.3.5 Teachers' teaching subjects

The teachers were asked to indicate their teaching subjects. The findings are shown in figure 4.2.

Figure 4.2: Distribution of teachers' teaching subjects

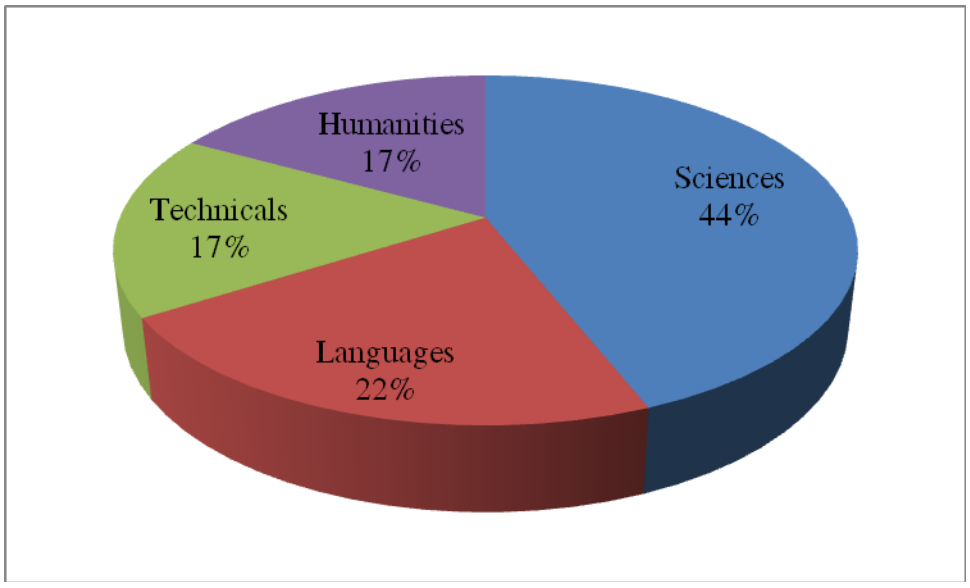


Figure 4.2 indicated that there were more science teacher respondents 8(44.4%), followed by languages 4(22.2%). Humanities and technicals accounted for 3(16.7%) each. This trend depicts the current status of most schools putting more emphasis in science subjects as compared to humanities; hence a probable contributory factor to low mean scores since high grades are obtained by an aggregate of all grades obtained across all the subjects.

4.3.6 Teachers' number of lessons per week

The teachers were also asked to indicate the number of lessons they taught per week, the results shown in figure 4.3.

Figure 4.3: Number of lessons per week

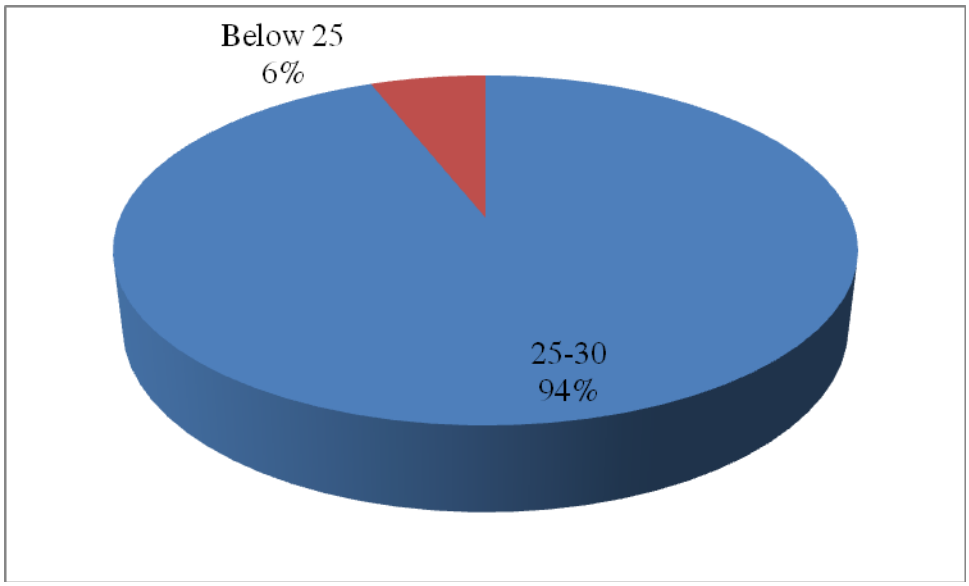


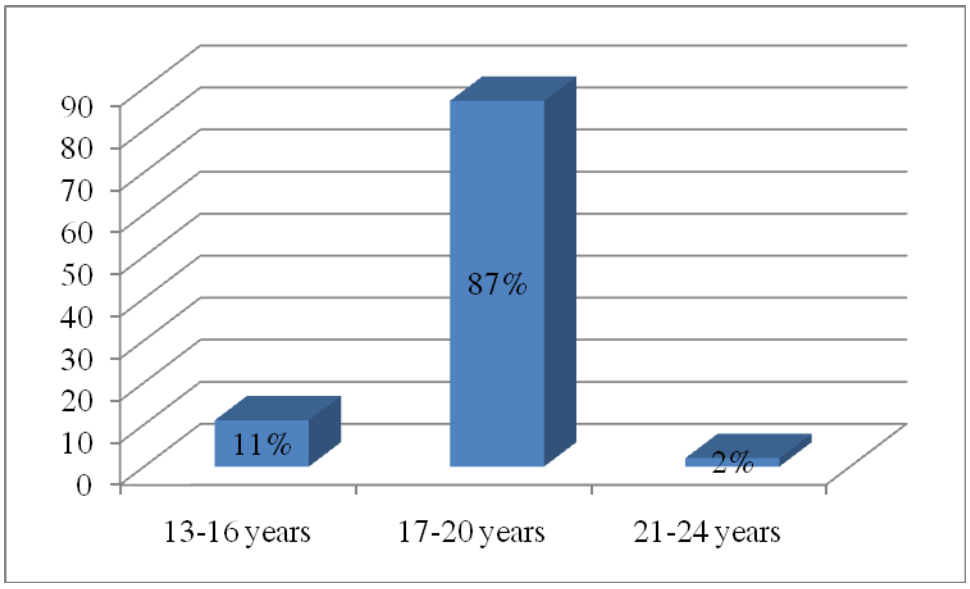
Figure 4.3 indicates that majority of teachers 17(94.4%) had 25-30 lessons per week, with the highest number of teachers having the maximum teaching loads as compared to only 1(5.6%) who had below 25 lessons per week. This indicates that most teachers in the district are at full lesson load capacity and unable to take more lessons with increasing annual enrolments in the schools. This is because the MoE recommends a minimum load of 28 lessons which is quite high to enable a teacher adequately prepare for lessons and handle all other administrative roles in the

school, this may explain why head teachers have decided to employ teachers under BOM, so that teachers workload is reduced to a maximum of 30.

4.3.7 Students' age distribution

The students were asked to indicate their ages, their age distribution shown in figure 4.4.

Figure 4.4: Students' age distribution



The findings in figure 4.4 revealed that, 208(86.6%) of the students were aged between 17-20 years, which is the appropriate average age of form three students. The study targeted form three students since their age and duration was deemed appropriate for the study since form three students had stayed long enough in the schools hence were able to provide accurate information necessary for the study. Other students, 26(10.8%) were aged between 13-16 years could have probably

started schooling at an earlier age than recommended and 6(2.6%) were aged between 21-24 years, who probably repeated classes, started schooling late or dropped out of school at a certain level of education before resuming hence variation in their ages.

4.3.8 Students' duration in the current school

The students were asked to indicate their duration in the current school, the findings are shown in Table 4.5.

Table 4.5: Students' duration in the current school

Number of years	F	Percent
3 years	234	97.5
4 years	6	2.5
Total	**240**	**100**

The study sought to establish the duration the students had spent in their current schools, from the findings in Table 4.5. Majority of the form three students 234(97.5%) had spent 3 years in their current school, only 6(2.5%) of the rest of the respondents had spent four years in their current school, the latter could be attributed to students who might have repeated classes due to poor performance or dropped out of school and rejoined hence stayed for four years hence taking longer period in school.

4.3.9 Number of streams in schools

The head teachers were asked to indicate the number of streams of their schools, the data is as shown in figure 4.5

Figure 4.5: Number of streams

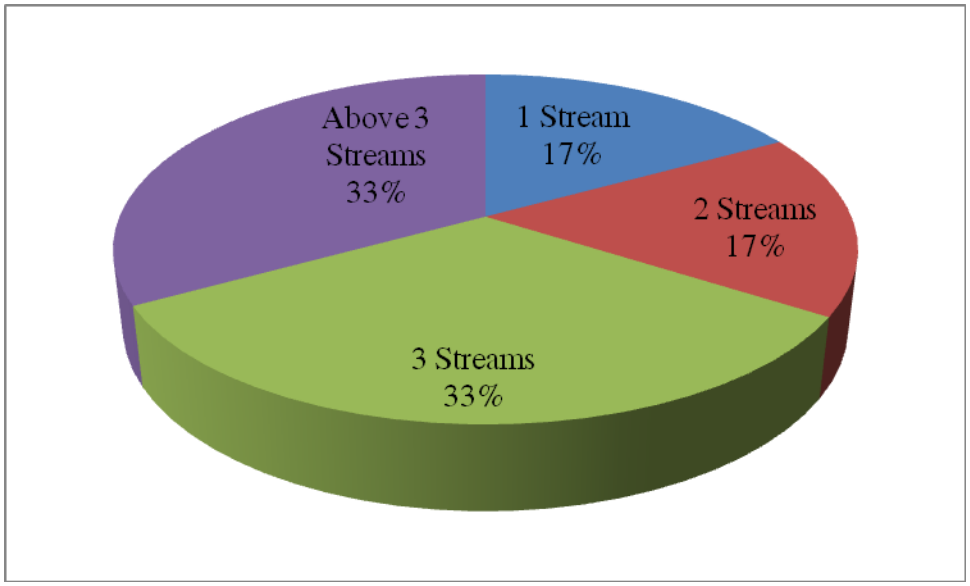


Figure 4.5 indicates that majority 4(66.6%) of FDSS have three and above streams, one and two streamed schools account for 16.7% each. These findings depict rapid expansion as a result of increased enrolment; thereby schools have large number of streams. The one and two streamed schools are new and were just established.

4.3.10 Average number of students per class

The head teachers were asked to indicate the average number of students per class, the findings shown in figure 4.6

Figure 4.6: Average number of students per class

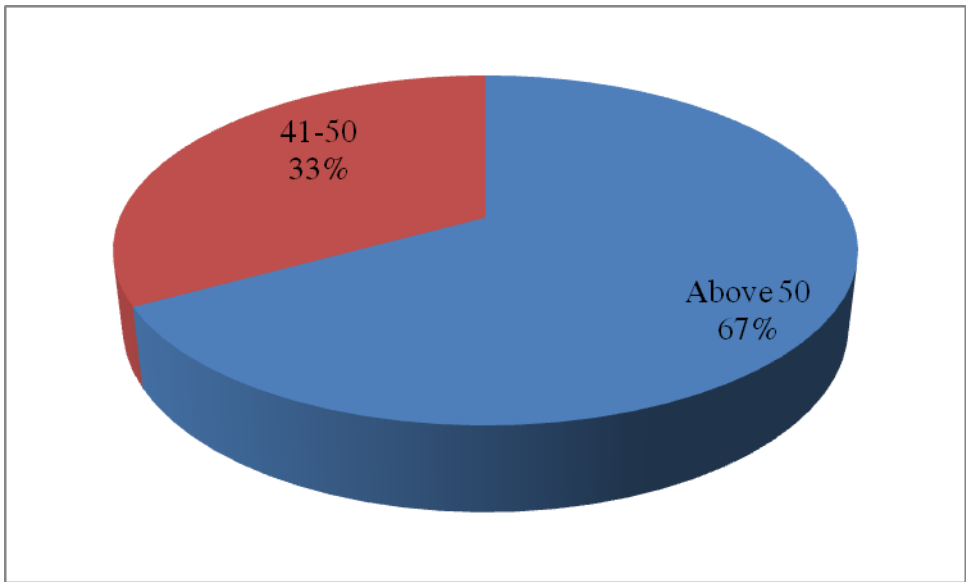


Figure 4.6 indicates that majority of the schools 4(66.7%) have above 50 students per class. The MoE recommends 35-40 students per class, this implies classrooms in the district are overpopulated with up to above 50 students per class. This depicted the rapid expansion of FDSE as a result of annual increase of enrolment rates due to increased transition rates from primary schools as a result of FPE. None of the schools meet the policy directive of 35-40 students per class since the rest of the schools 2(33.35) accommodate 41-50 students per class.

4.3.11 Schools' enrolment

The study investigated the trends in enrolment for the last five years, and the results shown in Table 4.6

Table 4.6: Schools' enrolment for the years 2009 – 2013

Year	Enrolment		Total
	Boys	Girls	
2009	920	764	1684
2010	1076	962	2038
2011	1243	1052	2295
2012	1286	1028	2314
2013	1335	1084	2419

Table 4.6 indicates the enrolment for both boys and girls have been increasing over the past five years from 1684 to 2419 in 2013, this also implies that transition rates from primary education since inception of FPE has gone up, and consequently increased annual enrolment rates experienced since inception of FDSE.

4.3.12 Schools' KCSE mean scores (2009-2013)

The head teachers were asked to indicate their school's mean scores for the last five years 2009-2013, the data is tabulated in Table 4.7.

Table 4.7: KCSE mean scores for the years 2009 – 2013

KCSE mean score	Rating	2009 Percent	2010 Percent	2011 Percent	2012 Percent	2013 Percent
0 to 4.0	Poor	66.7	50	66.7	66.7	66.7
4.1 to 6.0	Fair	33.3	50	33.3	33.3	33.3
6.1 to 9.0	Good	-	-	-	-	-
9.1 and above	Very good	-	-	-	-	-
Total		**100**	**100**	**100**	**100**	**100**

Table 4.7 shows a standard mean grade D+ performance from 2009 to 2013; however means of 6.1 and above has not been registered by any FDSS in the past five years. The performance in the district is rated as poor hence the need to look into the adequacy of TLR in the district and examine the probable influence of the TLR on students' KCSE performance.

4.4 Influence of availability of TLM on students' performance in KCSE

To establish the influence of availability of TLM on performance in KCSE in FDSE, the respondents were asked to respond to statements that sought to answer the same. This section discusses the responses of the respondents from data gathered. For example the head teachers and teachers were asked to indicate the availability of TLM in their schools. Data is presented in Tables 4.8 and 4.9.

Table 4.8: Head teachers' responses on adequacy of TLM

Availability of TLR	**Responses (percent)**				
TLM	**5**	**4**	**3**	**2**	**1**
1. Number of reference books	1(16.7)	4(66.6)	-	1(16.7)	-
2. Number of teachers guide	1(16.7)	-	4(66.6)	0(16.7)	1(16.7)
3. Teaching resources such as manilas, dusters, chalk, models charts,	1(16.7)	3(50)	1(16.7)	-	1(16.7)
4. Usage of resource persons	1(16.7)	1(16.7)	3(50)	-	1(16.7)
5. Usage of field trips/excursions	-	-	2(33.3)	3(50)	1(16.7)
6. Usage of computers in teaching	-	1(16.7)	2(33.3)	1(16.7)	2(33.3)
7. Number of calculators	-	1(16.7)	3(50)	1(16.7)	1(16.7)
8. Books and equipment storage facilities	-	1(16.7)	3(50)	2(33.3)	-

Legend: 5- strongly agree, 4-agree, 3-neutral, 2-disagree, 1-agree

The findings in Table 4.8 show that when the head teachers were asked about the adequacy of reference books the responses of the head teachers 4(66.6%) indicated they agreed on their adequacy, this implies the reference books were adequate. These results indicated that majority of schools in the district have allocated enough funds towards the purchase of reference books. The head teachers were neutral on adequacy of teachers' guides cited by 4(66.6%).This indicated that the number of teachers' guides were fairly adequate. The responses on use of computers by the head teachers indicated that none of the head teachers strongly agreed on their adequacy. This implied that most schools in the district had not embraced the use of ICT in teaching, learning and management of schools. This was probably due to inadequate funds to purchase computers, employ computer instructors and train teachers. Computers are important instructional aids in the teaching/learning process. Appropriate use of instructional aids helps keep learners interested and improves academic performance.

Again when the respondents were asked about the use of calculators in their schools, 3(50%) of the head teachers were neutral about use of calculators by students. On the adequacy of books and equipment stores the none of the head teachers' strongly agreed on its adequacy, implying there was a gross lack of books and equipment stores. This was probably brought about by limitations of funds necessary for construction and the challenge of having trained personnel to run the stores.

Table 4.9: Teachers' responses on adequacy of TLM

Availability of TLR	**Responses (percent)**				
Physical facilities	**5**	**4**	**3**	**2**	**1**
1. Number of reference books	2(11.1)	1(5.6)	7(38.9)	7(38.9)	1(5.6)
2. Number of teachers guide	1(5.6)	3(16.7)	7(38.9)	5(27.8)	2(11.1)
3. Teaching resources such as manilas, dusters, chalk, models, charts,	-	7(38.9)	4(22.2)	3(16.7)	4(22.2)
4. Usage of resource persons	-	4(22.2)	5(27.8)	6(33.3)	3(16.7)
5. Usage of field trips/excursions	1(5.6)	2(11.1)	1(5.6)	10(55.6)	4(22.2)
6. Usage of computers in teaching	1(5.6)	2(11.1)	5(27.8)	3(16.7)	7(38.9)
7. Number of calculators	-	3(16.7)	7(38.9)	2(11.1)	6(33.3)
8. Books and equipment storage facilities	1(5.6)	2(11.1)	4(22.2)	4(22.2)	7(38.9)

Legend: 5- strongly agree, 4-agree, 3-neutral, 2-disagree, 1-agree

The findings in Table 4.9 show that when the teachers were asked about the adequacy of reference books the responses of the teachers 7(38.9%) were neutral on adequacy of reference books, this implies the reference books may be fairly adequate. Reference books are important resources in teaching and learning because they help in enhancing clarity of content and they give the learners and the teachers a wider scope. Again the teachers were neutral on adequacy of teachers' guides cited by 7(38.9%).This indicated that the number of teachers' guides were fairly adequate. It is possible that teachers also overlook the importance of the

guides, they perhaps rely more on textbooks and reference books in preparation of their teaching. Lyons (2012) asserts on the importance of instructional materials in the teaching learning process as facilitates learning of abstract concepts and ideas and discourage rote learning and helps to stimulate and motivate learners. The responses on use of computers by the teachers indicated that only 1(5.6%) of teachers strongly agreed on their adequacy. This implied that most schools in the district had not embraced the use of ICT in teaching, Appropriate use of instructional aids helps keep learners interested and improves academic performance. According to (Nicholls, 2000) exclusively oral teaching cannot be the key to successful pedagogy. To make the teaching learning process interesting the teacher has to use instructional aids.

Again when the respondents were asked about the use of calculators in their schools, 7(38.9%) of teachers were neutral but also 6(33.3%) of teachers strongly disagreed on their use, this may have indicated that the students who don't have calculators may borrow from one another during specific lessons. Therefore it is apparent that the shortage of this facility may not necessarily be evident in during lesson time. Calculators are a mandatory requirement in teaching/learning and are allowed during internal and national examinations since it makes computations easier, accurate and faster. On the adequacy of books and equipment stores, only 1(5.6%) of the teachers strongly agreed on its adequacy, implying there was a gross lack of books and equipment stores. Most schools issued books to the

learners and collected at the end of the year; consequently, putting up of book stores was not a priority in most schools.

Textbook : pupil ratio

Further the head teachers were asked to indicate the pupil/ text book ratio in three compulsory subjects and the results provided in Table 4.10

Table 4.10: Textbook: pupil ratio

Subject	Ratio	Frequency	Percent
Maths	1:01	1	16.7
	1:03	5	83.3
English	1:01	1	16.7
	1:02	1	16.7
	1:03	4	66.7
Kiswahili	1:02	1	16.7
	1:03	5	83.3

Table 4.10 indicates that the extent of sharing textbooks is quite minimal in the three compulsory subjects, with the highest number of students sharing books are 3 at 83.3% in mathematics, 66.7% in English and 83.3% in Kiswahili. A few schools (2) allocated one book per student in mathematicss and English only.

The findings of the study indicate that the schools investment on text books was adequate, this probably was due to the fact that the government funding through

FDSE policy was channeled to provision of TLM. Also most schools gave priority to the core subjects, mathematics, English and Kiswahili, maybe because in the core subjects assignments are given after every lesson. When instructional material are lacking or inadequate the teaching/ learning process is compromised and this inevitably is reflected in low academic achievement, high drop out rates, problem behaviours, poor teacher motivation and unmet educational goals (Hassan, 2000).

Textbooks, set books, teachers' guides and models are essential in implementation of the curriculum. Textbooks and set books ensure that students can do their private reading, complete assignments in time and conduct group discussions. Textbooks and set books can also be used as reference materials to supplement the teachers' instruction. Teachers' guides give the teachers direction on how to introduce and deliver content in various subject areas. Models make the lessons meaningful and enhance students' understanding of concepts. Existence of discussion groups means that the students are provided with opportunities to learn from one another, peer instruction and express themselves and may improve their academic performance. Inadequacy in use of calculators means that the learners borrow from one another thus they are slow in completing assignments and some may end up copying from their classmates. Inadequacy of resources in the library and agriculture room means that learning gaps may occur in these subject areas resulting in low mean grades in national examinations. Reference books enhances the students reading material hence not restricted to a few classroom textbooks

thus broaden their knowledge and improve performance. Findings from the study revealed that TLM are fairly adequate.

4.5 Influence of adequacy of physical facilities on students' performance in KCSE

The study investigated several factors that indicate the adequacy of physical facilities in schools. Some of these factors are: chairs and desks, labs, library, home science rooms, latrines, dining halls, departmental offices, recreational facilities, water and power, amongst others. Head teachers and teachers were served with statements on a scale of 1-5, where 1 represented strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. The statements were meant to determine the extent of availability of these physical facilities in schools. The head teachers' and teachers' responses are shown in Tables 4.11 and 4.12.

Table 4.11: Head teachers' responses on adequacy of physical facilities

Availability of TLR	**Responses %**				
Physical facilities	**5**	**4**	**3**	**2**	**1**
1. Tables and chairs in the staffroom	4(66.6)	1(16.7)	1(16.7)	-	-
2. Desks and chairs in the classrooms	1(16.7)	2(33.3)	2(33.3)	1(16.7)	-
3. The capacity and resources in the library	-	-	1(16.7)	1(16.7)	4(66.7)
4. The capacity and equipment in the labs	1(16.7)	1(16.7)	1(16.7)	1(16.7)	2(33.3)
5. The facilities in the agriculture room	-	1(16.7)	1(16.7)	-	4(66.6)
6. The number of latrines/toilets	-	2(33.3)	-	4(66.7)	-
7. The number of offices allocated	1(16.7)	1(16.7)	-	3(50)	1(16.7)
8. Capacity of the dining hall	-	-	-	1(16.7)	5(83.3)
9. Size of the play ground	1(16.7)	-	-	1(16.7)	4(66.7)
10. Reliability of water supply	-	1(16.7)	2(33.3)	2(33.3)	1(16.7)
11. Reliability of power supply	1(16.7)	2(33.3)	2(33.3)	1(16.7)	-

Legend: 5- strongly agree, 4-agree, 3-neutral, 2-disagree, 1-agree

The findings of Table 4.11 indicated that, the head teacher respondents who strongly agreed on adequacy of chairs and desks in staffroom were 4(66.6%), indicating that majority of the respondents agreed that the number of chairs and desks used by teachers in the staffroom were adequate. This indicates that most school head teachers had invested in provision of staffroom furniture. Adequacy in

staffroom furniture means that the teachers are comfortable and can better prepare for lessons.

When asked about the adequacy of chairs and desks in classrooms, only 1(16.7%) of the head teachers strongly agreed on their adequacy. These results indicated that the schools had not given priority to the comfort of learners which is essential for good academic performance. The findings on adequacy of capacity and resources in library from the head teachers indicated that most schools had invested little in development of their libraries, this is cited by 4(66.7%) of head teachers . This indicated that schools lacked a variety of textbooks and other reading materials, perhaps schools only purchased recommended course books only which were kept in the custody of the students. On adequacy of capacity and equipment in the laboratory, agriculture room the head teachers responses indicated that most schools did not allocate enough resources to equip their laboratories, cited by 2(33.3%) of head teachers who strongly disagreed. Agriculture rooms were also depicted to be ill equipped cited by 4(66.6%) of head teachers who strongly disagreed on their adequacy. This was probably because laboratory equipment, agriculture room facilities are expensive and are required in large quantities since the two areas of study are taken by a large number of students. The study investigated the adequacy of latrines/toilets, capacity of dining hall, water supply and power supply to schools. All the head teachers strongly agreed that the latrines/ toilets are inadequate, and 3(50%) of head teachers strongly disagreed that the offices allocated are adequate and 5(83.3%) strongly disagreed on the

adequacy of the dining hall capacity, these responses for the head teachers indicated that the schools did not prioritize issues that seemed not to be directly related to tuition. The increased enrolment could be resulting in congestion and thus straining these facilities. Again the cost of putting up these facilities is met by the parents, who are sometimes economically handicapped. Consequently expansion and renovation of these facilities is somehow neglected. According to Padmanabhan (2001), there exists a close relationship between the physical environment and academic performance of students and observed that the quality of education that students receive bears direct relevance to the availability or lack thereof of physical facilities.

Table 4.12: Teachers' responses on adequacy of physical facilities

Availability of TLR	**Responses %**				
Physical facilities	**5**	**4**	**3**	**2**	**1**
1. Tables and chairs in the staffroom	7(38.9)	6(33.3)	-	3(16.7)	2(11.1)
2. Desks and chairs in the classrooms	2(11.1)	6(33.3)	1(5.6)	3(16.7)	6(33.3)
3. The capacity and resources in the library	-	2(11.1)	1(5.6)	7(38.9)	8(44.4)
4. The capacity and equipment in the labs	-	3(16.7)	-	5(27.8)	10(55.5)
5. Facilities in the agriculture room	-	1(5.6)	2(11.1)	7(38.9)	8(44.4)
6. Number of latrines/toilets	-	5(27.8)	4(22.2)	5(27.8)	4(22.2)
7. Number of offices allocated	1(5.6)	1(5.6)	3(16.7)	6(33.3)	7(38.9)
8. Capacity of the dining hall	1(5.6)	2(11.1)	1(5.6)	3(16.7)	11(61.1)
9. Size of the play ground	4(22.2)	4(22.2)	3(16.7)	6(33.3)	1(5.6)
10. Reliability of water supply	1(5.6)	6(33.3)	1(5.6)	9(50)	1(5.6)
11. Reliability of power supply	5(27.8)	5(27.8)	3(16.7)	4(22.2)	1(5.6)

Legend: 5- strongly agree, 4-agree, 3-neutral, 2-disagree, 1-agree

The findings of Table 4.12 indicated that, the teacher respondents who strongly agreed on adequacy of chairs and desks in staffroom were 7(38.9%), indicating that majority of teachers were comfortable with furniture allocated to them, meaning the teachers were able to prepare for lessons with ease.

When asked about the adequacy of chairs and desks in classrooms, only 2(11.1%) of teachers strongly agreed on their adequacy. These results indicated that the

schools had not given priority to the comfort of learners, learners who are uncomfortable easily get bored and tired and hardly concentrated in class. The research by Cash (1993) on effect of physical facilities on learning found out that the condition of classroom furniture correlated with students' achievement at a significant level hence influences their performance.

The findings on adequacy of capacity and resources in library indicated most schools had invested little in development of their libraries, this is cited by 8(44.4%) of teachers who strongly disagreed on their adequacy. This is probably due to the fact that most schools focus more on provision of classroom textbooks which have a direct relation to the curriculum. Textbooks that are directly related to the syllabus content are usually issued to the students and only supplementary reading materials and reference books were provided for in most school libraries. Pearls (2000) states that although teachers are required to deliver formal teaching in a classroom, much of the day to day teaching goes on outside the classroom in the course of interaction between learners and the environment. A well equipped library can help to enhance teaching and facilitate learning and thus make a shift to a learner cantered approach.

On adequacy of capacity and equipment in the laboratory, agriculture room the teachers responses indicated that most schools did not allocate enough resources to equip their laboratories, cited by 10(55.5) of teachers who strongly disagreed.

Agriculture rooms were also depicted to be ill equipped cited by 8(44.4%) of teachers responses who strongly disagreed on their adequacy. Laboratory, agriculture rooms provide students with an opportunity to see and make observation of what they are taught, and that learning takes place best through discovery exploration and interaction with the internal external environment. (Oyeniran, 2003). The study investigated the adequacy of latrines/toilets, capacity of dining hall, water supply and power supply to schools. The teachers strongly agreed that the latrines/ toilets are inadequate, and 7(38.9%) of teachers strongly disagreed that the offices allocated are adequate and 11(61.1) strongly disagreed on the adequacy of the dining hall capacity, these responses for the teachers indicated that the schools only prioritized on issues directly related to tuition. Facilities such as water supply, dining hall, latrines/toilets, playground and recreational facilities more or less address student welfare and therefore their adequacy was sometimes over looked.

Students' responses on the presence, condition and size of physical facilities

Further the students were asked on the presence, condition and size of physical facilities, as indicated in Tables 4.13 and 4.14.

Table 4.13: Presence of school facilities

School facility	Present		Absent	
	F	Percent	F	Percent
Library	60	25	180	75
Laboratories	197	82.1	43	17.9
Classrooms	238	99.2	2	0.8
Agriculture	150	62.5	90	37.5
Dining	43	17.9	197	82.1
Latrines/ toilets	240	100	-	-
Playground	195	81.2	45	18.8

The findings reveal that latrines/ toilets are available in all the schools as indicated by 100% of the student respondents, classrooms, laboratory and playground facilities are available as indicated by 238(99.2%) and 197(82.1%) and 195(81.2%) respectively. The facilities least available are libraries 60(25%) and dining facilities 43(17.9%)

The students who indicated presence of school facilities were further asked to indicate the conditions and size of the school facilities. The findings are presented on Table 4.14.

Table 4.14: Condition and size of school facilities

School facility	Condition	F	%	Size	F	%
Library	Good	-	-	Big	-	-
	Fair	24	40	Average	12	20
	Poor	36	60	Small	48	80
	Total	**60**	**100**	**Total**	**60**	**100**
Laboratories	Good	-	-	Big	-	-
	Fair	68	34.5	Average	50	25.4
	Poor	129	65.5	Small	147	74.6
	Total	**197**	**100**	**Total**	**197**	**100**
Classrooms	Good	-	-	Big	-	-
	Fair	107	45	Average	55	23.1
	Poor	131	55	Small	183	76.9
	Total	**238**	**100**	**Total**	**238**	**100**
Agriculture	Good	-	-	Big	-	-
	Fair	53	35.3	Average	30	20
	Poor	97	64.7	Small	120	80
	Total	**150**	**100**	**Total**	**150**	**100**

Dining	Good	-	-	Big	-	-
	Fair	17	39.5	Average	3	7.0
	Poor	26	60.5	Small	40	93
	Total	**43**	**100**	**Total**	**43**	**100**
Toilets/Latrines	Good	-	-	Big	-	-
	Fair	48	20	Average	60	25
	Poor	192	80	Small	180	75
	Total	**240**	**100**	**Total**	**240**	**100**
Playground	Good	-	-	Big	-	-
	Fair	98	50.3	Average	80	41
	Poor	97	49.7	Small	115	59
	Total	**195**	**100**	**Total**	**195**	**100**

The findings on Table 4.14 showed that the condition of the school facilities were generally poor as cited by 36(60%) for libraries,129(65.5%) laboratories, 131(55%) classrooms, 97(64.7%), agriculture room, 26(60.5%) dining, 192(80%) toilets, and 97(49.7%) playgrounds. This implies that the government has not made efforts to improve facilities in the day secondary schools besides FDSE, further the findings indicate the facilities in the day secondary schools were small, this was reported by 48(80%) for libraries, 147(74.67%) laboratories, 183(76.9%) classrooms, 120(80%) agriculture room, 40(93%) dining, 180(75%) toilets, and 115(59%) playgrounds. No physical facility was indicated to be in good condition

or big and adequate for the students. This implies that even though physical facilities like classrooms are present, they are small and do not adequately accommodate the students.

From the study, the chairs and desks in the staff room were adequate and this implies that the teachers were comfortable and therefore could stay longer in school and be available to the students. This could result in a greater student/teacher interaction and therefore a positive influence on the teaching/learning process. Capacity of equipments in the laboratory and agriculture rooms was found to be having a negative influence on the teaching learning process since they were indicated as inadequate. And consequently inhibit performance of practical lessons. Individual learners would therefore be ill prepared to handle practical papers and hence be unable to link theory with practice. Power supply ensures appropriate lighting, security, use of electrical equipments such as computers. Reliable power supply ensures timely and adequate provision of examinations, revision materials and handouts. On the other hand reliable water supply may enhance sanitation and hygiene in the school environment and therefore averts infections that would otherwise disrupt the teaching learning process. Power was determined to be reliable hence would positively influence performance, while the contrary on water reliability.

Recreational facilities and playfields helps in making the school environment more interesting, helps to prevent the build up of stress among students as well nurturing

talents through co-curricula learning. Inadequacy of physical facilities such as latrines/toilets, departmental offices, capacity of the dining hall, and size of the play ground brings about congestion, restricts working and space, poor sanitation and negatively affect the entire school environment. The use of resource persons and field excursion helps in varying the teaching/learning approaches and raises the students' motivation; unfortunately this is lacked in most schools and may be contributing to de-motivated students hence low mean scores. Inadequate computers means that the students and their teachers are not exposed to e-learning and therefore cannot access the vast electronic library.

4.6 Influence of adequacy of human resources on students' performance in KCSE

The study sought to establish the adequacy of teachers employed in the district. factors such as employment status of teachers, and enrolment for in service training was used to determine extent of human resource availability in the district.

Average number of teachers employed per school in the district

Head teachers were asked to indicate the employment status of teachers in their schools, and the averages are tabulated in Table 4.15

Table 4.15: Average number of teachers employed per school in the district

Employment status	Average No. of teachers
TSC	16
BOM	5
Volunteers	2
Total	**23**

Table 4.15 indicates that the average number of teachers employed by TSC and BOM per school is 16 and 5 respectively. There are 2 volunteer teachers on average per school in the district. These findings indicate that the district is understaffed hence the BOM intervened by employing more teachers to cater for the shortage. The ministry of education recommends a minimum of 28 lessons per teacher per week. The teachers indicated to be teaching 25-30 lessons per week, meaning the teaching shortage has been eased by the BOMs effort to employ more teachers to cater for the short fall in various departments. However there may be glaring imbalances in staffing in the various departments in schools, such that some departments may be over staffed while others are under staffed. On the other hand with increasing annual enrolment rates, the government need to plan and project teacher requirements for schools since currently the burden of paying teachers under BOM is left to parents under the FDSE program. This gross lack of teachers may impact negatively on students' performance.

Teachers' responses on enrolment for in service training

The study sought to find out the enrolment of teachers for in service training, the results provided in figure 4.7.

Figure 4.7: Teachers' responses on enrolment for in service training

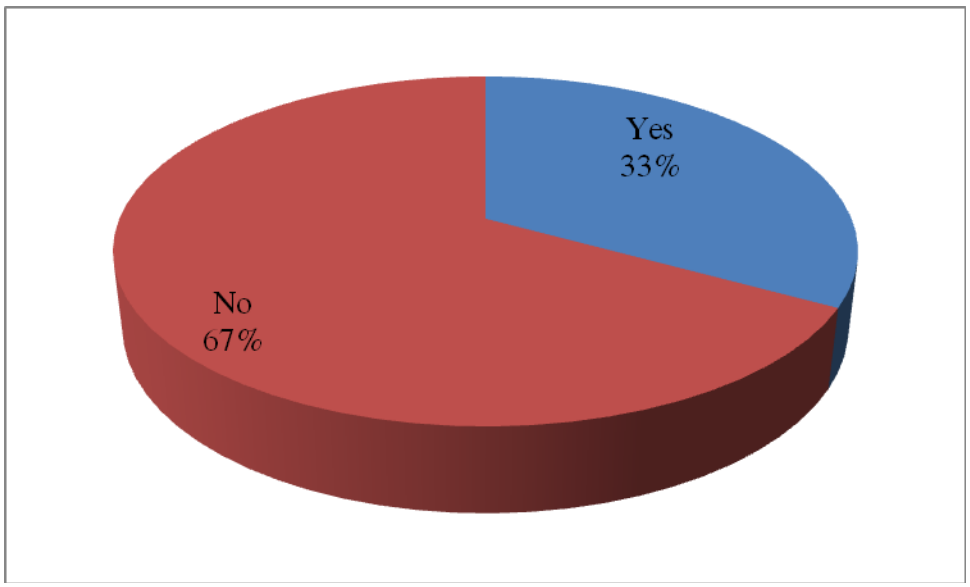


Figure 4.7 indicates that only 6(33.3%) had enrolled for in service training programmes, 12(67.3%) were of the contrary opinion. These results can probably be attributed to the fact that most schools in the district may not have opportunities for training due to busy school and teaching schedules also most teachers have family responsibilities which may not permit them to enroll for training due to unavailability of time and resources, hence missing out on opportunities that would improve the teachers skills and consequently having a negative influence on students' performance

4.7 Extent of utilization of TLR in FDSE

The study investigated the extent of utilization of resources in schools. This included all the TLR that is; TLM, physical facilities and human resources

Teachers' responses on extent of resource utilization

The study investigated the extent of utilization of teaching learning resources in schools, by being asked whether they made use of the TLR. The teachers were provided with statements on a rating of 1 to 5. Such that 1 represented strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. The percentages of these responses were computed and are provided in Table 4.16

Table 4.16: Teachers' responses on extent of resource utilization

Extent of resource utilization	Responses %				
	5	**4**	**3**	**2**	**1**
1. Usage of facilities in the laboratory	3(16.7)	7(38.9)	3(16.7)	2(11.1)	3(16.7)
2. Usage of facilities in the library	4(22.2)	4(22.2)	1(5.6)	3(16.7)	6(33.3)
3. Usage of facilities in the agriculture room	2(11.1)	3(16.7)	4(22.2)	1(5.6)	8(44.4)
4. Usage of field for co-curricular learning	5(27.8)	2(11.1)	4(22.2)	5(27.8)	2(11.1)
5. Usage of the reference books in teaching	8(44.4)	3(16.7)	4(22.2)	2(11.10	1(5.6)
6. Usage of the set books in teaching	7(38.9)	3(16.7)	1(5.6)	2(11.1)	5(27.8)
7. Usage of the text books in the teaching	8(44.4)	7(38.9)	-	3(16.7)	-
8. Usage of the teachers guide in teaching	4(22.2)	8(44.4)	3(16.7)	3(16.7)	-
9. Usage of the models in teaching	3(16.7)	4(22.2)	6(33.3)	4(22.20	1(5.6)
10. Usage of the resource persons	1(5.6)	4(22.2)	3(16.7)	8(44.4)	2(11.1)
11. Usage of the excursions/field trips	1(5.6)	2(11.1)	5(27.8)	6(33.3)	4(22.2)
12. Usage of the calculators in teaching	2(11.1)	6(33.3)	4(22.2)	3(16.7)	3(16.7)
13. Usage of the internet in teaching	3(16.7)	4(22.2)	3(16.7)	5(27.8)	3(16.7)
14. Usage of the charts in teaching	4(22.2)	8(44.4)	2(11.1)	4(22.2)	-
15. Usage of the recreational facilities	1(5.6)	4(22.20	3(16.70	6(33.3)	4(22.2)
16. Use of the discussion groups in teaching	9(50)	8(44.4)	1(5.6)	-	-

Legend: 5- strongly agree, 4-agree, 3-neutral, 2-disagree, 1-agree

Table 4.16 indicated that teacher respondents strongly agreed on the use of the following; 8(44.4%) used textbooks in teaching, 7(38.9%) used set books, 8(44.4%) used reference books, 9(50%) used discussion groups; Books, set books, textbooks, teachers' guides, models, calculators, charts and teaching aids, are an essential requirement for coverage of the syllabus in preparation for national examinations. They also enhance revision and completion of assignments. Therefore academic achievement cannot be attained unless there is proper and extensive use of these books. Only 7(38.9%) agreed on use of laboratory facilities, 8(44.4%) on use of teachers' guides, 6(33.3%) on use of calculators and 8(44.4%) used charts.

Thirty three percent strongly disagreed on using library facilities, 8(44.4%) as well on use of agriculture room, 27.8% disagreed on the use of playfield, and 5(27.8%) disagreed to be using internet in teaching and learning, these teachers responses indicate that there was minimal use of these facilities. This implies that text books are widely used in teaching and learning in FDSS.

The dismal use of facilities in the laboratory, agriculture room and computer room may be attributed to the fact that these rooms are poorly equipped and therefore teachers may find them to have little relevance in improving the mode of lesson delivery. Again most schools have put their priorities in purchase of textbooks, set books and teachers' guides at the expense of other instructional materials. Grant (1978) asserts that teaching and learning cannot be effective without adequate and relevant use of instructional materials. According to Abimbade (1997)

instructional resources in teaching and learning make students to learn more and retain better what they have been taught and that it also promotes and sustains students' interest. It also allows the learners to discover themselves and their abilities and consequently provides them with an opportunity to realize their full potential.

The study investigated the extent of use of resource persons. The responses of the teachers were 8(44.4 %) disagreed on use of resource persons. In schools, resources persons usually included KCSE examiners, motivational speakers and counsellors. The examiners equip the learners with skills to answer questions in national examinations while the motivational speakers are largely meant to guide the students on methods of study, developmental challenges, discipline, drug and substance abuse, relationships, among others. Resource persons play a key role in helping schools achieve their goals, in particular academic achievement.

On the extent of use of excursion/field trip the study found out that the responses of the teachers were 6(33.3%) disagreed on use of field trips and recreational facilities. This could be partly due to the fact that most schools do not have buses; hence excursions would entail hiring some means of transport which would be too expensive. The high cost of fuel witnessed in the past few years is also making travelling expensive even for those schools that own buses or vans. Excursions and field trips involve a lot of time in terms of preparation and actual study which may interfere with the formal school timetable. Excursions and field trips enhance

learning because they make classroom learning real and break monotony and create interest. This agrees with the findings of Oyeniran (2003) who observed that students learn best if they are given the opportunity to see and to make observation of what they are taught.

The responses on the frequent use of discussion groups by the teachers was 9(50%) of the teachers strongly agreed. Discussion groups encourage interaction, peer teaching and development of students social skills. They are therefore a very important component in the teaching learning process. It is encouraging that most schools have embraced this approach in their instruction. Abimbade (1997) observes that discussion groups allows the learners to discover themselves and their abilities and consequently provides them with an opportunity to realize their full potential. The study sought to investigate the extent of use playfields and recreational facilities in schools. The responses for the use of playfields were neutral indicating the respondents agreed that they use the facilities to enhance co-curricular learning. The percentages of teachers who strongly agreed and disagreed were 27.8%. Recreation facilities and field events are important to a school because they help to nurture talent, develop social skills, reduce stress and as whole help in development of an all rounded learner. However these results indicate that although schools are putting a lot of emphasis in the playfield activities little emphasis is being put in other recreational facilities. This could be due to the fact that field activities are a requirement of the ministry of education,

PE lesson is provided for in the time table, field events help in marketing the school and students are actually charged levies for field activities. On the other hand recreational events within the school are left to the individual schools to decide and allocate funds. Perhaps this is the reason why recreational events are seemingly neglected as well in most schools.

CHAPTER FIVE

SUMMARY OF THE STUDY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings of the study, conclusions and recommendations arrived at. It also gives suggestions for further studies.

5.2 Summary of the study

The study was to assess the influence of TLR on students' performance in KCSE in FDSE in Embakasi District, Nairobi County, Kenya. The research objectives were: To determine how availability of teaching and learning materials used in FDSS in Embakasi district affect students' performance in KCSE, to establish how adequacy of physical facilities influence students' performance in KCSE in Embakasi district., to establish how adequacy of human resource influence students' performance in KCSE in FDSE in Embakasi district and to assess extent of resource utilization and its effect on students' performance in KCSE in FDSE in Embakasi district.

The study employed descriptive research design. The target population included head teachers, class teachers and students in the entire Embakasi District. The sample size consisted of a total of 264 respondents; 6 head teachers, 18 class teachers and 240 students. The researcher employed self administered

questionnaires to gather data for the study. There were three sets of questionnaires; head teachers, class teachers and students. Findings revealed that;

FDSE has improved student enrollment in the schools, this is seen in the steady increase in enrolment rates over the past five years, and has also increased provision and adequacy of TLR in the schools as reported by the majority 5(83.3%) of head teachers.

The findings revealed that latrines/ toilets are available in all the schools as indicated by 100% of the head teachers, teachers and students. Classrooms, laboratory and playground facilities are available as indicated by 238(99.2%), 197(82.1%) and 195(81.2%) respectively by the student respondents. The facilities least available are libraries cited by 60(25%) and dining facilities cited by 43(17.9%), the findings implies that FDSE has contributed to an overstretch on the school facilities. Although some schools have facilities such as libraries, laboratories and classes, most of these facilities are regarded as either small and in poor condition for all the physical facilities. The researcher observed that even though some facilities like classrooms and laboratories existed they were small and ill equipped to appropriately serve the purposes for which they were built.

The study established that the chairs and tables for teachers in schools were adequate. The respondents who strongly agreed on adequacy of chairs and tables in the staffroom were 4(66.6%) for the head teachers and 7(38.9%) for the

teachers, indicating that majority of the respondents agreed that the number of chairs and tables were adequate. When asked about the adequacy of chairs and desks in the classrooms, only 1(16.7%) of the head teachers and 2(11.1%) of the teacher respondents strongly agreed on their adequacy, implying the desks in school are not enough for the learners. On capacity and equipment in the laboratory and agriculture room the head teachers and teachers who strongly agreed on their adequacy were a mere: 1(16.7%) and 0.0% respectively, meaning the facilities in the laboratories and agriculture rooms are quite inadequate. These results indicated that the schools did not prioritize issues that seem not to be directly related to tuition.

A greater proportion of the teachers and students reported that FDSE has affected syllabus coverage hence contributed to poor performance in the schools**.** FDSE is a clear indication to have contributed to congestion in the day secondary schools. Majority of the students cited missed examinations as a result of lack of school fees, 158(65.8%) on the other hand objected that there is improved performance of students in examinations. The introduction of Free Secondary Education enhanced students' access to secondary education. However the increased access was not commensurate to the number of teachers available in schools.

The study revealed employment of 5 extra teachers as on average per school as BOM teachers and each school admitting 2 volunteers to help with the teaching

workload. This translates to a total of extra 42 teachers in the district not provided for by FDSE. There was an increase in teachers' workloads as a result of free secondary education. The teachers were not able to do their work adequately due to high enrolment of students and overcrowded classes. Administration of internal examinations in the day secondary schools is also seen to be difficult as a result of increased number of students making most of the schools only being able to sit for internal examination once in a term.

The study also established that most teachers in the district had degree level of academic qualification and only a few teachers had enrolled for in-service training. 4(66.7%) and 16(88.9%) of the head teacher and teacher respondents had B.Ed level of education, none of the teacher respondents had masters level of education, but only 2(33.3%) of head teachers. The diploma level of education had only 2(11.1%) of the teacher respondents. The research found that only 6(33.3%) of teachers had enrolled for in-service training programmes, 12(66.7%) were of the contrary opinion, indicating that most teachers were missing out on trainings that would boost their performance hence boost students performance as well.

An analysis into the teaching and learning materials imply that majority of the teacher respondents strongly agreed that TLM were adequate except for reference guides, use of field trips, resource persons, and use of computers in teaching and learning. This was corroborated by 3(50%) of head teachers who agreed that

teaching materials such as manilas and chalk were adequate, agreed on adequacy of teachers guides and reference books and were neutral on use of field trips and use of computers for teaching and learning.

TLR are of no use unless effectively utilized, the study shows that teacher respondents strongly agreed on the use of the available TLM especially 8(44.4%) used textbooks in teaching, 7(38.9%) used set books, 8(44.4%) used reference books, 9(50%) used discussion groups; Only 7(38.9%) agreed on use of laboratory facilities, 8(44.4%) on use of teachers' guides, 6(33.3%) on use of calculators and 8(44.4%) used charts. Although the teachers disagreed to use certain facilities which the study found out to be unavailable in most schools, they include facilities in the libraries, agriculture room, disagreed on use of playfield, resource persons, field trips, internet and recreational facilities.

5.3 Conclusion

From this study it is clear that FDSE is a fruitful and worthy programme since has increased access to secondary education to most students who miss opportunities in boarding secondary schools. From the study it's also clear that TLM are available, except physical facilities are inadequate, small and in poor condition, inadequate recreational facilities and gross lack of human resources. An analysis of physical facilities shows an over stretch. Teachers further indicated that

facilities had a negative influence on performance of students in KCSE. Teaching and learning materials tend to be adequate and minimally shared especially in the compulsory subjects, human resources is also a serious concern, since enrolment in the schools increase yearly leading to inadequate curriculum supervision and implementation in schools. The study also established that the funds released by the government to finance free secondary education were inadequate, and was also not released on time, cited by 4(66.7%) of the schools head teacher respondents forcing schools to procure goods on credit or shelve some projects and this resulted to charging levies on parents to meet purchase of certain school resources.

5.4 Recommendations

Based on the findings, analysis and conclusions of the study, the following recommendations were made;

The government should allocate more funds to equip physical facilities in schools which are either inadequate or completely lacking, also more funds should be allocated to equip schools with resource persons, field trips and excursions, internet facilities and recreational facilities, to avert charging parents levies for these resources. Also specific subject rooms like agriculture room including laboratories should be equipped to enhance effective teaching and learning.

TSC should employ more teachers to cater for the enormous teacher shortage, in service training programmes should also be initiated to address manpower needs as a result of changing times to enable teachers embrace use and access to

computers and the internet and provision of e-materials. Where the internet is unavailable, unreliable or unaffordable, the development of local school networks and the provision of e-materials to schools on compact disks (CDs/ flash disks can support e-learning via school servers and networks.

The directorate of quality Assurance and Standards within the ministry of education should be more empowered with resources to enable them carry out their advisory work more effectively in schools. It is expected that their regular visits to school would be beneficial to schools as through their guidance schools would be able to maintain the expected standards for effective learning to take place, this would assist principals as well to ensure all TLR are utilized effectively

Head teachers should involve all education stakeholders to aid in school development programmes and projects. The schools should also initiate income generating projects to subsidize government funding.

The researcher recommends that the government should build more schools to meet the rising yearly enrolment surges to avoid overcrowding of physical facilities, stretch of teaching and learning materials and overworking of available teachers which in turn would compromise the quality of FDSE.

Motivational programs should be put in place for schools managers, teachers and students so as to encourage them and maintain their focus on their roles and contribution towards effective and efficient education programmes.

5.5 Areas for further research

The researcher suggests that;

i. The study was conducted in Nairobi County, a similar study should be done in other counties to establish status of TLR vis a vis performance, and study also extended to boarding schools.

ii. A study can be conducted on methods of improvising TLM and models in schools

iii. A study on Integration of ICT and e-learning to complement human resources

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APPENDICES

Appendix I: Letter of introduction to respondents

Joyce Atieno Akungu,
University of Nairobi,
P.O. Box 30197,
NAIROBI.

Dear Respondents,

RE: RESEARCH PROJECT FOR A POSTGRADUATE DEGREE PROGRAMME

I am a postgraduate student pursuing a Master's degree in Educational Administration and Planning at the University of Nairobi. I am conducting a research for my final year project, which is a requirement of the degree programme.

This questionnaire is designed to gather information on **the influence of teaching and learning resources on students' Kenya Certificate of Secondary Education performance in free day secondary education in Embakasi District.** Your school has been selected to be part of my study sample. Kindly provide information to all questionnaire items.

All information will be treated with utmost confidentiality.
For this reason DO NOT write your name on this questionnaire.
Thanks in advance

Yours Sincerely,

Joyce Atieno Akungu
E55/72710/2008

Appendix II: Questionnaire for head teachers

The information given in this questionnaire will be treated with strict confidentiality.

Instructions

Please tick appropriately in box [✔] corresponding to your choices for structured questions.

Write the answers to the open ended questions in the spaces provided.

Please tick [✔] the response that most closely approximates your opinion about the statements for questions consisting of statements scaling 1 to 5 as below.

5 Strongly Agree 4 Agree 3 Neutral 2 Disagree 1 Strongly Disagree

Section A: Background information

1. Indicate your gender Male [ ] Female [ ]
2. For how long have you served as a head teacher in this school?

Under one year	[ ]	1-3 years	[ ]
4-6 years	[ ]	7-9 years	[ ]
Over 9	[ ]		

3. What is your highest academic qualification?

P.hD	[ ]	M. Ed	[ ]
B. Ed	[ ]	B. Sc	[ ]
Dip. Ed	[ ]	Any other, please specify ___	

4. Indicate the number of streams in your school

1 [ ] 2 [ ] 3 [ ] above 3 [ ]

5. Give the number of teachers in your school as follows

   TSC _____ Volunteers _____ B.O.M _____

6. What is the average number of lessons that a teacher in your school is allocated per week? Below 18 [ ] 19-24 [ ] 25-30 [ ] above 30 [ ]

7. Indicate the enrolment in your school in the following years

Year	**Enrolment**		**Total**
	Boys	Girls	
2009			
2010			
2011			
2012			
2013			

Section B: Availability of Resources & School mean score

8. Use (5 Strongly Agree 4 Agree 3 Neutral 2 Disagree 1 Strongly Disagree)

	Physical facilities	5	4	3	2	1
1	The number of tables and chairs in the staffroom is adequate					
2	The number of desks and chairs in the classrooms are adequate					
3	The capacity and resources in the library are adequate for the number of students in the school					
4	The capacity and equipment in the laboratory is adequate for the number of students in the school					
5	The facilities in the home science/agriculture room are adequate for the number of students in the school					
6	The number of latrines/toilets in the school are adequate for the number of students in the school					
7	The number of offices allocated are adequate for the departments in the school					
8	The capacity of the dining hall is adequate for the number of students in the school					
9	The size of the play ground is adequate for the number of students in the school					
10	The water supply to the school is reliable					
11	The supply of power to the school is reliable					
	Teaching and learning materials (TLM)					
12	The number of reference books in the school are adequate					
13	The number of teachers guide in the school are adequate					
14	Teaching resources such as manilas, dusters, chalk, models, charts, are adequate					
15	Use of resource persons in the school is frequent					
16	Use of field trips/excursions in the school is frequent					
17	Use of computers in teaching and learning is common					
18	Students have adequate number of calculators					
19	Books and equipment storage facilities in the school are adequate					

9. What are the textbook/pupil ratios for each of the following subjects in your school?

Subject	**Number of Pupils per text book**
Mathematics	
English	
Kiswahili	

10. Give the number of students with KCSE mean score in the years provided in the table below.

Year	**Mean Index**				**Total**
	0-4.0	4.1-6.0	6.1-9.0	9.1 and above	
2009					
2010					
2011					
2012					
2013					

Concept of FDSE

11. a) Does the government disburse FDSE funds in time? Yes[ ] No[ ]

    b) If Yes, how has it affected your school? .....

12. Do you consider FDSE policy to have contributed to adequate provision of teaching and learning resources? Yes [ ] No [ ]

13. a) Has the provision of FDSE led to increase in provision of teaching and learning resources? Yes [ ] No [ ]b) If yes, to what extent? ……

14. What is the average number of students per class in your school?

    30-40 [ ] 41-50 [ ] above 50 [ ]

15. Do you have any suggestions on the provision of TLR? .....……

16. Do you think availability of teaching and learning resources (TLR) influences school performance in KCSE? Yes [ ] No [ ]

    (b) If Yes, how……

Thank you for your cooperation

Appendix III: Questionnaire for teachers

The information given in this questionnaire will be treated with strict confidentiality.

Instructions

Please tick appropriately in box [✔] corresponding to your choices for structured questions.

Write the answers to the open ended questions in the spaces provided.

Please tick [✔] the response that most closely approximates your opinion about the statements for questions consisting of statements scaling 1 to 5 as below.

5 Strongly Agree 4 Agree 3 Neutral 2 Disagree 1 Strongly Disagree

SECTION A: Background Information, Teacher's Qualifications and workload Information

1. What is your gender? Male [ ] Female [ ]
2. What are your teaching subjects? Languages [ ] Technicals [ ]
   Humanities [ ] Sciences [ ]
3. What is your highest academic qualification?
   M.Ed [ ] B.Ed [ ] B. Sc [ ] Dip. Ed [ ] others (specify)……
4. How many years of teaching experience do you have?
   0 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] Over 15 years [ ]
5. How many lessons do you teach per week? Below 18 [ ] 19-24 [ ]
   25-30 [ ] above 30 [ ]
6. (i) Have you ever enrolled in an in service training programme in the past one year? Yes [ ] No [ ]

(ii) If yes, did you find the training relevant to your career? Yes [ ] No [ ]

SECTION B: Availability of Resources

7. **Use (5 Strongly Agree 4 Agree 3 Neutral 2 Disagree 1 Strongly Disagree)**

	Physical facilities	5	4	3	2	1
1	The number of tables and chairs in the staffroom is adequate					
2	The number of desks and chairs in the classrooms are adequate					
3	The capacity and resources in the library are adequate for the number of students in the school					
4	The capacity and equipment in the laboratory is adequate for the number of students in the school					
5	The facilities in the home science/agriculture room are adequate for the number of students in the school					
6	The number of latrines/toilets in the school are adequate for the number of students in the school					
7	The number of offices allocated are adequate for the departments in the school					
8	The capacity of the dining hall is adequate for the number of students in the school					
9	The size of the play ground is adequate for the number of students in the school					
10	The water supply to the school is reliable					
11	The supply of power to the school is reliable					
	Teaching and learning materials (TLM)					
12	The number of reference books in the school are adequate					
13	The number of teachers guide in the school are adequate					
14	Teaching resources such as manilas, dusters, chalk, models, charts, are adequate					
15	Use of resource persons in the school is frequent					
16	Use of field trips/excursions in the school is frequent					
17	Use of computers in teaching and learning is common					
18	Students have adequate number of calculators					
19	Books and equipment storage facilities in the school are adequate					

Extent of Resource Utilization

8. **Use (5 Strongly Agree 4 Agree 3 Neutral 2 Disagree 1 Strongly Disagree)**

		5	4	3	2	1
1	I make use of the facilities in the laboratory in teaching					
2	I make use of the facilities in the library in teaching					
3	I make use of the facilities in the agriculture/ home science/ computer room in teaching					
6	I make use of the play field to enhance co-curricular learning					
7	I make use of the reference books in teaching					
8	I make use of the set books in my teaching					
9	I make use of the text books in the teaching of subjects					
10	I make use of the teachers guide in teaching					
11	I make use of the models in teaching					
12	I make use of the resource persons in teaching					
13	I make use of the excursions/field trips in teaching					
14	I make use of the calculators in teaching					
15	I make use of the internet in teaching					
16	I make use of the charts in teaching					
17	I make use of the recreational facilities to entertain students					
18	I make use of the discussion groups teaching					

9. Do you consider FDSE policy to have contributed to adequate provision of teaching and learning resources? Yes [ ] No [ ]

10. a) Has the provision of FDSE led to increase in provision of teaching and learning resources? Yes[ ] No[ ]b) If yes, to what extent? ……

11. Do you have any suggestions on the provision of TLR? .....……

12. Do you think availability of teaching and learning resources (TLR) influences school performance in KCSE? Yes [ ] No [ ]

    (b) If Yes, how……

Thank you for your cooperation

Appendix IV: Questionnaire for students

The information given in this questionnaire will be treated with strict confidentiality.

Instructions

Please tick appropriately in box [✔] corresponding to your choices for structured questions.

Write the answers to the open ended question in the space provided.

SECTION A:

Background Information:

1. What is your age in years? 13-16 years [ ] 17-20 years [ ]

   21-24 years [ ] Above 24 years [ ]

2. Were you admitted in form one in this school? Yes [ ] No [ ]

   b) If Yes, which year? ……..

3. Do you wish to complete your secondary education through Free Day Secondary Education? Yes [ ] No [ ]

4. Do you have adequate textbooks in all subjects in your school? Yes [ ]No [ ]

5. Do you have adequate equipment in your laboratories? Yes [ ] No [ ]

6. Do you have adequate chemicals in your laboratories? Yes [ ] No [ ]

7. Do you complete your syllabus at the end of each academic year?Yes [ ]No [ ]

8. Do you often miss exams? Yes [ ] No [ ]

   b). If Yes, Give reasons……..……

Availability Physical facilities

9. Please indicate the presence, condition and size of the following facilities

			Good 1 Fair 2 Poor 3	Big 1 (Accommodate adequately) Average 2 Small 3 (Inadequate)
Item	Present	Absent	Condition	Size
Library				
Laboratories				
Classrooms				
Agriculture				
Dining				
Latrines/ toilets				
Playground				

10. Is there a provision to consult your teacher after class when you do not fully understand a concept taught in class? Yes [ ] No [ ]

    b). If Yes, how often? Always [ ] Not Always [ ]

11. What grade do you expect in K.C.S.E?

    A – B+ [ ] B – C+ [ ] C – D+ [ ] Below D+ [ ]

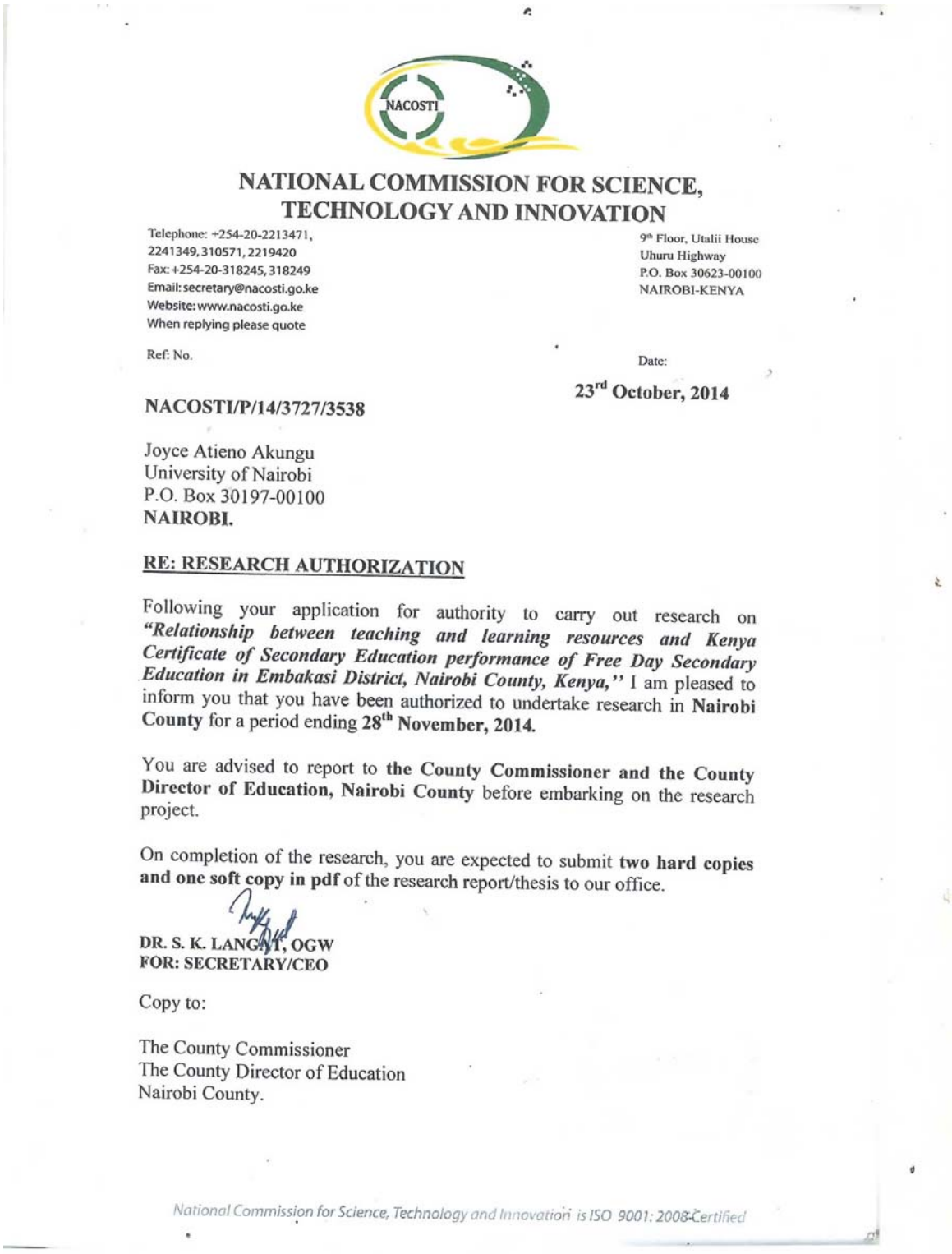
12. Do you think the provision of FDSE has improved performance of students in KCSE? Yes [ ] No [ ]

13. Do you think availability of teaching and learning resources influences school performance in KCSE? Yes [ ] No [ ]

    (b) If Yes, how……

Thank you for your cooperation

Appendix V: Letter of authorization



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/14/3727/3538**

Date: **23rd October, 2014**

Joyce Atieno Akungu
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Relationship between teaching and learning resources and Kenya Certificate of Secondary Education performance of Free Day Secondary Education in Embakasi District, Nairobi County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **28th November, 2014.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. S. K. LANGAT, OGW
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Nairobi County.

National Commission for Science, Technology and Innovation is ISO 9001: 2008 Certified

Appendix VI: Research permit

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

THIS IS TO CERTIFY THAT:
MS. JOYCE ATIENO AKUNGU
of UNIVERSITY OF NAIROBI, 17854-100 Nairobi,has been permitted to conduct research in *Nairobi County*

on the topic: *RELATIONSHIP BETWEEN TEACHING AND LEARNING RESOURCES AND KENYA CERTIFICATE OF SECONDARY EDUCATION PERFORMANCE OF FREE DAY SECONDARY EDUCATION IN EMBAKASI DISTRICT,NAIROBI COUNTY,KENYA*

for the period ending:
28th November,2014

Permit No : NACOSTI/P/14/3727/3538
Date Of Issue : 23rd October,2014
Fee Recieved :Ksh 1000

.....
Applicant's Signature

.....
Secretary
National Commission for Science,