SCHOOL BASED FACTORS INFLUENCING STUDENTS' PERFORMANCE IN KENYA CERTIFICATE OF SECONDARY EXAMINATION IN PUBLIC SECONDARY SCHOOLS IN KATHIANI SUB-COUNTY

Musyoka Julie Mutindi

A Research Project Submitted in Fulfillment of the Requirements for the Degree of Master of Education in Educational Administration South Eastern Kenya University

2018

DECLARATION

This research project is my original work and has not been presented for a degree in any other institution for any other award. I understand that plagiarism is an offence and I declare therefore that this research project is my original work and has not been submitted for any award in any other institution.

Signature _____ Date_____

Musyoka Julie Mutindi

E55/MAC/20554/2014

This research project has been submitted for examination with our approval as university supervisors.

Signature _____Date_____

Dr.Selpher K. Cheloti

Lecturer

Department of EducationalAdministration and planning

South Eastern Kenya University

Signature _____Date _____

Dr. Redempta Maithya

Senior Lecturer

Department of Educational Administration and Planning

South Eastern Kenya University

ACKNOWLEDGEMENT

I thank the Almighty God for seeing me through this journey of writing this research project. I register my gratitude to my supervisors; Dr Selpher Cheloti and Dr Redempta Maithya of the department of Educational Administration and Planning for their tireless professional guidance and support without which my dream won't be a reality. To my lecturers; Dr Jonathan Mwania, Dr Gideon Kasivu Dr Rose Mwanza and Dr Janet Mulwa who have been of great support during my course work. Special thanks goes to my husband Joshua Mulinge Sila; for his patience, moral support, understanding, encouragement and financial support he accorded to me to make my dream a reality .I wish to convey my special gratitude to my children; victor Mushindi and Winfred Nzilani for their patience and understanding in the course of this study.

I appreciate the principal Ngoleni secondary school Mr. Daniel Munguti whose support and encouragement enabled me to complete my work on time. To him I say thank you very much. To all the respondents across the sampled schools in Kathiani Sub County, they deserve a pat on their backs for sparing their time to provide me with the data for this study. To the head teachers and Deputies of all sampled secondary schools, thank you very much for your direct involvement in organizing the Heads of Department to fill the questionnaires. I also thank my dear friends and colleagues who always encouraged me even when the going became tough. Finally, I thank all the people who have been instrumental in making this research project a success. God bless you all.

DEDICATION

I dedicate this work to my husband; Joshua Mulinge Sila and my children; Victor Mushindi and Winfred Nzilani.

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ABBREVIATIONS AND ACRONYMS

CDF	Constituency Development Fund
EFA	Education for All
FPE	Free Primary Education
KCSE	Kenya Certificate of Secondary Education
KNEC	Kenya National Examination Council
MOE	Ministry of Education
MOEST	Ministry of Education Science and Technology
NACOSTI	National Commission of Science, Technology and Innovation
SCEO	Sub County Education Office
SEKU	South Eastern Kenya University
SPSS	Statistical Package for Social Sciences
STR	Student-Teacher Ratio
TSC	Teachers Service Commission
UNICEF	United Nations International Children Education Fund
URT	United Republic of Tanzania

ABSTRACT

Learners' academic performance is an area of great concern to all stakeholders in education worldwide. Schools in Kathiani Sub-County have recorded dismal performance in Kenya Certificate of Secondary Education (KCSE) in the last five years. The study sought to establish the school based factors influencing students' performance in KCSE in public secondary schools in Kathiani Sub County. The objectives of the study were; Determine the extent to which teaching resources influence students' performance in KCSE, Examine the extent to which teacher adequacy influence students' performance in KCSE, Assess the extent to which physical facilities influence students' performance in KCSE and Examine the extent to which head teachers' supervisory role influence students' performance in KCSE in public secondary schools in Kathiani Sub-County, Machakos County. The study was guided by Education Production Function Theory. The study used descriptive research design. The target population of the study was 30 head teachers and 270 Heads of departments in 30 public secondary schools in Kathiani Sub County, Machakos County. The study used Simple random sampling, stratified sampling and purposive sampling techniques in selecting a sample size of 9 head teachers and 81 heads of department from the target population. Questionnaires were used to collect data from the head teachers and heads of department. Validity of the questionnaires was ascertained by experts from the school of Education while reliability of the instruments was determined using the Cronbach alpha. Quantitative data was analyzed using frequencies, percentages mean and standard deviation while hypotheses were tested at the 0.05 level of significance using Pearson correlation coefficient. The study found out that teaching resource especially radios, television, computer and projectors were inadequate and that teacher inadequacy was occasioned by the fact that there were no immediate replacements made once teachers had transferred from schools. In addition, the study found out among others that library and laboratory facilities were inadequate. Lastly, the study found that, the head teachers rarely vetted teachers' lesson notes and rarely appraised teachers. Overall the study found out that teaching resource, teacher adequacy, physical facilities and head teachers supervisory roles had positive and significant relationship with students' performance at KCSE. The findings further found out that KCSE performance in Kathiani Sub County has been declining over the years. The study recommended among others that, the Ministry of Education should equip public secondary schools with adequate textbooks, teachers' reference books, radios, television, computers and projectors to improve performance of students in KCSE. Similarly, the study recommended that Teachers Service Commission (TSC) should recruit and post more teachers in Kathiani Sub County and should replace teachers immediately when they are transferred to address the problem of teacher inadequacy. Finally, there is need for head teachers to intensify teacher performance appraisal in order to give regular feedback to the teachers.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Education is an essential ingredient for the development of any society and is seen as a pathway to raising political, social awareness as well as upholding the level of manpower (Onyara, 2013). These benefits have led to increased number of pupils in primary and in secondary schools world over (World Bank, 1990). According to Yara and Otieno (2010), education is a fundamental human right. The pivot to sustainable development, peace, and stability within and among countries is the provision of quality education to their citizens (Oguntuase, Awe, & Ajayi, 2013).

According to Mwangi and Nyagah (2013), the performance of an individual in the National Examination is a predictor of that person's future. Due to the concern of the countries around the globe about their citizen's future, education has become a major Centre of investment. For the betterment and improvement of educational achievement; countries further invest in school facilities for better performance of the students (Yichun, Rodney& Lance, 2012). Expenditures on Education have been seen to increase and majorly focused on the students, for instance, Canada and America had an increment of students' spending nationally from $7,077 to $9,040 and $8,118 to $10,770 in 1998 and 2005 respectively (Statistics Canada, 2008; National Center for Education Statistics, 2007). This increase is as result of the belief that school facilities have effects on students' academic performance (Dearden, Ferri, & Meghir, 2002; Earthman, 2002).

Many countries in Africa are paying attention to invest in education from primary, secondary and tertiary levels. However, the main challenge is poor academic performance of students (Miller & Yodar, 2002). In Botswana, for example, the government is offering free basic education to all the children attending school. In addition, the government supports education from primary to secondary level. To achieve this, the Ministry of Education receives a hefty share of the country's budget

(Matambo, 2013). Despite all the efforts by the government on education, the students' academic performance has been declining lately from 2010 (Luke & Mavis, 2014).

In Tanzania, the government has initiated several policy structural reforms to ensure quality education (United Republic of Tanzania, 2001). Notable among these are the Education Sector Development Programmes, institutional vision to be focused on vision 2025 aspiration and the National Science and Technology Policy (URT, 2001). Despite these efforts, low academic performance in secondary schools has been recorded. United Republic of Tanzania (2012), reports that academic performance of students has been deteriorating. For instance, pass rate for Divisions I to III was as follows; 36.6% in 2007, 31% in 2008, 17.91% in 2009, 11.5% in 2010 and 10.05% in 2011(URT, 2012).

The government of Kenya has implemented free primary education (FPE) and subsidized secondary education to increase access. The government input through Constituency Development Fund (CDF) in secondary schools has been towards improving teaching/learning resources and infrastructure for better academic performance in national examinations. The establishment of additional national secondary schools has also been aimed at improving the students' academic performance. Despite all the efforts by the government to improve the academic performance of the students, the academic performance in KCSE is still at stake (Ministry of Education Science and Technology (MOEST), 2010).

Kenya's system of education provides for 8 years in primary and 4 years in secondary education. After 4 years of secondary education the students are subjected to a Kenya Certificate of Secondary Education examination which varies from School to School and from year to year. Factors that can cause this variation in performance can either be school based factor or external factors among others. According to Onyara (2013), school-based factors are those within school control that can influence students'

academic performance in public secondary schools. They include; teaching resources, teacher adequacy, physical facilities and head teachers' supervisory role.

Teaching resources are significant in that they help in boosting clarification for better understanding of more complicated concepts (Wanyama, 2013). According to Wanyama (2013), instructional materials such as radios and educational films motivate the students as well as students' vibrant discussions. These materials induce critical thinking in the learners hence making them independent in tackling their activities. In the year 2002, the Ministry of Education Science and Technology (MOEST) in Kenya, in conjunction with United Nations International Children Education Fund (UNICEF) launched the child-centered interactive approach to teaching and learning. According to the Ministry of Education (MOE, 2001), the academic performance of learners can be influenced by availability, distribution and utilization of educational resources. Other factors, which have influence on academic performance, include the frequency of use of the resources as well as the time allowed for their use.

Teacher adequacy can compromise the quality of education (Boyd & Barbarin, 2008).To identify the adequacy of teachers in the learning environment, the student-teacher ratio (STR) need to be determined. Student teacher ratio will tell whether an institution is having adequate teachers or not. The advantage of having low STR is reducing the number of students to be handled by a teacher in the classroom. This ensures the teacher's attention to the students and thus good academic performance. On the other hand, high STR will mean that a teacher will have to handle a large number of the students in the classroom at the same time. Students' academic performance is influenced by the transfer of teachers from schools without replacements leading to lack of enough teachers' thus influencing teacher-student ratio (Wanyama, 2013).

Physical facilities refer to the school buildings; classrooms, library, dormitories, laboratories, toilet facilities, offices and other infrastructure that would motivate

students towards learning (Akomolafe & Adesua, 2016). If physical facilities are available, adequate and effectively utilized they can lead to high students' academic performance and if not they can lead to low students' academic performance (Akomolafe & Adesua, 2016).

Head teacher supervisory role refers to the head teacher's intervention to ascertain, maintain and improve the quality of education students receive at school (Nyamongo, Sang, Nyaoga &Matoke, 2014). Head teachers' supervisory role include; vetting of teachers notes, regular visits to observe teachers lesson presentation and giving feedback, observing teachers attendance and punctuality, regular checking of students exercise books to find out teachers output of work and inspecting pupils assessment records among others (Amina, 2015). Onumah (2016) argues that the academic performance of any level of education is dependent on the quality, regular and continuous supervision of head teachers. However Onumah (2016) goes on to say that most public secondary schools have a problem of ineffective internal supervision by the school head teachers leading to poor academic performance and the way forward to this phenomenon formed the basis for this study.

Several researchers have carried out research with the quest to address the factors influencing academic performance in Kenya Certificate of Secondary Education (KCSE). For instance, Simiyu (2013) carried out research to examine the factors influencing the students' academic performance in public secondary schools in Trans Nzoia West Sub County. The study found that school factors greatly contribute to students' academic performance. The study further found that presence of a well-stocked library, relevant text books, well trained teachers', spacious classrooms are factor that can contribute to good academic performance. According to Onyara (2013), students' poor performance is due to lack of learning facilities and resources as well as poor supervision of learning activities. The study also shows that almost half of the heads of schools rarely take a look at teacher's professional records

Academic performance is also influenced by the transfer of teachers from schools without replacements. This leads to lack of enough teachers' thus leading to poor academic performance (Wanyama, 2013). A study by Simiyu, 2013; Onyara, 2013 and Wanyama, 2013 have been done in other Counties in Kenya and there is no evidence to show that a study on school based factors influencing student performance in KCSE has been done in Kathiani Sub County. The current study sought to investigate the school-based factors influencing students' performance in KCSE in public secondary schools in Kathiani Sub County, Machakos County.

1.2 Statement of the problem

The desire to provide quality education for all children is one of the major objectives of the Ministry of Education. As such, the government of Kenya has continuously implemented measures to improve the quality of Education in secondary schools. Despite government measures like improving physical facilities, learning resources in schools through the CDF fund and free and subsidized secondary education to boost performance, performance in public secondary schools in Kathiani Sub-county has been persistently low.

Statistics held at Kathiani Sub County Education Office (SCEO, 2017) show that most of the secondary schools have recorded a mean score below 4.5 in KCSE between 2012 and 2016 except 5 schools with a mean score above 4.5. According to the report, the KCSE mean score for the Sub County from 2012 to 2016 is as follows; 4.144, 4.070, 4.750, 4.874 and 3.151. The factors for this inconsistency performance over the years are not well understood which has made it difficult to design strategies that can improve the KCSE performance of poorly performing schools. The researcher was compiled to carry out this study to establish the school based factors influencing students' performance in KCSE in Kathiani Sub County, Machakos County.

A number of studies conducted in other parts of the country found that the presence of a well-stocked library, relevant text books, well trained teachers and spacious

classrooms contributed to good academic performance (Simiyu, 2013; Nyamongo, Sang, Nyaoka & Matoke, 2014). Nyamongo, Sang, Nyaoka and Matoke (2014) found that there was a significant relationship between the head teachers' supervisory role and students' academic performance. Studies by; Simiyu, (2013) and Nyamongo, Sang, Nyaoka & Matoke (2014) have been done in other counties in Kenya and no evidence that a study on school based factors influencing student performance in KCSE in Kathiani Sub County has been done. Therefore, this study sought to investigate school based factors influencing students' performance in KCSE in public secondary schools in Kathiani Sub County, Machakos County.

1.3 General objective of the study

The general objective of the study was to investigate the school-based factors influencing students' performance in Kenya Certificate of Secondary Education in public secondary schools in Kathiani Sub-County.

1.3.1 Specific objectives of the study

The study was guided by the following objectives: to;

(i) Determine the extent to which teaching resources influence students' performance in KCSE in public secondary school in Kathiani Sub- County.

(ii) Examine the extent to which teacher adequacy influence students' performance in KCSE in public secondary schools in Kathiani Sub- County.

(iii) Assess the extent to which physical facilities influence students' performance in KCSE in public secondary schools in Kathiani Sub-County.

(iv) Examine the extent to which to which head teachers' supervisory role influence students' performance in KCSE in public secondary schools in Kathiani Sub- County

1.4 Hypotheses of the study

The study was guided by the following hypotheses:

i) Ho1: There is no significant relationship between teaching resources and students' performance in KCSE in public secondary schools in Kathiani Sub-County.
ii) Ho2: There is no significant relationship between teacher adequacy and students' Performance in KCSE in Public Secondary Schools in Kathiani Sub-County.
iii) Ho3: There is no significant relationship between physical facilities and students' performance in KCSE in Public Secondary Schools in Kathiani Sub-County.
iv) Ho4: There is no significant relationship between head teacher's supervisory role and students' performance in KCSE in public secondary schools in Kathiani Sub County.

1.5 Significance of the study

At the school level, the study will provide insights to head teachers, teachers and the Board of Management on the school-based factors influencing students' academic performance in KCSE. The findings will also help guide the head teachers in addressing poor performance in public secondary schools in Kathiani Sub-County and in creating an understanding of the basic requirements of achieving and maintaining excellence in public secondary schools in Kenya.

The findings of the study could be useful to policy makers in Education sector in charge of allocation and disbursement of funds to public secondary schools in Kathiani sub-county. The Ministry of Education Science and Technology (MOEST) could use the study findings to determine the status of teaching and learning resources and physical facilities in secondary schools. The findings could also be used by the MOEST to assess the extent to which the government funding has enhanced equitable distribution of teaching and learning resources for effective teaching and learning in secondary schools. The findings of the study could be helpful to the Teachers Service

Commission (TSC) who could ensure that all the secondary schools have adequate trained and professionally qualified teachers for effective curriculum implementation. Finally, the study could guide future researchers undertaking similar or related studies and consequently contribute to existing knowledge in the study area.

1.6 Limitations of the study

The researcher envisaged to encounter the following challenges': First, the head teachers and heads of department in the study may fail to give the expected information due to fear of victimization. The researcher addressed this problem by approaching the head teachers and heads of department professionally and assured them that the findings would be used for academic purposes only and that their identity would not be revealed. Second, it was difficult to control the attitudes of the head teachers and heads of department which may have influenced the validity and reliability of their responses. However, the researcher assured the head teachers and heads of department that the information would be used for academic purposes only.

1.7 Delimitations of the study

The study was conducted in Kathiani Sub-County, Machakos County. Secondly the study was delimited to public secondary schools which sat for KCSE examination between 2012 and 2016 and no private secondary schools were considered. The study was delimited to responses from head teachers and heads of department in Kathiani Sub-County.

1.8 Assumptions of the study

The study was carried out under the following assumptions:

(i) The researcher assumed that the head teachers and heads of department would be cooperative, honest, and trustworthy in their responses to the research questions and also be accessible to respond to the research questions in time.

(ii) The researcher additionally assumed that the Sub County administrators would give the obliged consent to collect data from the school head teachers and heads of department in Kathiani Sub-County.

1.9 Definition of significant terms

The following definitions of words were used in the study as follows:

Academic performance: refers to student achievement measured by mean grade attained in Kenya Certificate of Secondary Education.

Head teacher supervisory role: refers to role of head teacher of overseeing teaching/learning process.

Physical facilities: refers to the school infrastructures that are used by students and teachers in their daily school activities; classrooms, library, dormitories, laboratories among others.

Public secondary schools: refers to institutions owned by the government and are registered to offer education to learners on regular basis from form one to form four.

School based factors: refers to the internal factors that are within the control of the school.

Teacher adequacy: refers to the number of teachers that can conveniently handle a given number of students. For instance one teacher to teach 40 students

Teaching resources: refers to the resources teachers use in classroom to support specific learning objectives as set out in the lesson plan.

1.10 Organization of the study

The study is organized into six chapters. Chapter one covers; background to the study, statement of the problem, general objective of the study, specific objectives of the study, research hypotheses, significance of the study, limitation of the study, delimitations of the study, operational definition of terms and organization of the study. Chapter two covers review of related literature arranged as per study objectives and explained from global, regional and narrowing to Kenyan situation while identifying research gaps through local studies done, summary of the literature review, theoretical framework and conceptual framework. Chapter Three covers

research methodology which includes: introduction, research design, target population, sampling techniques and sample size, data collection instruments, validity and reliability of research instruments, data collecting procedures, data analysis techniques and ethical considerations. Chapter four covers research results of the study. Chapter five covers discussions and interpretations of research findings. Chapter six covers conclusions and recommendations of the study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This section covered literature review on school-based factors influencing students' academic performance. The review was examined under the following sub-headings: teaching resources and students' academic performance, teacher adequacy and academic performance, physical facilities and students' academic performance as well as head teachers' supervisory role and students' academic performance, summary of the literature review, theoretical and conceptual frameworks.

2.2 Teaching resources and students' academic performance

Teaching resources are described as methods and materials used in teaching (Owoko, 2010). Evidence from the World Bank and other international organizations on the quality of learning in the developing countries points out the importance of individual school's input (Owoko, 2010). Some of the inputs include teachers, classroom size and its environment, instructional materials such as textbooks and other reading materials as well as school buildings and facilities (Eshwani, 1996). These inputs can influence students' academic performance either positively or negatively.

Globally, students' academic performance is as a result of a variety of factors such as the school environment as well as teaching and learning resources. In developed countries like the UK, USA, Germany and France, the government allocates enough funds for the education sector to deal and ultimately combat the causes of poor academic performance in schools (McKenzie & Schweitzer, 2001). The funds are therefore used in ensuring enough teaching and learning materials such as textbooks. Technology is incorporated as a major resource material for use in teaching and learning in the developed countries with the aim of improving the academic performance of students (Wenglinskiy, 2002).

Laurillard (2013) study on effective teaching, and learning technologies in Botswana found that lack of relevant teaching materials caused dismal students' academic performance. The study further found that students' academic achievement is mainly caused by lack of relevant textbooks and other print materials such as publications and handbooks. The government of Botswana is committed to ensure that the Ministry of Education and Skill Development receives lion's share, both recurrent and development budget (Matambo, 2013). Despite all the efforts by the government on education, the students' academic performance has been declining lately from 2010 (Luke & Mavis, 2014).

The Republic of Rwanda, is committed to match resource availability with resource requirements, increase infrastructure and provide equipment in accordance with set standards, as well as learning materials, although this goal has not been fully met (Benjamin & Orodho, 2014). Lowe (2009) recommends that learners should be allowed to learn in a way which suits the preferred style of learning. Students should be given an opportunity to learn their learning style by using various learning resources that best suit them. Lowe (2009) goes on to say that learners learn and perform better when their classroom is well organized giving them enough space.

According to Agosiobo (2007), the use of teaching resources is important because they motivate learners to learn. They offer stimulus variation and assist in sustaining learners' attention throughout the lesson. Learning resources clarify information, and offer a clear explanation to complex concepts. Agosiobo (2007) found that instructional materials stimulate lively class discussion. For example after watching a film in a class or listening to radio. In addition, they also challenge independent thinking, especially when used individually in an assignment or as a class activity.

Adequate use of teaching resources gives the learner a practical experience which can help in selection of learning concepts more clearly. Utilization of educational resources and academic performance are closely related because students can master the learning strategies. Momoh (2010) in West Africa found that there is a positive

significant relationship between instructional resources and academic performance. The study also found that Schools endowed with more materials performed better than schools that were less equipped. This corroborated with the study by Babayomi (1999) that private schools performed better than public schools because of the availability and adequacy teaching materials.

Lyons (2012) argues that students' performance is influenced by the quality and quantity of teaching materials. Lyons (2012), found that institutions with adequate teaching/learning resources such as textbooks, charts, maps, audiovisual and electronic instructional materials such as radio, tape recorder, television and video tape recorder stand a better chance of performing well in examination than poorly equipped ones. Therefore, poor academic performance could be attributed to lack of enough teaching materials and equipment, thus the need to carry out this study to establish the validity of this statement.

In Kenya, Oyugi and Nyagah (2010) assessed the influence of Teaching and Learning Resources on the Implementation of Inclusive Education in Pre-School Centers in Nyamira North Sub-County. The study sampled 134 pre- school teachers and 270 pre-school parents through stratified random sampling and 12 Education Officers sampled by census sampling. The study found that teaching/learning resources comprise of community involvement, regular teachers for both special needs students and the average students which influence student performance. A study by Yara and Otieno (2010) on teaching and learning resources and academic performance shows that, stationaries and teaching aids influence students' performance. His findings are in agreement with findings of UNESCO (2008) report that teaching and learning materials such as text books, teaching aids (chalk, chalk board) and stationaries can influence students' academic performance. These studies did not assess how teaching resources influence students' performance in Kathiani Sub County which this study sought to establish.

2.3 Teacher adequacy and students' academic performance

The success of the educational system is determined by the availability and adequacy of teachers. To identify the adequacy of teachers in the learning environment, the student-teacher ratio (STR) need to be determined which will account for the number of students a single teacher handles in a class. The STR method will make it simple for teachers to be allocated a specific number of students in the class at any educational level. The method as well shows the workload of any given teacher in any level of education. Additionally, the method is helpful in that it can determine the number of the students that need to be enrolled in any learning institution as well as the manpower that is required for a given number of students (Afolabi, 2005).

According to Rosehotz and Simpson (2002), contemporary education thought holds that one of the pivotal causes of unsteady development in many countries is inability to adequately staff schools with teachers. Tyke and O'Brien (2002) argue that schools are plagued by shortage of teachers due to increase in students' enrolment, teacher attrition and retirement leading to poor academic performance. Teacher inadequacy is believed to confront many secondary schools world over and Kenya is not exempted. The similar situation was observed in Australia by Klaus and Dolton (2008) who argue that the nation need to hire at least one million teacher over the next ten years because the inadequacy can influence students' academic performance.

According to MacDonald (2007), the attrition of both new and experience teachers is a great challenge for schools and schools administrators throughout the United States. This can influence students' academic performance. According to Tyke and O'Brien (2002) the shortage of teachers has forced many education systems to lower education standards through the employment of unqualified teachers to fill the gap, thus lowering the school's academic performance.

In Tanzania, students' performance is dismal, and the quality of performance is suspected to be influenced by inadequate teachers as well as low syllabus coverage among other factors (Mdee & Donatha, 2015). Mdee and Donatha (2015) further recommended that, for the Tanzanian country to improve the quality and the performance of the students, teacher students' ratio needs to be addressed together with employing more qualified teachers. According to Mosha (2014) most of the secondary school in Tanzania has inadequate teachers which has led to poor academic performance.

A survey conducted in Kenya by United Nations Educational, Scientific and Cultural Organization (2005), shows that average ratio in 162 sampled schools was 58:1 against the requirement of 40:1. Such class sizes in public secondary school make it difficult for teachers to teach lessons effectively as compared to their counterparts in private schools who handle a smaller number of students. Therefore, teacher adequacy is a significant factor influencing students' academic performance. Students will be considered passive in the class due to their large number as a result of the teaching methods that will be employed by the teacher in taking care of the big population (Okongo, Ngao, Rop & Nyongesa, 2015).

Since the introduction of free primary and subsidized secondary education in Kenya, the ratio of teacher to student has escalated from the recommended range of 1:40 to 1:60 (MOEST, 2010). The teacher-student ratio factor is a major contributor to the compromised results of the students. According to UNESCO report (2012) on efforts made by the government to ensure education for all (EFA) as a Millennium Development Goal, Kenya faces a serious shortage of qualified teachers which is causing schools performance to be negatively affected. The report also reiterated the problems of shortage of teaching personnel which are factors influencing students' academic performance in Kenya schools. The shortage of teachers is, therefore, a significant factor that is impinging on the students' performance in Kenya Certificate of Secondary Education (KCSE) examination and thus the need for this study.

2.4 Physical facilities and students' academic performance

Ensuring that all the school learning facilities are adequate and that they are in good condition creates conducive environment for learners and also supports learning. Education is advocated for in most of the states across the globe to equip their citizens with values, skills and knowledge that will enable them to build their societies and eliminate inequality and disparity (Newmann, 1992). The success of schools can be measured through the good performance posted by the students in those schools.

Availability and the efficiency of physical facilities have a positive impact on students' academic performance while Lack of these facilities leads to negative impact on academic performance. Taylor and Vlastor (2009) argue that adequate physical facilities strengthen and encourage the academic performance of schools. The learning process can be enhanced through creating conducive learning environment that favors learning by ensuring that the classrooms are arranged properly. Based on Taylor and Vlastor (2009) argument the setting of the classroom adds value to the teaching and learning process thus resulting in academic success unlike when there are no facilities. According to Lyons (2001), learning in a well-structured classroom improves cooperation between the teacher and the students' hence good students' performance. On the other hand, when the students are uncomfortable in the classroom, they tend to post poor results in their academic performance due to communication barrier between the teacher and the students. Therefore, teachers' effectiveness and students' academic performance can be greatly influenced by poor school facilities.

Many studies have established that physical facilities and material resources in secondary schools are inadequate world over. For example; World Bank (2008) in a study on textbooks and school library provision in secondary education in Sub-Sahara Africa found that textbooks and libraries were not only inadequate but unevenly distributed among rural and urban schools in the area of study which influences academic achievements. Similarly, Asiabaka (2008) on efficient management of schools in Nigeria noted that the government's failure to establish a policy directive

on minimum standards for schools facilities has led to disparities in this area thus poor academic performance.

Olaniyan and Ojo (2008) found out that lack of textbooks and training manuals was one of the challenges hindering successful implementation of early technology in Nigerian secondary schools. This is in agreement with Chiriswa (2002) who found out that effective teaching and learning depends on the availability of suitable, adequate resources such as books, laboratories, library materials and other visual and audio teaching aids which enhance good performance in the national examination. The current study sets out to establish the extent to which the availability or unavailability of physical facilities influence students' academic performance in KCSE in public secondary schools in Kathiani Sub-County, Machakos County.

A study by Akinsanya (2010) to determine the influence of differential distribution and utilization of human resources on students' performance in state-owned and federal schools in Ogun State, Nigeria found that physical facilities like laboratories and libraries were inadequate which influenced students' performance. Oni (1995) found that availability and quality of materials facilitate smooth operation of any school and thereby enhancing effective teaching/learning activity and thus higher educational attainment by students.

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In Kenya, Onyara (2013) found a direct relationship between the students' performance and availability of school physical facilities. This is in line with Mwangi and Nyagah (2011) who argued that good academic performance is contributed to by

the availability of school buildings and other appropriate plans thus resulting to effective teaching and learning activities. High educational performance can as well be achieved through having a pleasant atmosphere and other physical facilities such as latrines and playgrounds. Wanyama (2013) carried out a study in Narok-North County on school-based factors influencing students' performance at Kenya Certificate of Secondary Education and found that students attitude towards education influenced their academic performance. The study further found that school administration and availability of physical facilities like classrooms laboratories and dormitories influenced students' academic performance. This study was set out to establish whether this is the case in Kathiani Sub-County, Machakos County.

2.5 Head teachers supervisory role and students' academic performance

The success of any level of education is hinged on the quality, regular and continuous supervision of instruction (Onumah, 2016). Onumah (2016) identified management of curriculum and instruction, supervision of classroom instruction, monitoring and evaluation of students' progress and achievement, promotion and enhancement of learning environment, establishing and supporting continuous staff development and procuring instructional materials for teaching and learning as major supervisory functions of secondary school head teachers.

Ankomah (2002) pointed out that one of the characteristics of successful school is the presence of strong leadership manifested through supervision of teachers' work. For instance, in most successful schools the head teachers sit in the classroom during instructional time and note down points that they later discuss with the teachers. On a regular basis, the head teacher samples out some of the exercises done by children to find out the extent to which teachers are teaching. The head teacher also inspects the lesson plans of teachers and vets them every week. This exercise can influence the students' academic performance positively.

A study by Nyannyonjo (2007) on analysis of factors influencing learning achievement in Public Secondary Schools in Uganda showed that school performance is influenced by head teachers' characteristics such as; qualification, age, experience and tenure of service in the school. The study further found that good supervision strategy styles were significant factors influencing learning achievements in examinations. The findings of this study concur with those of Sushila (2004) on the role of the head teachers in influencing school performance in Kuria District, Kenya. However, Nyamongo, Sang, Nyaoga and Matoke (2014) reiterated that in carrying out supervisory tasks, the head teacher should have a clear specification of goals and targets. They further pointed out that most head teachers did not have objectives and mission targets to guide their schools. They found that 80% of all the head teachers interviewed had not attended any lesson thus were not aware of what was going on in their classes but only waited for final KCSE results which led to their schools posting poor results.

Secondary Schools require good leadership by the head teachers in order to organize the process of teaching and learning and to ensure that the mission of the school is achieved (Lydiah & Nasongo, 2009). The core role of the head teachers is to ensure the achievement of the established mission through creating a good environment for the learners (Lezotte, 2001). A study by Musungu and Nasongo (2008) on the instructional leadership role of secondary school head teachers found that head teachers supervised teachers' work by inspecting records such as schemes of work, lesson books, records of work covered, class attendance records, and clock in/clock out register.

A study by Njuguna, Waweru and Nyagosia (2013) on factors influencing academic achievement in public secondary schools in Central Kenya by specifically comparing the top 20 performing schools and 20 from the bottom category, established that head teachers' frequency of internal supervision contributed towards better performance. This involved proper tuition and revision, careful supervision of teachers and pupils' work, proper testing policy, syllabus coverage, teacher induction courses and team

building. In the same context, Ndunda (2004) and Wanyama (2013) remarked that the students' performance depends on the school head teacher. This is because the head teachers are the focal system of a school through which all important functions rest and is also the controller of all resources that may influence students' performance in a school. This study was therefore set out to establish the influence of head teachers' supervisory role on students' academic performance in KCSE in public secondary schools in Kathiani sub-County.

2.6 Summary of the literature review

The reviewed literature illustrated that effective teaching and learning is influenced by availability, quality and variety of relevant teaching materials which in turn influences students' academic performance in Kenya Certificate of Secondary Education (KCSE) (Lyons, 2012; Oyugi & Nyagah, 2010). On analysis of the teacher adequacy studies found that availability of teachers, teacher adequacy, teacher shortage, and transfer of teachers influence the student teacher ratio which in turn influences the students' academic performance ((Afolabi, 2005; Tyke & O'Brien, 2002; Mosha, 2014 and UNESCO,2005). The reviewed literature on physical facilities and students' academic performance found that availability, adequacy and efficiency of physical facilities in schools influenced students' academic performance (Taylor & Vlastor, 2009; Lyons, 2001; Akinsanya, 2010; World Bank, 2008; Onyara, 2013 and Wanyama, 2013). The reviewed literature also, established that characteristics of head teachers such as in-service training, age, experience and tenure of service in the school influence students' academic performance (Nyannyonjo, 2007). The head teachers' supervisory role can also influence students' academic performance in KCSE either positively or negatively (Sushila, 2004 and Nyamongo, Sang, Nyaoga & Matoke, 2014).

Although literature has was reviewed on school based factors influencing students' academic performance, most of these studies have been done in other parts of the country and regions whose strategic approach and financial footing is different from that of Kathiani Sub-County. None of the studies therefore focused on how these

apply in the case of Kathiani Sub-County. It is evident therefore that a literature gap exists on the school based factors influencing students' academic performance in Kathiani Sub-County. This study therefore sought to fill this gap by focusing on school based factors influencing students' performance in KCSE in public secondary schools in Kathiani Sub-County.

2.7 Theoretical Framework

The study was guided by the Education Production Function Theory whose main proponents are Dewey, Husted and Kenny (1998). The theory focuses on the analysis in the economics of education whose impacts are on school resources both physical facilities and learning resources. The theory assumes that there is substitutability of inputs to produce the same output. A standard formulation for the education production function takes the form: A = F(X) where A represents the output produced by the activity, and X is a set of inputs. This theory is supported by Callan and Santerre (1990) and Nelson and Hevert (1992) who have provided empirical evidence that there is at least limited substitutability between educational inputs, for example teachers, physical facilities, learning resources, financial resources and students' performance.

The study therefore used this theory to highlight various aspects of the learning process of the students in relation to teaching resources, teacher adequacy, physical facilities as well as head teachers' supervisory role which are inputs to academic performance. On analysis of the role of school resources in determining student achievement the theory posits that the output of the educational process (the achievement of students) is directly related to inputs that both are directly controlled by policy makers (teaching resources, teacher's adequacy, physical facilities, and head teacher's supervisory role). Though academic achievement may be measured at discrete points in time, the educational production function theory is cumulative. This theory was therefore applicable to the study since it relates various inputs which include provision of learning resources, provision of human resources, curriculum supervision and physical resources and students' performance. The study was,

therefore guided by this theory to establish the school-based factors influencing students' academic performance in KCSE in public secondary school in Kathiani Sub-County, Machakos County.

2.8 Conceptual Framework

The conceptual framework of this study illustrated the interrelationship between the independent variables and the dependent variables. The independent variables include teaching resources, teacher adequacy, physical facilities, and head teachers supervisory role while the dependent variable is academic performance (KCSE). The intervening variables are government policy.

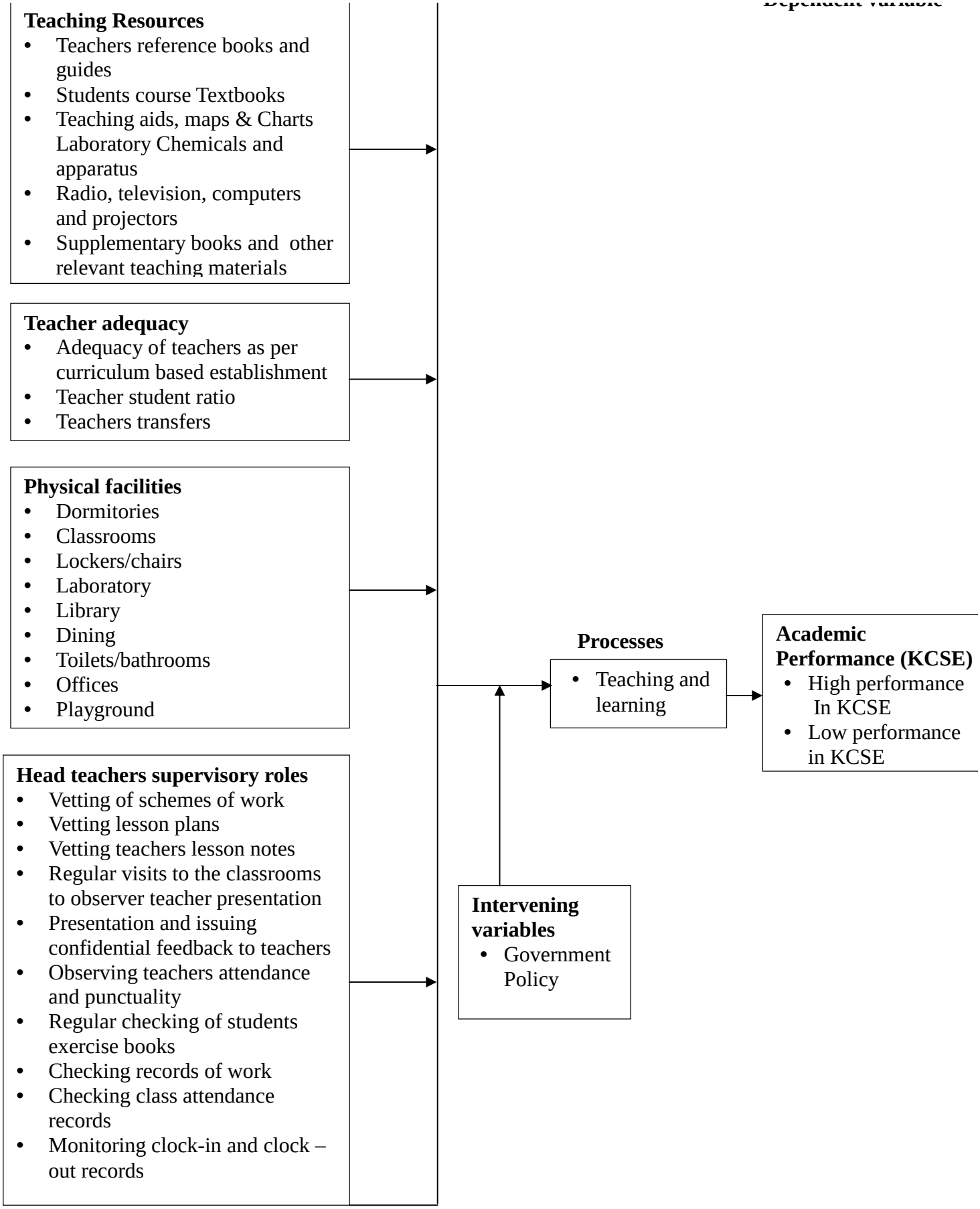

Figure 2. : Conceptual framework showing interrelationship among variables

The conceptual framework shows the school based factors influencing the students' performance in KCSE which include; teaching resources, teacher adequacy, physical facilities, and head teachers' supervisory role. As shown in the conceptual framework, if the teaching resources; teacher reference books and guides, student course books, teaching aids, laboratory chemicals and apparatus, radios, television computers and projectors are provided as per the governments' policy, the students' academic performance in KCSE will be high. On the other hand if they are not provided, the performance in KCSE will be low. In addition, if the teachers are adequate as per the curriculum based establishment, academic performance will be high, but if inadequate, the performance in KCSE will be low. Likewise if the physical facilities that are library, laboratory, classrooms, toilets, office space, dormitories and playing grounds are made available as per the government's policy, students' academic performance in KCSE will be high. On the other hand if the head teachers perform their supervisory role effectively; vetting schemes of works, teachers' lesson plan, teachers lesson notes, regular visits to classroom to observe teacher presentation and presentation of feedback to teachers, observing teacher attendance and punctuality and checking records of works the performance in KCSE will be high and vice versa.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The chapter covered research methodology that was used in the study. It was divided in the various sections. These includes: research design, target population, sampling techniques and sample size, data collection instruments, validity and reliability of research instruments, data collection procedure, data analysis techniques and ethical considerations.

3.2 Research design

The study used descriptive research design. A descriptive design is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman &Bell, 2007). Bryman and Bell (2011) assert that a descriptive design seeks to get information that describes existing phenomena by asking questions relating to individual perceptions and attitudes. Thus, this approach was suitable for this study since the researcher intended to collect comprehensive information through descriptions to establish the school based factors influencing students' academic performance in public secondary schools in Kathiani Sub-County, Machakos County. The design was appropriate for the study because it was conducted in a setting that required direct responses from respondents while investigating existing phenomenon without manipulating the variables.

3.3 Target population

The target population is a complete set of individuals, cases or objects with some common characteristics to which the researcher wants to generalize the results of the study (Mugenda & Mugenda, 2012).This study targeted 30 public secondary schools, their head teachers and heads of departments. Records at Kathiani Sub-County office (2017) show that the Sub-County has 30 public secondary schools (11 mixed

day/boarding schools, 14 mixed day schools and 5 single gender schools(boys and girls schools) that have presented students for KCSE examinations between 2012 and 2016. The study therefore, targeted 30 head teachers and 270 HODs. The head teachers and the HODs were targeted because they are in charge of curriculum supervision and academic matters in the school and were considered to have knowledge of the factors influencing students' performance in KCSE. The deputies were not included because they play the same roles as the head teachers in curriculum supervision.

3.4 Sampling techniques and sample size

A sample is a set of entities drawn from a population with the aim of estimating the characteristics of the population (Cresswell, 2013). The researcher used stratified sampling technique, simple random sampling technique and purposive sampling technique to select the sample size. Sample size is the group of individual on which information is obtained (Fraenkel & Wallen, 2000).

Kathiani Sub County had 30 public secondary schools with classification thus: 11 mixed/day and boarding, 14 mixed day and 5 single gender (boys and girls) public secondary schools. Due to the population characteristics, the study used stratified sampling technique to stratify the population into three strata as follows; mixed day/boarding schools, mixed day schools and single gender (boys and girls) schools.

Mugenda and Mugenda (2003) recommend a representative sample of between 10 and 30% for a descriptive research. 30% of 11 = 3.3≈3 mixed day/boarding, 30% of 14= 4.2≈4 mixed day schools and 30% of 5 =1.5≈2 single gender schools. Therefore 30% of each stratum yielded 3 mixed/day boarding, 4 mixed day and 2 single gender schools. After stratification of schools, simple random sampling technique was used to select sample size of 9 secondary schools from the strata's. Names of the schools from the three strata's were written in a piece of paper and folded and shuffled in 3 separate bowls as per the strata's. 3 schools were picked from the mixed day boarding, 4 from the mixed day and 2 from the single gender schools that is one boy's

school and one girl's school. Purposive sampling technique was then used to sample 9 head teachers and 81 heads of department as shown in table 3.1 below. Their inclusion was predetermined by the selection of their schools. In using this technique to select the head teachers and the heads of department, the researcher believed that the respondents would give the required information for the study because they are in charge of curriculum supervision and academic matters in their schools. To ensure gender equity in schools where the numbers of female teachers were more than male teachers and vice-versa, the researcher used purposive sampling technique

Table 3- : Sample size

School category	**Target population**		**Sample size**	
	Head teachers	**Heads of departments**	**Head teachers**	**Heads of departments**
Mixed/day boarding	11	99	3	27
Mixed day	14	126	4	36
Single gender schools	5	45	2	18
Total	**30**	**270**	**9**	**81**

3.5 Research instruments

This study relied on primary data which was collected by use of questionnaires and secondary data which involved the use of document analysis. Questionnaires were used because they are cheap, also ensure anonymity and permit the utilization of the standardized questions, provide time for respondents to think about responses, and are is easy to score (Saunders, 2012). The questionnaires were used to collect data from the head teachers and heads of departments and were made up of closed-ended and open-ended questions to avoid being too rigid and to quantify data, especially where structured items were used. The questionnaire for the head teachers was divided into

five sections. Section A sourced data on the demographic information of the respondents, Section B contained questions regarding teaching resources and students' academic performance, Section C collected data on teacher adequacy and students' academic performance, Section D had questions on physical facilities and students' academic performance and Section E collected data on head teachers' supervisory role and students' academic performance . The questionnaire for the heads of department was divided into five sections. Section A sourced data on the demographic information of the respondents, Section B contained questions regarding teaching resources and students' academic performance, Section C collected data on teacher adequacy and students' academic performance, Section D had questions on physical facilities and students' academic performance and Section E collected data on head teachers' supervisory role and students' academic performance. Document analysis involved sourcing data on KCSE results for a period between 2012 and 2016 which was obtained from the Kathiani Sub County Education office to establish and confirm the responses given in the questionnaires of the head teachers.

3.6 Validity of research instruments

The validity of a research instrument is concerned with the accuracy with which the instrument measures what it is supposed to (Golafshani, 2003). This study used questionnaires whose validity was tested by use of content validity. Content validity is a process of logical analysis that involves careful and critical examination of items in the research instrument. The research instruments were submitted to university supervisors to ascertain content validity. The instruments were then, handed to a team of experts from the Department of Educational Administration in the School of Education who ascertained content validity of the instruments. The corrections done were in cooperated. The instruments were then piloted in two schools from the sub county which were not part of the actual research. According to Bell (2010) piloting research instruments is necessary because it is a way of finalizing them and enables the validity of the instruments to be determined.

3.7 Reliability of research instruments

Mugenda and Mugenda (2003) asserted that, the accuracy of data collected largely depends on the data collection instruments in terms of validity and reliability. Instrument reliability is the extent to which a research instrument produces similar results on different occasions under similar conditions. It is the degree of consistency with which it measures whatever it is meant to measure (Bell, 2010). Reliability is concerned with the question of whether the results of a study are repeatable. The researcher determined the internal consistency of the instrument items through a single test administration for the two sets of questionnaires in two schools from the sub county which were not part of the actual research. Reliability coefficient of the research instrument was assessed using Cronbach's alpha (α) which is computed as follows:

$A=k/k\text{-}1\times [1-\sum (S^2)/\sum S^2 sum]$

Where:

α= Cronbach's alpha

k = Number of responses

$\sum (S^2)$ = Variance of individual items summed up

$\sum S^2 sum$ = Variance of summed up scores

A Cronbach alpha coefficient of 0.761 was obtained for head teachers' questionnaires while a coefficient alpha of 0.771 was obtained for heads of department questionnaires. These coefficients were deemed satisfactorily reliable for the instruments to be used for data collection having passed the threshold by of more than 0.7. Mugenda and Mugenda (2003) observe that an instrument with a reliability coefficient of greater than 0.7 is considered highly reliable.

3.8 Data collection procedures

The data collection process started after obtaining an introduction letter from the Board of Post Graduate Studies (BPGS), South Eastern Kenya University (SEKU) and a research permit from the National Commission of Science, Technology and Innovation (NACOSTI). The research permit enabled the researcher to proceed with

data collection. Permission was sought from the Kathiani Sub County Education office and head teachers from the respective schools before any research work began. The research questionnaires were then self-administered to the respondents.

3.9 Data analysis techniques

Malhotra and Birks (2006) describe data analysis as the editing, coding, transcription and verification of data. Data analysis was done using Statistical Package for Social Science (SPSS) version 21. Descriptive statistics such as frequencies, percentages, mean and standard deviation was used for all the quantitative data and information presented in form of tables. The qualitative data from the open ended questions was analyzed using content analysis. This was based on Zina (2010) recommendation on the analysis of qualitative data, so that the collected data would be organized, sorted out, coded and thematically analyzed, searching for meaning, interpreting and drawing of conclusions on the basis of the research objectives. The null hypotheses were tested using correlation analysis at the 0.05 level of significance.

3.10 Ethical considerations

According to Bryman and Bell (2011), it is the responsibility of the researcher to carefully assess the possibility of harm to research participants. This should be done in every way possible by taking all reasonable precautions to ensure respondents are in no way exposed to harm or adversely influenced due to their participation in the research. The researcher undertook to explain to the respondents that permission has been sought before commencement of the research work to avoid respondents from refusing to participate. The rights and dignity of the respondents such as the right to decline to participate as a respondent to the questionnaire, and freedom to present their views on related areas without fear of repercussion was assured before data collection took place. The purpose of the research was clearly explained to the participants without necessarily divulging details of the study, in order to avoid respondent bias or pre-formed opinions.

CHAPTER FOUR
RESEARCH RESULTS

4.1 Questionnaire Response Rate

This study administered a total of 9 questionnaires for head teachers and 81 to the heads of departments. Of these, all the 9 questionnaires were returned by the head teachers department while 68 questionnaires were returned by the Head of Departments. This represented questionnaire response rates of 100% and 84% for head teachers and Heads of Departments respectively. These rates were considered acceptable since according to Best and Khan (2006) return rates of more than 60% are considered to be very good.

4.2 Demographic characteristics of head teachers' and heads of department

The head teachers' and Heads of Department characteristics in terms of gender, professional qualification, experience of teaching and length of stay in the current school were as presented in Tables 4. 1 through 4.5

4.2.1 Gender

Head teachers' and heads of department gender was analyzed and results shown in Table 4.1

Table 4. Gender of head teachers' and heads of department

	Head teachers		**Heads of departments**	
Gender	**Frequency**	**Percent**	**Frequency**	**Percent**
Male	6	66.7	40	58.8
Female	3	33.3	28	41.2
Total	**9**	**100.0**	**68**	**100**

Table 4.1 shows that 6 (66.7%) of the head teachers were male while 3(33.3%) were female. On the other hand 40(58.8%) of the heads of department were male while 28(41.2%) were female.

4.2.2 Professional qualification of head teachers' and heads of department

Head teachers' and heads of department professional qualification was analyzed and results shown in Table 4.2 and 4.3 respectively.

Table 4. Head teachers' highest level of professional qualification

Qualifications	Frequency	Percent	Cumulative Percent
MED	1	11.1	11.1
BED	8	88.9	100.0
Total	**9**	**100.0**	

Table 4.3 shows that 8(88.9%) of the head teachers had a Bachelors of Education(BED) degree level of qualification compared to nearly 1(11.1%) of the head teachers who had post graduate Master of Education(MED) degree level of qualification.

Similarly, heads of department' level of professional qualification was analyzed and results are as shown in Table 4.3

Table 4. : Heads of departments' professional qualification

Qualifications	Frequency	Percent	Cumulative percent
P1	2	2.9	2.9
Diploma	22	32.4	35.3
Degree	40	58.8	94.1
Others (Masters)	4	5.9	100.0
Total	**68**	**100.0**	

Table 4.3 shows that 40(58.8%) of the Heads of Department had a degree level of professional qualification followed 22(32.4%) of the Heads of Departments (HODs) with a diploma level of professional qualification. It is also worth noting that about 4(5.9%) of the Heads of Department had attained a master's level of qualification. However, there was 2.9% of heads of departments in secondary schools with a P1 certificate level of qualification shown in Table 4.3

4.2.3 Teaching experience for head teachers and heads of departments

With regard to the length of service in teaching, most head teachers had the following years of service in teaching as shown in Table 4.4

Table 4. : Head teachers experience in teaching service

Head teachers years of teaching service	Frequency	Percent	Cumulative Percent
Less than 2 years	1	11.1	11.1
3-4 years	1	11.1	22.2
Over 4 years	7	77.8	100.0
Total	**9**	**100.0**	

Table 4. 5 shows that 7(77.8%) of the head teachers had a teaching experience of over four years while 1(11.1%) others had a teaching experience of 3-4 years. 1(11.1%) of the head teachers had a teaching experience of Less than 2 years.

When asked on how their experience helped them in ensuring good performance, head teachers argued that their experience has helped them in making necessary decisions, upholding good practices, proper management of school resources, overcoming challenges that may hinder good performance, ensuring team work and betterment of human resource management skills.

Similarly, heads of department length of service in teaching was analyzed as shown in Table 4.5

Table 4. : Heads of departments teaching service

Heads of department Years of teaching service	**Frequency**	**Percent**	**Cumulative Percent**
Less than 2 years	8	11.8	11.8
3-4 years	16	23.5	35.3
Over 4 years	44	64.7	100.0
Total	68	100.0	100.0

Table 4.5, shows that 44 (64.7%) of the Head of Departments had teaching experience of over four years. About 16 (23.5%) of them had an experience of between 3-4 years while 8(11.8%) had an experience of less than two years.

4.2.4 Duration of service in current school

With regard to duration of stay in the current school, head teachers gave the following responses that are presented in Table 4.6

Table 4. : Head teachers' length of service in current school

Length of service	Frequency	Percent	Cumulative Percent
Less than 2 years	2	22.2	22.2
3-4 years	2	22.2	44.4
Over 4 years	5	55.6	100.0
Total	**9**	**100.0**	

Table 4.6 shows that 5 (55.5.%) of the head teachers had stayed in the respective schools for a period of over four years while about 22.2 percent of them had stayed for a period of 3-4 years while 22 percent had worked for less than two years in their current station.

Similarly, analysis of heads of department's length of stay in the current school is as presented in table 4. 7.

Table 4. Head of department length of stay in current school

Length of stay in current station	Frequency	Percent	Cumulative Percent
Less than 2 years	17	25.0	25.0
3-4 years	14	20.6	45.6
Over 4 years	37	54.4	100.0
Total	**68**	**100.0**	

Table 4.7.shows that 37 (54.4%) of the heads of department said that they had stayed in the current school for a period of over 4 years while about 17(25%) of them had less than two year stay. 14(20.6%) of the departmental heads had worked in the school for a period between 3 and 4 years.

4.2.5 Age of head teachers

Head teachers were asked a question regarding their ages. Results of this analysis were presented in Table 4.8

Table 4. Age of head teachers

Age	Frequency	Percent	Cumulative percent
41 – 45 years	2	22.2	22.2
46 – 50 years	4	44.4	66.7
51-55years	1	11.1	77.8
56- 60 years	2	22.2	100.0
Total	**9**	**100.0**	

As shown in Table 4.8, 4 (44%) of the head teachers were between the age ranges of 46- 50 years while 2 (22%) were 56-60 years of age. 2 (22%) of the head teachers were of the age 41 – 45 years. 1(11.1%)) were in the age bracket of 51-55years.

4.3 Analysis in line with objectives

This study sought to achieve four objectives namely: Determine the extent to which teaching resources influence students' performance in KCSE in public secondary school in Kathiani Sub- County; Examine the extent to which teacher adequacy influence students' performance in KCSE in public secondary schools in Kathiani Sub- County; Assess the extent to which physical facilities influence students' performance in KCSE in public secondary schools in Kathiani Sub-County and Examine the extent to which head teachers' supervisory role influence students' performance in KCSE in public secondary schools in Kathiani Sub- County. Analysis of the objectives including KCSE performance as well as testing of the null hypotheses are presented in sections 4.3.1 through 4.3.4

4.4 Teaching resources and students' academic performance

The first objective sought to determine the extent to which teaching resources influence students' performance in KCSE in public secondary school in Kathiani Sub-County. In order to achieve this objective, the study first sought to measure the adequacy of the existing teaching resources within the schools that were surveyed in the study area. A section 4.4.1 and 4.4.2 presents the head teachers' and heads of department views regarding the adequacy of these teaching resources

4.4.1 Head teachers' views on the adequacy of teaching resources

Head teachers' s were presented with statements concerning teaching resources such as reference books for teachers, teaching aids, laboratory chemicals among others of which they were required to indicate whether they were adequate or inadequate. These responses from head teachers' were analyzed and results presented as shown in table 4.9

Table 4. : Head teachers' response with regard to teaching resources

Teaching resources	Adequate	Inadequate	Neutral
Teachers reference books and guides	77.8%	11.1%	11.1%
Student Course Textbooks	66.7	33.3	0
Teaching aids, maps & Charts	66.7	11.1	22.1
Laboratory Chemicals and apparatus	77.8	11.2	0
Radio, television, computers and Projector	11.1	44.4	44.4
Supplementary books and other relevant teaching materials	66.7	11.1	22.2

Table 4.9 shows that 77.8% of the head teachers said that teacher' reference books and guides were adequate. 11.1 percent said that they were inadequate and 11.1% were silent on the same. 66.7% of the head teachers said that student course textbooks were adequate and 33.3.7% of them said that they were inadequate.

Similarly, 66.7% of head teachers reported that teaching aids, maps and charts were adequate while 11 percent said that they were inadequate and 22.1 percent of them were non-committal. 77.8 percent of the head teachers said that laboratory chemicals and apparatus were adequate with 11.2 percent holding a contrary view. 44.4 percent of the head teachers reported that Radio, television, computers and Projector were inadequate, and a similar percent of head teachers (44.4%) were non-committal. Additionally, supplementary books and other relevant materials for teaching were considered to be adequate as reported by 66.7% of the head teachers while only 11.1 percent reported that they were inadequate and 22.2% were non-committal.

4.4.2 Heads of department views on the adequacy of teaching resources

Similar to the findings as presented in section 4.3.1.2 herein, responses with regard to adequacy of teaching resources as sourced from the heads of department were analyzed and presented in table 4.10.

Table 4. : Heads of department response with regard to teaching resources

N =68 Teaching resources	Adequate	Inadequate	Neutral
Teachers reference books and guides	79.4%	11.8%	8.8%
Students Course Textbooks	61.8	25.0	13.2
Teaching aids, maps & Charts	39.7	42.6	17.6
Laboratory Chemicals and apparatus	50.0	33.8	16.2
Radio, television, computers and Projectors	13.2	55.9	30.9
Supplementary books and other relevant teaching materials	44.1	33.8	22.1

Table 4. 10 show that 79.4% of the departmental heads said that teacher' reference books and guides were adequate while 11.8% of them said they were inadequate. 8.8% were non-committal. 61.8 percent of the HODs said that Students Course Textbooks were adequate while 25% of them said that the students' course textbooks

were inadequate. According to 42.6% of the heads of department, teaching aids, maps and charts were inadequate while 39.7 percent of them said that they were adequate and 17.6% were neutral.

Table 4.10 shows that 50% of the heads of departments said that laboratory chemicals and apparatus were adequate while 33.8% said they were inadequate and 16.2% were non-committal. Radio, television, computers and Projector facilities were found to be inadequate as said by 55.9% of the departmental heads. 13.2% of the heads of department reported that they were inadequate while 30.9% were non-committal. Similarly, supplementary books and other teaching materials were found to be adequate by 44.1% of the departmental heads while 33.8% others said that they were inadequate. 22.1% of the heads of department were non-committal.

4.4.3 Extent to which teaching resources influence students' academic performance

In line with achieving the first objective, this study sought to find the extent in which the teaching resources influenced academic performance of the school considering the underlying facts about the adequacy of these resources as established herein in the preceding sections. In this case, a common question was asked to both the heads of departments and head teachers to rate their views on an ordinal scale with regard to the extent of influence. The measure of extent was ordinal ranked on a continuum and numerical figures were assigned to give an interpretation schema as follows: 5= very great extent; 4 = great extent; 3 = moderate extent; 2= little extent and 1 = no extent at all. Pursuant to the foregoing, data with regard to the extent to which teaching resources influenced academic performance was analyzed collectively for both head teachers and heads of department and presented in table 4.11

Table 4. : Extent teaching resources influence students' academic performance in KCSE

Extent of influence of teaching resources	Head teachers' (N =9)		Heads of department (N= 68)	
	Frequency	Percent	Frequency	Percent
To a little extent			2	2.9
To a moderate extent			10	14.7
To a great extent	5	55.6	29	42.6
To a very great extent	4	44.4	27	39.7
Mean	**4.44**		**4.19**	

Table 4.11 shows that 5(55.6%) of the head teachers said that teaching resources influenced academic performance to a great extent while 44(44.4%) of them agreed that teaching resources influenced academic performance of the students to a very great extent. On the other hand, 29 (42.6%) of the heads of department reported that teaching resources influences students' performance to a great extent while 27(39.7%) of the heads of department said that teaching resources influenced performance to a very great extent. However, 10(14.7%) of the heads of department reported that teaching resources influenced students' performance in KCSE to a moderate extent while 2(2.9%) of them said that it influenced to a little extent.

Overall and in line with the interpretation schema presented at the beginning of this section where 5 represents very great extent and 1 representing no extent at all, it can be seen that the mean value depicting extent of influence by head teachers' was found to be 4.44 while that of the heads of department was 4.19 implying that both categories of respondents were in agreement that teaching resources influenced students' academic performance at the Kenya Certificate of Secondary Education (KCSE) to a great extent.

Finally, in order to make inferences concerning the relationship between the dependent variable and independent variable in line with objective one, the first null hypothesis for this study was formulated and tested at the 0.05 level of significance. The formulated null hypothesis stated that "Ho1: There is no significant relationship between teaching resources and students' performance in KCSE in public secondary schools in Kathiani Sub- County, Kenya". In order to test the validity of this claim, a correlation analysis was performed and results are as presented in table 4.12

Table 4. : Correlation between KCSE performance and teaching resources

		KCSE performance
Teaching Resources	Pearson Correlation	0.657
	Sig. (2-tailed)	0.045
N		**77**

Significance 0.05 2-tailed

Results from table 4.12 show that there was a positive relationship of r +0.657 which was significant at p 0.045 a level lower than $p \leq 0.05$. This means that teaching resources and academic performance have a positive significant relationship. Consequently, the null hypothesis which stated that there was no significant relationship between teaching resources and students' academic performance in KCSE was rejected and alternative upheld.

4.5 Teacher adequacy and student academic performance in KCSE

The second objective sought to examine the extent to which teacher adequacy influence students' performance in KCSE in public secondary schools in Kathiani Sub- County. A set of likert scale items were formulated and presented to the head teachers and heads of department in which case they were required to rate the level of

agreement in respect of the statements put forth on teacher adequacy. A section 4.5.1 and 4.5.2 presents the head teachers' and heads of department views regarding the teacher adequacy. Their responses were analyzed and presented in Table 4.13 and 4.14 respectively.

4.5.1 Head teachers' views on the teacher adequacy and students' academic performance

Head teachers' were presented with statements concerning teacher adequacy such as; Our school is sufficiently supplied with teachers as per the Curriculum based establishment of the school, we often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school, The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy, The teacher-pupil ratio in our school is sufficient, There are regular teacher transfers in our school by the TSC and When teachers transfer from our school we do not get immediate replacement. These responses from head teachers' were analyzed and results presented as shown in table 4.13

Table 4. : Adequacy of teachers as per head teachers' view

Statements on teacher adequacy	Strongly agree	Agree	Disagree	Strongly disagree
Our school is sufficiently supplied with teachers as per the Curriculum based establishment of the school	0%	11.1%	55.6%	33.3%
We often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school	11.1	0	22.2	66.7
The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy	44.4	55.6	0	0
The teacher-pupil ratio in our school is sufficient	22.2	22.2	44.4	11.1
There are regular teacher transfers in our school by the TSC	0	22.2	66.7	11.1
When teachers transfer from our school we do not get immediate replacement	66.7	22.2	11.1	0

Table 4.13 shows that 55.6 percent of the head teachers disagreed that their schools had adequate teachers as per the curriculum based establishment, while 33.3% of them strongly disagreed. 11.1% agreed with the statement. Similarly, 66.7% of the head teachers strongly disagreed that they contract form four school leavers with good grades to mitigate the problem of teacher inadequacy. 22.2% disagreed while 11% of them agreed. 55.6% agreed that the respective Board of Management in their schools employ trained and qualified graduate teachers to mitigate the problem of teacher inadequacy while 44.4% strongly agreed. 44.4% of the head teachers disagreed to the statement that the teacher to student ratio in their respective schools was sufficient while 11.1 percent of them disagreed strongly disagreed that teacher pupil ratio was sufficient. 22.2% of the head teachers strongly agreed that the teacher student ratio in their schools is sufficient while 22.2% agreed with the statement.

When asked whether there were regular transfer of teachers from their schools, 66.7% of the head teachers disagreed with the statement while 22.2% of them agreed that there were regular transfers. 11.1% of them strongly disagreed with the statement. With regard as to whether there was immediate replacement when teachers transferred, 66.7% strongly agreed with the statement while 22.2% of the head teachers agreed. 11.1% of the head teachers disagreed that when teachers from their schools are transferred they get immediate replacement.

4.5.2 Heads of department views on the teacher adequacy

Heads of Department were presented with statements concerning teacher adequacy such as; Our school is sufficiently supplied with teachers as per the Curriculum Based Establishment of the school, We often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school, The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy, The teacher-student ratio in our school is sufficient, There are regular teacher transfers in our school by the TSC and when teachers transfer from

our school we do not get immediate replacement. These responses from the Heads of Department were analyzed and results presented as shown in table 4.14

Table 4. : Heads of department responses on teacher adequacy

Statements on teacher adequacy	Strongly agree	Agree	disagree	Strongly disagree
Our school is sufficiently supplied with teachers as per the Curriculum based establishment of the school	0%	29.4%	52.9%	17.6%
We often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school	0	17.6	27.9	54.4
The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy	39.7	51.5	5.9	2.9
The teacher-pupil ratio in our school is sufficient	4.4	26.5	42.6	26.5
There are regular teacher transfers in our school by the TSC	0	22.1	52.9	25.0
When teachers transfer from our school we do not get immediate replacement	16.2	44.1	26.5	13.2

Table 4.14 shows that 52.9% of the departmental heads disagreed with the statement that their schools are sufficiently supplied with teachers as per the curriculum establishment of the schools while 29.4% of them strongly agreed to the statement.

17.6% of the heads of department strongly disagreed that their school is sufficiently supplied with teachers as per the curriculum based establishment. Similarly 54.4% of the departmental heads strongly disagreed that they employ form four school leavers with good grades as teachers to mitigate the problem of teacher shortages While 27.9% of them disagreed. 17.6 percent of the heads of department agreed that they do contract form four leavers with good grades to teach in their schools to mitigate the problem of teacher shortage. 39.7% of the departmental heads strongly agreed while 51.5% agreed with the statement that their respective BOMs employs trained and qualified graduates to help solve the problem of teacher shortage. 5.9% of them disagreed with the statement while 2.9% of them strongly disagreed.

With regard to the teacher-student ratio, 42.6% of the heads of department disagreed that the ratio was sufficient while 26.6 strongly disagreed. 26.5% of the heads of department agreed that the teacher student ratio in their schools was sufficient while 4.4% of them strongly agreed with the statement. Similarly, 52.9% of the heads of department disagreed that there were regular transfers of teachers from their schools by TSC while 25% strongly disagreed with the statement. 22.1% agreed that there were regular transfers in their school by the TSC. 44.1% of the heads of department agreed that when teacher's transfers occur in their schools, there is no immediate replacement while 16.2% of them strongly agreed with the statement. 26.5% of the heads of department disagreed that when teachers transfer from their schools they do not get immediate replacement.

4.5.3 Extent to which teacher adequacy influence students' academic performance

In line with achieving the second objective, this study sought to find the extent in which the teacher adequacy influenced academic performance of the schools considering the underlying facts about the teacher adequacy as established herein in the preceding sections. In this case, a common question was asked to both the head teachers and head of department to rate their views on an ordinal scale with regard to the extent of influence. The measure of extent was ordinal ranked on a continuum and

numerical figures were assigned to give an interpretation schema as follows: 5= very great extent; 4 = great extent; 3 = moderate extent; 2= little extent and 1 = no extent at all. Pursuant to the foregoing, data with regard to the extent to which teacher adequacy influenced students' academic performance was analyzed collectively for both head teachers and heads of department and presented in table 4.15

Table 4. : Extent to which teacher adequacy influence students' performance in KCSE

Extent of influence of teacher adequacy	Head teacher (N =9)		Heads of department(N= 68)	
	Frequency	**Percent**	**Frequency**	**Percent**
To a little extent			1	1.5
To a moderate extent			3	4.4
To a great extent	5	55.6	28	41.2
To a very great extent	4	44.4	36	52.9
Mean	**4.56**		**4.46**	

As noted from table 4.15, 5(55.6%) of the head teachers were of the view that teacher adequacy influenced performance to a great extent while 4(44.4%) of them agreed that teacher adequacy influenced students' academic performance of the students to a very great extent. On the other hand, 28(41.2%) heads of department were of the view that teacher adequacy influence students' academic performance to a great extent while 36(52.9%) of the heads of department said that teaching adequacy influenced performance to a very great extent. However, 3(4.4%) percent of the heads of department opined that teaching resources influenced students' performance in KCSE to a moderate extent while 1(1.5 %) were of the view that it influenced to a little extent.

Overall and in line with the interpretation schema presented at the beginning of this section where 5 represents very great extent and 1 representing no extent at all, it can be seen that the mean value depicting extent of influence by head teachers was found to be 4.56 while that of the heads of department was 4.46 implying that both categories of respondents were in agreement that teaching adequacy influenced students' academic performance at the Kenya Certificate of Secondary Education to a great extent.

Finally, in order to make inferences concerning the relationship between the dependent variable and independent variable in line with objective two, the second null hypothesis for this study was formulated and tested at the 0.05 level of significance. The formulated null hypothesis stated that "Ho2: There is no significant relationship between teaching adequacy and students' performance in KCSE in public secondary schools in Kathiani Sub- County, Kenya". In order to test the validity of this claim, a correlation analysis was performed and results are as presented in table 4.16

Table 4. : Correlation between teacher adequacy and KCSE performance

		KCSE Performance
Teacher adequacy	Pearson Correlation	0.544
	Sig. (2-tailed)	0.012
N		**77**

Significance 0.05 2-tailed

Results from Table 4.16 show that there was a positive relationship of r +0.544 which was significant at p 0.012 a level lower than $p \leq 0.05$. This means that teacher adequacy and academic performance have a positive significant relationship. Consequently, the null hypothesis which stated that there was no significant relationship between teacher adequacy and students' academic performance in KCSE was rejected and the alternative upheld.

4.6 Physical facilities and students' academic performance in KCSE

The third objective of the study sought to assess the extent to which physical facilities influence students' performance in KCSE in public secondary schools in Kathiani Sub-County. In this regard, the head teachers and heads of departments were asked to rate the adequacy or inadequacy levels of the physical facilities available for use in their respective schools. A section 4.6.1 and 4.6.2 presents the head teachers' and heads of department views regarding the adequacy of physical facilities. Their responses were analyzed and presented in Table 4.17 and 4.18 respectively.

4.6.1 Head teachers' views on the adequacy of physical facilities

Head teachers' were presented with statements concerning physical facilities adequacy and in adequacy and their responses presented in Table 4.17.

Table 4. : Head teachers' responses on adequacy of physical facilities

Physical facilities	Adequate	Inadequate	Neutral
Dormitories	44.4%	11.1%	44.4%
Classrooms	66.7	22.2	11.1
Lockers/chairs	100	0	
Laboratory	33.3	55.6	11.1
Library	22.2	44.4	33.3
Dining	22.2	44.4	33.3
Toilets/bathrooms	55.6	44.4	0
Offices	22.2	66.7	11.1
Playground	22.2	55.6	22.2

Table 4.17 shows that 44.4% of the head teachers held that dormitories were adequate with another 44.4% of them remaining neutral. Only 11.1% of the head teachers reported that the dormitories were inadequate. 66.7% of the head teachers however reported that classrooms were adequate while 22.2% of them said they were

inadequate. 11.1% of the head teachers were non-committal. All the head teachers 9(100%) reported that lockers/chairs were adequate. As for the laboratory, 55.6% of the head teachers were of the view they were inadequate and 33.3% of them said they were adequate.11.1% of the head teachers remained neutral on the adequacy /inadequacy of laboratory. Library facility according to 44.4% of head teachers were inadequate whereas only 22.2% of them supported that they were adequate and 33.3% of them non-committal.

Table 4.17 shows that 44.4% of the head teachers had the view that the dining hall facilities were inadequate whereas only 22.2% of them supported that they were adequate and 33.3% non-committal. With regard to toilets/bathrooms 55.6% of the head teachers were of the view that they were adequate while 44% of them said they were not adequate. Office facilities according to 66.7% of the head teachers were inadequate. Only 22% of them held the view they were adequate and 11.1% non-committal. On the office facility 66.7% of the head teachers were of the view that they were inadequate while 22.2% held the view that they were adequate. Only 11.1% of them remained neutral. Finally, 55.6% of the head teachers were of the view that the playgrounds were inadequate while only 22.2% held the view they were adequate. Only 22.2% of them remained non-committal.

4.6.2 Heads of department views on the adequacy physical facilities

Heads of department were presented with statements concerning physical facilities adequacy and inadequacy and their responses presented in Table 4.18.

Table 4. : Heads of department responses on the adequacy of physical facilities

Physical facilities	Adequate	Inadequate	Neutral
Dormitories	30.9%	38.2%	30.9%
Classrooms	66.2	23.5	10.3
Lockers/chairs	80.9	8.8	10.3
Laboratory	22.1	55.9	22.1
Library	11.8	77.9	10.3
Dining hall	30.9	45.6	23.5
Toilets/bathrooms	42.6	41.2	16.2
Offices	19.1	64.7	16.2
Playground	22.1	64.7	13.2

Table 4.18 shows that 30.9% of the heads of department were of the opinion that dormitories were adequate in their schools while 38.2% of them said that they were inadequate. 30.6% of the heads of department were neutral about the same facility. With regard to classrooms, 66.2% of the heads of department held that they were adequate while 23.5% said they were inadequate and 10.3% of them were non-committal. 80.9% of the heads of department held the view that chairs/lockers were adequate while 8.8% were of the view that they were inadequate and 10.3% were non-committal.

As shown in Table 4.18, 55.7% of the HODs were of the view that laboratory facilities were inadequate while a 22.1% held the view that they were adequate. 22.1% of the HODs were non-committal on the adequacy/inadequacy of the laboratory facility. 77.9% of the heads of department held the view that library facilities were inadequate while 11.8% of them held that they were adequate. Concerning the same facility 10.3% of the HODs remained neutral. On the same note, 45.6% of the HODs were of the view that dining hall facilities were inadequate while 30.6% of them held that they were adequate and 23.5% of them non-committal.

With respect to toilets/bathrooms, 42.6% of the heads of departments were of the view that they were adequate and 41.2% of them were of the view that they were inadequate. 16.2% of them were neutral on the same. 64.5% of the heads of departments reported that office facilities were inadequate and 19.1% said that they were adequate while 16.2% of them were silent on the same. Similarly, 64.7% of the heads of department confirmed that playgrounds facility was inadequate while 22.2% of them reported that they were adequate. On the same facility 13.2% of the heads of department were non-committal.

4.6.3 Extent to which physical facilities influence Students' Academic Performance in KCSE

In line with achieving the third objective, this study sought to find the extent in which the physical facilities influenced academic performance of the schools considering the underlying facts about the adequacy of these resources as established herein in the preceding sections. In this case, a common question was asked to both the head teachers and head of department to rate their views on an ordinal scale with regard to the extent of influence. The measure of extent was ordinal ranked on a continuum and numerical figures were assigned to give an interpretation schema as follows: 5= very great extent; 4 = great extent; 3 = moderate extent; 2= little extent and 1 = no extent at all. Pursuant to the foregoing, data with regard to the extent to which physical facilities influenced students' academic performance was analyzed collectively for both head teachers and heads of department and presented in table 4.19.

Table 4. Extent to which physical facilities influence students' performance in KCSE

Extent of influence of physical facilities	Head teacher (N =9)		Heads of Department (N= 68)	
	Frequency	**Percent**	**Frequency**	**Percent**
To a moderate extent	2	22.2	25	36.8
To a great extent	5	55.6	25	36.8
To a very great extent	2	22.2	18	26.5
Mean	**4.00**		**3.90**	

As noted from Table 4.19, 5(55.6%) of the head teachers were of the view that physical facilities influences students' performance to a great extent while 2(22.2%) of the head teachers concurred that physical facilities influenced performance to a very great extent. However, 2(22.2%) of the head teachers opined that facilities influenced students' performance in KCSE to a moderate extent while. On the other hand, 25(36.8%) of the heads of department were of the view that physical facilities influenced performance to a great extent while 18(26.5%) of them agreed that physical facilities influenced academic performance of the students to a very great extent. 25(36.8%) of the head of department opined that physical facilities influenced students' performance in KCSE to a moderate extent.

Overall and in line with the interpretation schema presented at the beginning of this section where 5 represents very great extent and 1 representing no extent at all, it can be seen that the mean value depicting extent of influence by head teachers was found to be 4.00 while that of the heads of department was 3.90 implying that both categories of respondents were in agreement that physical facilities influenced

students' academic performance at the Kenya Certificate of Secondary Education to a great extent.

Finally, in order to make inferences concerning the relationship between the independent variable and dependent variable in line with objective three, the third null hypothesis for this study was formulated and tested at the 0.05 level of significance. The formulated null hypothesis stated that "Ho1: There is no significant relationship between physical facilities and students' performance in KCSE in public secondary schools in Kathiani Sub- County, Machakos County ". In order to test the validity of this claim, a correlation analysis was performed and results were presented in Table 4.20

Table 4. : Correlation between physical facilities and KCSE performance

		KCSE Performance
Physical facilities	Pearson Correlation	0.626
	Sig. (2-tailed)	0.037
N		77

Significance 0.05 2-tailed

Results from table 4.20 show that there was a positive relationship of r +0.626 which was significant at p 0.037 a level lower than $p \leq 0.05$. This means that physical facilities and academic performance have a positive significant relationship. Consequently, the null hypothesis which stated that there was no significant relationship between physical facilities and students' academic performance in KCSE was rejected and alternative upheld.

4.7 Head teachers' supervisory role and students' academic performance

Finally, the fourth objective sought to examine the extent to which head teachers' supervisory roles influence students' performance in KCSE in public secondary schools in Kathiani Sub- County, was investigated and both the views of Head teachers and heads of department were analyzed and results presented in Tables 4.21 and Table 4.22 respectively

Table 4. : Head teachers view on supervisory practices

Areas of supervisory Practices	Very often	Often	Rarely
Schemes of work	33.3%	66.7%	0%
Lesson plans	22.2	55.6	22.2
Vetting of teachers lesson notes	0	44.4	55.6
Regular visits to the classroom to observe teacher lesson	11.1	77.8	11.1
Presentation and issuing confidential feedback	0	66.7	33.3
Observing teachers' attendance and punctuality	33.3	66.7	0
Regular checking of students' exercise books to find out teachers output of work	22.2	55.6	22.2
Records of work	44.4	55.6	0
Class attendance records	66.7	33.3	0
Clock in & clock out records	55.6	33.3	11.1
Students notes	22.2	66.7	11.1

Table 4.21 shows the self-rating by head teachers themselves regarding how they conducted the various supervisory roles. As shown on the Table, the head teachers often did check on the scheme of work with 33.3% doing it very often while 66.7% said they do it often. Similarly, 22.2 % of the head teachers said they rarely check lesson plans while about 55.6% of them said they often carried out this activity and 22.2% of them did that very often. 55.6% of the head teachers were of the view that they rarely vet teachers lesson notes while 44.4% of them reported that they carried out this activity often. 77.8% of the head teachers often carried regular visits to

classroom to observe teachers lesson while 11.1% rarely observed teachers' lesson presentation and 11.1% of them did that very often.

The results from Table 4.21 show that 66.7% of the head teachers often supervised lesson presentation and issued confidential reports about their teachers while 33.3% of them rarely carried out the activity. 66.7% of the head teachers said that they often observed teachers attendance and punctuality while 33.3% of them were of the view that they did that very often. 55.6% of the head teachers often found out about the output of teachers by regularly checking students exercise books while 22.2% of them rarely did so and 22.2% did that very often. 55.6% of the head teachers reported that they often checked teachers' records of work while 44.4% of them did that very often.

On class attendance records, the results Table 4.21 show that 66.7% of the head teachers reported that they very often supervised class attendance while 33.3% of them did that often. 55.6% of the head teachers however said that very often they monitored clock in and clock out records, 33.3% of them did that often while 11 percent of them rarely checked teachers' times for clocking in and clocking out. Finally, 66.7% of the head teachers reported that they often checked students' notes as part of their supervisory roles while 22.2% of them did so very often and 11.1% of them rarely carried out this activity.

Regarding other mechanism of supervision in order to check on class attendance, head teachers said they apply the following: using lesson attendance register marked by the school management, teachers are taught on self-discipline and responsibility and others used class secretary to mark teachers' attendance register.

Heads of department were also asked to provide their views on the head teachers various supervisory practices and how often they conducted such activities as shown in Table 4.22.

Table 4. : Heads of department views on head teachers' supervisory role

Areas of supervisory Practices	Very Often	Often	Rarely	Neutral
Schemes of work	50%	42.6%	5.9%	1.5%
Lesson plans	23.5	48.5	26.5	1.5
Vetting of teachers lesson notes	14.7	39.7	39.7	5.9
Regular visits to the classroom to observe teacher lesson	17.6	41.2	35.3	5.9
presentation and issuing confidential feedback	17.6	44.1	30.9	7.4
Observing teachers' attendance and punctuality	67.6	27.9	4.4	0
Regular checking of students' exercise books to find out teachers output of work	14.7	52.9	26.5	5.9
Records of work	50.0	44.1	5.9	0
Class attendance records	64.7	33.8	1.5	0
Clock in & clock out records	70.6	26.5	2.9	0
Students notes	19.1	47.1	29.4	4.4

As indicated in Table 4.22 heads of department were asked to rate the frequency at which their respective head teachers conducted their supervisory roles in ensuring teaching and learning takes place in their respective schools,. The results from Table 4.22 shows that 50% of the heads of department said that head teachers checked schemes of work very often while 42.6% of them said that the head teachers often did so and 5.9% of them rarely perform this activity. Similarly, 48.5% of the heads of department said that the head teachers checked lesson plans often, 23.5% of them said that the head teachers performed this very often and 26.5% of them rarely perform this activity. Regarding vetting of teachers' lesson notes, 39.7% of the heads of department reported that most of the head teachers often vetted teachers lesson notes, 39.7 said that they rarely did so while 14.7% of them said that they very often perform this activity. It was also reported by 41.2% of the heads of department that head teachers often visits classrooms to observe teacher lessons presentation while 17.1% of them said that they very often did so and 35.3% of them said that they rarely carried out this activity.

With regard to presentation and issuing of confidential feedback, 44.1% of the heads of department s held the view that head teachers often did the activity while 30.9% of them said that head teachers rarely did the activity and 17.6% of them said they very often did this activity. 67.6 % of the departmental heads were of the view that most head teachers very often observed teachers attendance and punctuality while 27.9% of the heads of department held that the head teachers often observed the teachers attendance and punctuality. 52.9% of the departmental heads had the view that head teachers often checked students' notebooks to gauge teachers work output. 14.7% were of the view that they did this very often while 26.5% of the heads of department had the view that the head teacher rarely do this kind of activity.

The results from Table 4.22 show that 50% of the heads of department had the view that head teachers very often checked records of work while 44.1% of them held that the head teachers often carried out this activity. 5.9% of the heads of department had the view that the head teachers rarely checked records of work. Table 4.22 shows that

64.7% of the heads of department also held the view that head teachers very often checked class attendance records while 33.8% of them observed that their head teachers often checked class attendance records. 70.6% of the heads of department held that the head teachers very often checked clock in and out records while 26.5% of them had the view that the head teachers often did so. 2.9% of them said that their head teachers rarely did so. 47.1% of the heads of department observed that head teachers often checked students' notes while 19.1% said that the head teacher very often did so. 29.4% of the heads of department held that the head teachers rarely checked students' notes.

An open ended question was addressed to the heads of department on other supervisory mechanisms that head teachers uses in ensuring teachers attend their lessons without fail. According to the heads of department, head teachers employ various mechanisms such as class representatives keeping lesson attendance register, delegating supervision to the deputy head teacher , use of secret class informers, close supervision, use of threats and consistent check of the block timetable.

In line with achieving the fourth objective, this study sought to find the extent in which the head teacher's supervisory roles influenced academic performance of the students considering the underlying facts about head teacher's supervisory roles established herein in the preceding sections. In this case, a common question was asked to both the head teachers' and heads of departments to rate their views on an ordinal scale with regard to the extent of influence. The measure of extent was ordinal ranked on a continuum and numerical figures were assigned to give an interpretation schema as follows: 5= very great extent; 4 = great extent; 3 = moderate extent; 2= little extent and 1 = no extent at all. Pursuant to the foregoing, data with regard to the extent to which head teachers supervisory role influenced students' academic performance in KCSE was analyzed collectively for both head teachers' and heads of department and presented in Table 4.23

Table 4. : Extent to which head teachers' supervisory role influence students' performance in KCSE

Extent of influence	Head teachers (N= 9)		Heads of Department (N =68)	
	Frequency	Percent	Frequency	Percent
To a little extent	0	0	1	1.5
To a moderate extent	1	11.1	14	20.6
To a great extent	6	66.7	28	41.2
To a very great extent	2	22.2	25	36.8
Mean	**4.13**		**4.11**	

Table 4.23 shows that 6(66.7%) of the head teachers were of the view that head teachers supervisory role influences students' performance to a great extent. 2(22.2%) of the head teachers concurred that head teachers supervisory role influenced performance to a very great extent. However, 1(11.1%) of the head teacher reported that head teachers supervisory roles influenced students' performance in KCSE to a moderate extent while) none averred that it influenced to a little extent. On the other hand, 28(41.2%) of the heads of departments were of the view that head teachers supervisory roles influenced performance to a great extent while 25(36.8%) of them agreed that head teachers supervisory role influenced students' academic performance to a very great extent. However, 14(20.6%) of the heads of departments opined that head teachers supervisory roles influenced students' performance in KCSE to a moderate extent while 1(1.5%) averred that head teachers supervisory role influenced students' performance to a little extent

Overall and in line with the interpretation schema presented at the beginning of this section where 5 represents very great extent and 1 representing no extent at all, it can be seen that the mean value depicting extent of influence by of the head teachers was found to be 4.13 while that of the heads of department was 4.11 implying that both

categories of respondents were in agreement that head teachers supervisory roles influenced students' academic performance at the Kenya Certificate of Secondary Education to a great extent.

When asked about factors within the school that are likely to be influencing this performance, head teachers were of the view that absenteeism of learners, poor coverage of syllabus, poor lesson attendance, low teacher-student ratio, few text books for learners and lack of role models from parents and students indiscipline among other factors. Heads of departments on the other hand said that performance is influenced by use of mother tongue in school by students, inadequate facilities i.e. laboratory, lack of reading culture, poor relationship between teachers, students and stakeholders, inadequate staffing, poor teacher motivation, lack of enough text books and student indiscipline

Finally, in order to make inferences concerning the relationship between the independent variable and dependent variable in line with objective four, the fourth null hypothesis for this study was formulated and tested at 0.05 level of significance. The formulated null hypothesis stated that "Ho1: There is no significant relationship between head teachers supervisory role and students' performance in KCSE in public secondary schools in Kathiani Sub- County, Kenya". In order to test the validity of this claim, a correlation analysis was performed and results were presented in Table 4.24

Table 4. : Correlation between KCSE performance and head teachers' supervisory roles

		KCSE Performance
Head teachers Supervisory roles	Pearson correlation	0.680
	Sig. (2-tailed)	0.037
N		**77**

Significance 0.05 2-tailed 0.05

Results from Table 4.24 show that there was a positive relationship of r +0.680 which was significant at p 0.037 a level lower than $p \leq 0.05$. This means that head teachers supervisory and academic performance have a positive significant relationship. Consequently, the null hypothesis which stated that there was no significant relationship between head teachers supervisory role and students' academic performance in KCSE was rejected and alternative upheld.

Head teachers were asked to indicate the performance in KCSE in their school for a period of 5 years i.e. 2012-2016 and the results were analyzed as show in Table 4.25

Table 4. : KCSE performance results in Kathiani Sub County between 2012 and 2016

KCSE mean score	**N**	**Minimum**	**Maximum**	**Mean**	**Standard deviation**

Mean score 2012	9	2.35	5.97	4.1887	1.32352
Mean score 2013	9	2.39	5.91	3.7679	1.19272
Mean score 2014	9	2.65	6.07	4.1780	1.03432
Mean score 2015	9	2.86	6.23	4.0898	1.15234
Mean score 2016	9	2.19	5.04	3.2406	0.85591
KCSE Average Performance	9	2.53	5.84	3.8930	1.04727

Source: Kathiani Sub County Education Office (2017)

Table 4.25; show that the average performance of the schools in the Sub County has been oscillating between 3 and 4 points. Specifically, the average performance of the Sub County in 2012 was 4.2 with the lowest school registering a mean grade of 2.3 points (D-) while the highest had a mean grade of 6 points(C). The same trend replicated in 2013 wherein the lowest performing school had a mean grade of C- (2.39 points) while the highest performing school had a mean score of 5.91 points (C plain). However the overall mean grade for the county in 2013 was 3. 8 representing a drop of 0.3 from a mean of 4.2 registered in 2013 although the drop didn't influence the mean grade which remained at D+. The year 2014 however shows that the lowest performing school had a mean of 2.65 points (D plain) which is an improvement from the earlier years. However, even though the top performing school in the Sub County had a mean of 6.07 points, the average grade did not change from that which had been registered the previous years.

Similarly, during the year 2015, the lowest performing school registered an increase in terms of mean average points (2.86) while the highest performing school had a mean average point of 6.23. However, there was a marginal drop in the aggregate performance of the schools in the sub county where a negative deviation of 0.2 points in the mean was recorded even though the drop did not influence the average mean grade which remained at D+. However, there was a sharp drop in performance in the year 2016. During the year in reference, the lowest performing school had a mean of 2.19 (D-) while the highest had a mean of 5.04 (C-) and the overall mean for the sub

county then was 3.2 points (D plain). Overall, the average KCSE performance for the sub county for the five year period under review was 3.89 representing an average mean grade of D+. This performance can be considered as being below average in the scale where 12 points are a maximum.

CHAPTER FIVE
DISCUSSION AND INTER PRETATION OF RESEARCH FINDINGS

5.1 Introduction

This study was guided by four objectives thus: Determine the extent to which teaching resources influence students' performance in KCSE in public secondary school in Kathiani Sub- County, Examine the extent to which teacher adequacy influence students' performance in KCSE in public secondary schools in Kathiani Sub- County, Assess the extent to which physical facilities influence students' performance in KCSE in public secondary schools in Kathiani Sub-County and finally Examine the extent to which head teachers' supervisory role influence students' performance in KCSE in public secondary schools in Kathiani Sub- County. Based on the research findings the objectives were discussed below.

5.2 Teaching resources and students' academic performance

The views collected from most head teachers as reported in Table 4.9 show that teaching aids, maps and charts were adequate which is contrary to majority of the heads of department who were of the view that they were inadequate. Laboratory Chemicals and apparatus according to the head teachers were adequate as shown in Table 4.9 while the heads of department were of the opinion that these resources were inadequate as per Table 4.10. This contrary opinion may have been occasioned by the fact the government has provided funds to purchase this resources, therefore, the head teachers may fear being held responsible for the inadequacy.

The findings of the study also show that radio, television, computer and projectors were inadequate as per the responses from majority of the head teacher and heads of departments as shown in Tables 4.9 and Table 4.10. Inadequacy of these resources may hinder effective integration of ICT in teaching and learning thus influencing student's academic performance. According to the head teachers' responses in Table 4.9 supplementary books and other relevant materials were adequate which is contrary

to 33.8% of the heads of the department who were of the view that they were inadequate. The contrary view may have been occasioned by the fact that schools are given capitation and may be most schools charge computer funds hence head teachers may be apprehensive to show that they have shortage of radios, television, computers and projectors.

Table 4.11 shows that most head teachers and heads of the departments were of the view that teaching resources influences students' academic performance to a great extent. A hypothesis Ho1 which stated there is no significant relationship between teaching resources and students' performance in KCSE in public secondary schools in in Kathiani Sub County was tested. The results were r=0.657 which was at p 0.045 a level lower than p $\geq$0.05.This shows that there is a positive and significant relationship between teaching resources and students' performance in KCSE in public secondary schools in Kathiani Sub County. This implies that adequacy of teaching resources influences students' academic performance. Therefore if teaching resources are adequate, KCSE performance will improve. This implies that the adequacy of teaching resources has an overall positive impact on academic performance. It can therefore be argued that the below average performance recorded by the schools in the Sub County could be attributed to the inadequacy of the teaching resources in Kathiani Sub County.

The findings of this study are in agreement with Laurillard (2013) who found that lack of relevant teaching materials caused dismal students' academic performance in Botswana. Similarly, the findings agree with those of Momoh (2010) in West Africa who found that there is a positive significant relationship between instructional resources and academic performance. In this study, it was reported that schools that were endowed with teaching resources excelled than those that were less equipped. The study findings are also in line with a study by Babayomi (1999) in Lagos, Nigeria who also found out that private schools performed better than public schools because of the availability and adequacy teaching resources. These imply that teaching resources are important in the overall performance in KCSE. The study findings are

also in line with the findings of Oyugi and Nyagah (2010), in their study which assessed the influence of Teaching and Learning Resources on the Implementation of Inclusive Education in Pre-School Centers in Nyamira North Sub-County.

5.3 Teachers adequacy and students' academic performance in KCSE

The views collected from the head teachers and heads of departments' as per Table 4.13 and 4.14 shows that, there was shortage of teachers in schools in Kathiani Sub County as per the curriculum based establishment. This may have been occasioned by the transition rates from primary schools to secondary schools. Table 4.13 and Table 4.14 shows that the head teachers and heads of department disagreed with the statement that they often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage. This imply that majority of the school in Kathiani Sub County are in compliance of Teachers Service Commission policy of engaging trained and qualified teachers to teach in schools. However, majority of the head teachers and heads of department agreed that their BOMs employ trained and qualified teachers to address teacher inadequacy. This imply that the school BOMS in Kathiani Sub County have adhered to the TSC requirement of contracting trained and qualified teachers to mitigate the problem of teacher inadequacy. According to Tyke and O'Brien (2002) the shortage of teachers has forced many education systems to lower education standards through the employment of unqualified teachers to fill the gap, thus lowering the school's academic performance.

The findings of this study in Table 4.13 and Table 4.14 show that the head teachers and heads of department are in agreement that the teacher student ratio in their schools is low. This situation may have been occasioned by free primary education and also the government of Kenya policy of 100% transition from primary to secondary schools which may have increased the teacher students' ratio in most of the public secondary schools in Kathiani Sub County. The findings in Table 4.13 also show that the head teachers disagreed with statement that there are regular transfers in their schools. The same view was shared with that of the heads of department as

shown in Table 4.14. The reason for this may have been occasioned by the Teachers Service Commission policy on the grounds to which a teacher can be granted transfer. The head teachers also concurred with the heads of the department on the statement that when teacher transfer from their schools they do not get immediate replacement. This may imply that the Teachers Service Commission policy on immediate replacement after transfer may have been relaxed to the case of Kathiani Sub County.

When asked about the extent the teacher adequacy influenced academic performance, majority of the head teachers' and heads of department reported that teacher adequacy influenced performance to a great extent with a mean of 4.56 and mean of 4.46 as shown in Table 4.15. A hypothesis Ho2 which stated there is no significant relationship between teacher adequacy and students' performance in KCSE in public secondary schools in Kathiani Sub County was tested. The results were r+0.544 which was at p 0.012 a level lower than $p \leq 0.05$. This shows that there is a positive and significant relationship between teacher adequacy and students' performance in KCSE in public secondary schools in Kathiani Sub County implying that teacher adequacy influences students' academic performance hence if teachers' are adequate, KCSE performance will improve. This results are in line with a survey conducted in Kenya by UNESCO(2005) which found that teacher adequacy is a significant factor influencing students' academic performance This imply that when teachers are adequate, students' academic performance improves and vice versa.

Studies conducted elsewhere also confirm that teacher adequacy is critical in students' academic performance. Tyke and O'Brien (2002) argue that when schools are plagued by shortage of teachers due to increase in students' enrolment academic performance is normally influenced and often poor results are reported. Equally, Klaus and Dolton (2008) observes that teacher inadequacy can influence students' academic performance. The study findings are also in line with that of Mosha (2014) found out that most secondary school in Tanzania has inadequate teachers thus leading to their poor academic performance.

5.4 Physical facilities and students' academic performance in KCSE

The findings of the study show that most of the physical facilities in the sampled schools in Kathiani Sub County were inadequate. Table 4.17 shows 44.4% of the head teachers were of the view that dormitory were adequate while 44.4% were non-committal. This may have been occasioned by the reason that some of the schools were day schools and couldn't have given their view on the adequacy of this facility. Similar views were also shared by the heads of department in Table 4.18. Dining hall, laboratory, library toilets/bathrooms, offices and playground facilities were inadequate according to majority of the head teachers as shown in Table 4.17. This view corroborated with that of the heads of department as shown in tables 4.18. It is however worth noting that both the head teachers and heads of department were in agreement that chairs/lockers were the only facilities that were adequately provided. All other facilities were wanting according to the head teachers and heads of department and this may be a contributing factor to the decimal performance in KCSE recorded in public secondary schools in Kathiani Sub County over the years

With regard to the extent the physical facilities influenced academic performance, majority of the head teachers reported that the physical facilities influenced performance to a great extent with a mean of 4.00 as shown in Table 4.19 .This was in agreement with heads of department view in Table 4.19 were the mean is 3.9. A hypothesis Ho3 which stated there is no significant relationship between physical facilities and students' performance in KCSE in public secondary schools in Kathiani Sub County was tested. The results were r+0.626 which was at p 0.037 a level lower than $p \leq 0.05$. This shows that there is a positive and significant relationship between physical facilities and student's performance in KCSE in public secondary schools in Kathiani Sub County implying that adequacy of physical facilities influences students' academic performance hence if physical facilities are adequate, KCSE performance will improve. This clearly demonstrates that academic performance can only improve when physical facilities that can enhance learning are adequately provided. Hence facilities like laboratories, library facilities play a critical role in

performance improvement. Since these facilities were found inadequate, the academic performance of the schools in Kathiani Sub County is likely to suffer.

It is important to note that physical facilities offer the environment through which learning takes place. Therefore these findings are in agreement with those of Taylor and Vlastor (2009) who found that adequate physical facilities strengthen and encourage the academic performance of schools. According to Lyons (2001), learning in a well-structured classroom improves cooperation between the teacher and the students' hence good students' performance. Similarly a study by Akinsanya (2010) in Ogun State, Nigeria, found that the inadequacy of physical facilities like laboratories and libraries influenced students' academic performance. Onyara (2013) on the other hand found a direct relationship between the students' performance and availability of school physical facilities. The study findings are also in line with a study by Mwangi and Nyagah (2011) who argued that good academic performance is contributed to by the availability of school buildings and other appropriate plans thus resulting to effective teaching and learning activities.

5.5 Head teachers' supervisory role and academic performance

It is important to note that the success of any level of education is hinged on the quality, regular and continuous supervision of instruction Onumah (2016). With regard to this parameter, this study found out that in nearly all the aspects of teaching, head teachers exercised their mandate of supervision except in the vetting of teachers' lesson notes, and to some extent presentation and issuing of confidential feedback and regular checking of students' exercise books to check on teacher output which were rarely done as shown in Table 4.21.This view is in agreement with 39.7% of heads of department who reported that the head teachers rarely vetted teachers lesson notes and 30.9% of them said that the head teachers rarely presented and issued a confidential feed back to the teachers after a lesson presentation, A study by Musungu and Nasongo (2008) on the instructional leadership role of secondary school head teachers found out that head teachers supervised teachers' work by inspecting records such as

schemes of work, lesson books, records of work covered, class attendance records, and clock in/clock out register. This clearly indicates that most of the head teachers rarely vet teachers' lesson notes.

Regarding other mechanism of supervision in order to check on class attendance, head teachers said they apply the following: using lesson attendance register marked by the school management, teachers are taught on self-discipline and responsibility and others use class secretary to mark teachers' attendance register. These views were in agreement with those of the heads of department. This may have been occasioned by the reason that heads of department also assist in supervision of curriculum implementation and therefore are aware of the mechanisms they apply to ensure 100% class attendance by the teachers.

As to whether supervisory roles influenced performance, majority of the head teachers said that supervisory roles by the head teacher influenced students' academic performance to a great extent as reported in Table 4.23. These views also concur with those of the heads of department as analyzed in Table 4.23. A hypothesis Ho4 which stated there is no significant relationship between head teachers supervisory role and students' performance in KCSE in public secondary schools in in Kathiani Sub County was tested as shown in Table 4.24. The results were r+0.680 which was at p 0.037 a level lower than $p \leq 0.05$. This shows that there is a positive and significant relationship between head teachers supervisory role and students' performance in KCSE. This implies that when head teachers supervisory practices are regular, KCSE performance would improve and vice versa. Indeed as Ankomah (2002) points, successful schools are noticed by the presence of strong leadership manifested through supervision of teachers' work.

The findings of this study therefore are in line with those of Nyannyonjo (2007) on analysis of factors influencing learning achievement in Public Secondary Schools in Uganda that showed that school performance was influenced by among others head teachers supervision strategy. He also noted that the supervision strategy was

significant in influencing learning achievements in examinations. The findings of this study also concur with those of Sushila (2004) on the role of the head teachers in influencing school performance in Kuria District, Kenya. However, Nyamongo, Sang, Nyaoga and Matoke (2014) reiterated that in carrying out supervisory tasks, the head teacher should have a clear specification of goals and targets.

CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This section gives conclusions and recommendations of the study based on the formulated research objectives in chapter one:

Teaching resources are critical in determining the academic performance of students. Where teaching resources are adequate, performance of learners will improve and vice versa. It is instructive therefore to conclude that the availability and adequate teaching resources significantly influences the academic performance of students to a great extent as was established from the findings of this study. The study concludes that if schools are given adequate teaching resources students' performance at KCSE would improve.

The study also concludes that teacher reference books & guides and course books are adequate in most of the schools in Kathiani Sub County. It was also concluded that radio, television, computers and projectors are not adequate in most of the schools in Kathiani Sub County thus posing a challenge in implementation of ICT integration in teaching and learning. The study concluded that there was positive and significant relationship between teaching resources and KCSE performance. Based on the finding therefore, the study concluded that adequacy of teaching resources would leads to improvement in KCSE performance in public secondary schools in Kathiani Sub County, Kenya

The study concludes that schools in Kathiani Sub County are understaffed and that whenever teachers are transferred, the Teachers Service Commission does not replace them promptly. The researcher concluded that schools in Kathiani Sub County do not engage form four school leavers with good grades to mitigate the problem of teacher inadequacy The study also concludes that BOMs in schools in Kathiani sub county

employ trained and qualified teachers to help mitigate the problem of teacher inadequacy .the researcher also concludes that when teachers transfer from majority of the schools in Kathiani Sub County there is no immediate replacement. The study also concludes that the teacher student ratio in schools in Kathiani Sub County is low. The researcher Concludes that there is a positive and significant relationship between teacher adequacy and students' performance at KCSE, this implies that teacher adequacy can lead to improvement of students' performance in public secondary schools in Kathiani Sub County, Kenya.

The study concludes that locker/chairs are adequate in schools in Kathiani Sub County. Further, the researcher concluded that facilities like laboratory, library, dining hall. Offices, toilet/bathrooms and playground were inadequate in schools in Kathiani Sub County. The study further concluded that physical facilities influenced students' performance in KCSE to a great extent. Further, it was concluded that that there was a positive and significant relationship between physical facilities and students' performance in KCSE. The researcher also concluded that adequacy of physical facilities can lead to improved students' performance at t KCSE in public secondary schools in Kathiani Sub County, Machakos County.

Based on the findings of the study the researcher concludes that, head teachers rarely vet teachers' notes and present and issue a confidential feedback to teachers after a lesson observation session. The study can also conclude that head teacher's supervisory role influence students' performance in KCSE to a great extent in school in Kathiani Sub County. The study concludes that there is a positive and significant relationship between head teachers supervisory role and students' performance at KCSE in schools in Kathiani Sub County. This implies that when head teachers play their supervision roles quite often, the students' performance significantly improves. Therefore, it was concluded that the greater the frequency of supervision by head teachers, the greater the improvement in performance in KCSE.

6.2 Recommendations

The study makes the following recommendations based on the study findings as per the objectives:

1. The MOEST should equip public secondary schools with adequate textbooks, teachers' reference books, radios, televisions, computers and projectors to improve performance of students in KCSE in Kathiani Sub County.
2. The government should increase its capitation vote head for purchase of lab equipment's and chemicals so that learners can do more practical's and improve their KCSE performance.
3. Head teachers should encourage teachers to be innovative and use locally available materials to prepare adequate teaching aids and charts in relevant topics to enhance teaching thus improve students' performance at KCSE.
4. The Ministry of Education should visit schools to ascertain the actual purchase of textbooks as per the ministry's recommendation and take measures against head teachers found not to have bought the books.
5. Teachers' Service Commission should recruit and post more teachers in Kathiani Sub County to ensure adequate teacher student ratio as per the Curriculum Based Establishment
6. Teacher' Service Commission should replace teachers on time when they transfer to address the problem of teacher inadequacy
7. The government should allocate funds in public secondary schools in Kathiani Sub County to enable them to put up facilities like modern laboratory, library, dining hall, offices and modern dormitories to create conducive teaching and learning environment.
8. The government should ensure that all the schools have adequate playing ground.
9. Head teachers should monitor teachers class attendance on a regular basis and ensure that they vet often the teachers lesson notes
10. Quality Assurance and Standards officers(QASOs) should ensure regular supervision in schools

11. Head teachers should intensify teacher performance appraisal in order to give regular feedbacks on the performance of the teachers.

6.3 Suggestion for Further Study

The researcher suggests the following areas for further research:

i. A similar study to be carried out in the entire county or in other counties to ascertain the influence of school based factors on students' performance in KCSE.

ii. The current study was delimited on the influence of school based factors on students' performance in KCSE. It is suggested that a study be done on the influence of external school environment on students' performance in KCSE.

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APPENDICES

APPENDIX I:

LETTER OF INTRODUCTION

Julie M. Musyoka

South Eastern Kenya University

P.O. BOX 170-90200

Kitui, Kenya.

To the principal,

Dear Sir/Madam,

RE: Permission to collect Research Data

I am a final Master of Education degree student at the South Eastern Kenya University. My area of specialization is Educational Administration. I am currently undertaking research on "**School-Based Factors Influencing Students' Academic Performance at Kenya Certificate of Secondary Education in Public Secondary Schools in Kathiani Sub-County**". Your school has been sampled to participate in the study. This letter is to seek your participation in the study and your teachers (Heads of department). The data collected will be used for academic purpose only.

Thank you for your cooperation.

Yours faithfully,

Musyoka Julie Mutindi

E55/MAC/20554/2014

APPENDIX II

QUESTIONNAIRE FOR HEAD TEACHERS

This questionnaire is intended to collect data on **school based factors influencing students' academic performance in KCSE in public secondary schools in Kathiani Sub County**. Kindly answer the following questions by ticking in the appropriate box [√] or filling the space provided. In order to ensure confidentiality do not indicate your name or the name of your school on the paper or any other form of identification. The information you give will be used for the purpose of this study only. Please answer questions as honestly as possible.

Section A: Demographic information

1) Please indicate your gender. Male [ ] Female [ ]
2) What is your highest professional qualification?

   PhD [ ] MED [ ] BED [ ] Diploma [ ]

   Others (specify)……
3) What is your age?

   21 – 25 years [ ] 26 – 30 years [ ] 31 – 35 years [ ]

   36 – 40 years [ ] 41 – 45 years [ ] 46 – 50 years [ ]

   51-55years [ ] 56- 60 years [ ]
4) For how long have you been a head teacher in your teaching career?

   Less than 2 years [ ] 3-4 years [ ] Over 4 years [ ]
5) For how long have you been a head teacher in the current school?

   Less than 2 years [ ] 3-4 years [ ] Over 4 years [ ]
6) How does your experience help you in ensuring good performance in this school?

   .....

Section B: Teaching Resources and Students' Performance in KCSE

7) Please indicate the adequacy of following teaching resources in your school by ticking [√] against the choices provided. Alternate choices are as follows: adequate, inadequate and neutral

	3=	2=Inadequate	1=Neutral

	Adequate		
Teachers reference books and guides			
Course Textbooks			
Teaching aids, maps & Charts			
Laboratory Chemicals and apparatus			
Radio, Television, Computers and Projector			
Supplementary books and other relevant teaching materials			

8) To what extent does Teaching Resources influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent [ ]

To no extent at all [ ]

Section C: Teacher Adequacy and Students' Performance in KCSE

9) The following statements are formulated to imply the adequacy levels of teachers in a school. Kindly indicate your level of agreement to the statements in view of adequacy of teachers in your school.

	4=Strongly agree	3=Agree	2=Disagree	1=Strongly disagree
Our school is sufficiently supplied with teachers as per the Curriculum based establishment of the school				
We often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school				
The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy				
The teacher-pupil ratio in our school is sufficient				
There are regular teacher transfers in our school by the TSC				
When teachers transfer from our school we do not get immediate replacement				

10) To what extent does teacher adequacy influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent [ ]

To no extent [ ]

Section D: Physical Facilities and Students' Performance in KCSE

11) Please indicate the adequacy of the following physical facilities in your school in the spaces provided. The alternate choices are as follows: 3=Adequate, 2=Inadequate and 1= neutral.

Dormitories	adequate [ ]	inadequate [ ]	neutral [ ]
Classrooms	adequate [ ]	inadequate [ ]	neutral [ ]
Lockers/chairs	adequate [ ]	inadequate [ ]	neutral [ ]
Laboratory	adequate [ ]	inadequate [ ]	neutral [ ]
Library	adequate [ ]	inadequate [ ]	neutral [ ]
Dining hall	adequate [ ]	inadequate [ ]	neutral [ ]
Toilets/bathrooms	adequate [ ]	inadequate [ ]	neutral [ ]
Offices	adequate [ ]	inadequate [ ]	neutral [ ]
Playground	adequate [ ]	inadequate [ ]	neutral [ ]

12) To what extent do physical facilities influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent

Section E: Head Teachers' Supervisory Role and Students' Performance in KCSE

13) How often do you supervise the teachers' class lesson/work in relation to the following key on the degree to which the head teacher supervise teachers work/lesson (4) very often, (3) often (2) rarely, (1) neutral

	4	3	2	1
Schemes of work				
Lesson plans				
Vetting of teachers lesson notes				
Regular visits to the classroom to observe teacher lesson				
presentation and issuing confidential feedback				
Observing teachers' attendance and punctuality				
Regular checking of students' exercise books to find out teachers output of work				
Records of work				

Class attendance records				
Clock in & clock out records				
Students notes				

14) To what extent does your supervisory role influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent [ ]

To no extent [ ]

15) What mechanisms have you put in place in ensuring that teachers attend to their classes without missing?

.....

16) In your view, what factors within the school are likely to influence KCSE performance in your school?.....

KCSE PERFORMANCE

Indicate the mean grade KCSE performance of your school for the past five years

2012	2013	2014	2015	2016

Thank you for your cooperation

APPENDIX III:

QUESTIONNAIRE FOR HEADS OF DEPARTMENTS

This questionnaire is intended to collect data on **school based factors influencing students' academic performance in KCSE public secondary schools in Kathiani Sub County.** Kindly answer the following questions by ticking in the appropriate box [√] or filling the space provided. In order to ensure confidentiality do not indicate your name anywhere on the paper or any other form of identification. The information you give will be used for the purpose of this study only.

Section A: Demographic information

1) Please indicate is your gender Male [ ] Female [ ]
2) What is your highest level of your professional qualification?
   P1 [ ] Diploma [ ] Degree [ ] others specify)……
3) For how long have you been a teacher? Tick appropriately.
   Less than 2 years [ ] 3-4 years [ ] Over 4 years [ ]
4) For how long have you stayed in this school?
   Less than 2 years [ ] 3-4 years [ ] Over 4 years [ ]

Section B: Teaching Resources and Students' Performance in KCSE

5) Please indicate the adequacy of following teaching resources in your school by ticking [√] against the choices provided. Alternate choices are as follows: adequate, inadequate and neutral

	3= Adequate	2=Inadequate	1=Neutral
Teachers reference books and guides			
Course Textbooks			
Teaching aids, maps & Charts			
Laboratory Chemicals and apparatus			
Radio, television, Computers and Projectors			
Supplementary books and other relevant teaching materials			

6) To what extent does Teaching Resources influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent [ ]

To no extent at all [ ]

Section C: Teacher Adequacy and Students' Performance in KCSE

The following statements are formulated to imply the adequacy levels of teachers in a school. Kindly indicate your level of agreement to the statements in view of adequacy of teachers in your school.

	4=Strongly agree	3=Agree	2=Disagree	1=Strongly disagree
Our school is sufficiently supplied with teachers as per the Curriculum based establishment of the school				
We often use form four school leavers with good grades as teachers to mitigate the problem of teacher shortage in our school				
The BOM employs trained and qualified graduate teachers to help mitigate the problem of teacher inadequacy				
The teacher-pupil ratio in our school is sufficient				
There are regular teacher transfers in our school by the TSC				
When teachers transfer from our school we do not get immediate replacement				

7) To what extent does teacher adequacy influence students' performance in KCSE?

To a very great extent [ ] to a great extent [ ]

To a moderate extent [ ] to a little extent [ ]

To no extent [ ]

Section D: Physical Facilities and Students' Performance in KCSE

11) Please indicate the adequacy of the following physical facilities in your school in the spaces provided. The alternate choices are as follows: 3=Adequate, 2=Inadequate and 1= neutral.

Dormitories	adequate [ ]	inadequate [ ]	neutral [ ]
Classrooms	adequate [ ]	inadequate [ ]	neutral [ ]
Lockers/chairs	adequate [ ]	inadequate [ ]	neutral [ ]
Laboratory	adequate [ ]	inadequate [ ]	neutral [ ]
Library	adequate [ ]	inadequate [ ]	neutral [ ]
Dining hall	adequate [ ]	inadequate [ ]	neutral [ ]
Toilets/bathrooms	adequate [ ]	inadequate [ ]	neutral [ ]
Offices	adequate [ ]	inadequate [ ]	neutral [ ]
Playground	adequate [ ]	inadequate [ ]	neutral [ ]

12) To what extent do physical facilities influence students' performance in KCSE?

To a very great extent [ ] To a great extent [ ]

To a moderate extent [ ] To a little extent

E: Head Teachers' Supervisory Role and Students' Performance in KCSE

13) How often does your head teacher supervise the teachers' class lesson/work in relation to the following key on the degree to which the head teacher supervise teachers work/lesson (4) very often, (3) often (2) rarely, (1) neutral

	4	3	2	1
Schemes of work				
Lesson plans				
Vetting of teachers lesson notes				
Regular visits to the classroom to observe teacher lesson				
presentation and issuing confidential feedback				
Observing teachers' attendance and punctuality				
Regular checking of students' exercise books to find out teachers output of work				
Records of work				
Class attendance records				
Clock in & clock out records				
Students notes				

14) To what extent does head teachers' supervisory role influence students' performance in KCSE?

To a very great extent [ ] To a great extent [ ]

To a moderate extent [ ] To a little extent [ ]

To no extent [ ]

15) What mechanisms are put in place by your principal in ensuring that teachers attend to their classes without missing? .....

16) In your view, what factors within the school are likely to influence students KCSE performance in your school?.....

.....

APPENDIX IV

KATHIANI SUB COUNTY KCSE RESULTS

KATHIANI SUb-COUNTY KCSE ANALYSIS 2012-2015
2012/2013

S/NO	SCHOOL	ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	Total	MS 2013	MS 2012	DEV
1	KATHIANI BOYS	158	0	10	13	31	32	36	21	13	2	0	0	0	1226	7.759	7.37	0.389493671
2	ST.CATHERINE	52	0	4	4	7	10	11	7	7	2	0	0	0	389	7.481	6.89	0.590769231
3	KATHIANI GIRLS	90	0	2	5	22	14	18	14	12	2	1	0	0	663	7.367	6.55	0.816666667
4	ABC MITABONI	126	0	0	2	4	11	25	28	40	11	4	1	0	745	5.913	5.97	-0.057301587
5	MITABONI H. SCH.	100	0	0	1	4	9	8	9	23	25	20	1	0	505	5.050	5.45	-0.4
6	KAANI LIONS	110	0	0	0	1	5	8	14	24	27	22	8	1	500	4.545	4.45	0.095454545
7	ST.VINCENT IMILINI	32	0	0	0	0	2	2	3	7	8	4	6	0	139	4.344	5.41	-1.06625
8	KITHUNGUINI	108	0	0	0	3	5	5	8	11	27	37	7	0	438	4.252	5.03	-0.777572816
9	KAEWA	93	0	0	2	0	2	6	7	14	18	27	17	0	377	4.054	3.57	0.483763441
10	KALILUNI GIRLS	78	0	0	0	0	1	2	4	18	19	27	7	0	307	3.936	4.24	-0.304102564
11	KITUVU	30	0	0	0	1	0	1	1	5	8	11	3	0	118	3.933	4.15	-0.216666667
12	KAIANI	16	0	0	0	1	0	0	1	4	3	3	2	2	62	3.875	3.28	0.595
13	KAUTI	35	0	0	0	0	1	0	0	8	11	13	2	0	135	3.857	3.07	0.787142857
14	KALIKYA	22	0	0	0	0	0	0	1	6	3	11	1	0	83	3.773	2.96	0.812727273
15	MBEE	40	0	1	2	0	2	0	0	5	5	10	12	3	149	3.725	3.68	0.045
16	NGILINI	68	0	0	0	0	4	5	3	6	10	19	20	1	253	3.721	4.24	-0.519411765
17	KINYAU	21	0	0	0	0	0	0	2	4	5	6	4	0	78	3.714	3.38	0.334285714
18	NGOLENI	162	0	0	2	3	6	2	5	19	33	48	42	2	596	3.679	4.38	-0.700987654
19	KITIE	56	0	0	0	0	3	2	3	4	12	18	14	0	206	3.679	4.45	-0.771428571
20	GEN. MULINGE	160	0	0	2	0	0	4	12	21	32	43	42	4	580	3.563	3.64	-0.0775
21	NTHUNGUNI	10	0	0	0	0	0	0	1	2	1	3	4	0	38	3.451	3.25	0.201
22	KING'ONG'OI	29	0	0	0	0	1	0	1		4	11	10	2	100	3.321	3.115	0.206
23	REV. KITONYI	44	0	0	0	0	0	1	3	7	7	11	13	2	149	3.386	3.774	-0.387636364
24	KIKOMBI	73	0	0	0	1	0	1	0	7	18	20	23	3	232	3.178	3.35	-0.171917808
25	HARLEYS	8	0	0	0	0	0	0	0	1	1	4	2	0	25	3.125	3.768	-0.643
26	KISOVO	23	0	0	0	0	0	0	1	1	4	8	7	2	67	2.913	2.793	0.120043478
27	ST.PAULS	15	0	0	0	0	1	0	0	2	1	2	6	3	43	2.867	3.03	-0.163333333
28	MBUUNI	40	0	0	0	0	0	1	0	4	2	14	17	2	113	2.825	3.57	-0.745
29	ABC KWANGENGI	23	0	0	0	0	0	0	1	0	4	4	12	2	60	2.609	2.346	0.262695652
30	AIC MUMBUNI	48	0	0	0	0	0	0	1	2	5	12	21	7	121	2.521	2.694	-0.173166667
31	THINU	33	0	0	0	0	0	0	1	0	3	9	14	6	79	2.394	2.687	-0.293060606
	TOTAL	1859	0	17	33	78	108	138	150	275	308	408	304	40	8428	118.037	120.172	-2.135
	MEAN SCORE 2013															4.070	4.144	-0.074

2014/2015 KCSE ANALYSIS KATHIANI SUBCOUNTY

S/N	SCHOOL	Entry	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	Total	MS 2015	MS 2014	DEV
1	KATHIANI BOYS H.	194	0	5	46	51	56	21	9	2	1	2	1	0	1645	8.479	8.138	0.342
2	ST. CATHERINE	59	0	1	6	16	20	11	5	0	0	0	0	0	482	8.169	7.036	1.134
3	KATHIANI GIRLS	84	0	0	7	21	22	22	11	1	0	0	0	0	660	7.857	7.737	0.120
4	ABC MITABONI	102	0	0	0	3	11	24	35	26	3	0	0	0	635	6.225	6.040	0.185
5	NGIINI SEC. SCH.	57	0	0	1	0	3	9	9	16	11	8	0	0	299	5.246	5.000	0.246
6	MITABONI H. SCH.	76	0	0	0	1	7	5	12	20	17	12	2	0	380	5.000	4.763	0.237
7	KITHUNGUINI SEC.	100	0	0	0	0	4	13	23	20	23	11	6	0	498	4.980	4.926	0.054
8	KALILUNI GIRLS	50	0	0	0	0	1	5	6	16	13	8	1	0	237	4.740	4.259	0.481
9	KAANI LIONS SEC.	98	0	0	0	1	0	7	17	23	30	19	1	0	454	4.633	4.473	0.159
10	KAEWA SEC. SCH.	131	0	0	1	0	2	8	17	35	36	29	3	0	596	4.550	4.179	0.371
11	MBEE SEC. SCH.	44	0	0	0	0	0	5	4	9	14	8	4	0	192	4.364	4.574	-0.210
12	REV. KITONYI SEC.	29	0	0	0	0	1	3	0	9	5	6	5	0	122	4.207	3.706	0.501
13	GEN. MULINGE	104	0	0	0	0	2	6	9	20	25	26	16	0	422	4.058	3.336	0.722
14	KAIANI SEC. SCH.	29	0	0	0	0	2	1	0	5	10	7	4	0	117	4.034	3.958	0.076
15	KALIKYA SEC.	38	0	0	0	0	0	1	2	9	12	11	3	0	151	3.974	3.828	0.146
16	NGOLENI SEC.	131	0	0		6	7	9	15	29	32	32	1	503	3.840	4.065	-0.225
17	KAUTI SEC. SCH.	40	0	0	0	0	0	0	3	9	10	13	5	0	152	3.800	4.281	-0.481
18	ST. VINCENT IMILINI	42	0	0	0	0	0	2	1	7	10	18	4	0	157	3.738	4.500	-0.762
19	KITIE SEC. SCH.	58	0	0	0	0	0	3	1	9	16	19	10	0	213	3.672	3.556	0.117
20	IKOLENI	25	0	0	0	0	0	1	0	4	8	7	5	0	90	3.600	3.120	0.480
21	ST.BENEDICT	46	0	0	0	0	2	2	0	5	10	17	9	1	165	3.587	3.421	0.166
22	KINYAU SEC. SCH.	28	0	0	0	0	0	2	1	3	6	9	7	0	100	3.571	4.231	-0.659
23	KIKOMBI SEC.	61	0	0	0	0	0	0	4	3	18	31	4	1	213	3.492	3.508	-0.017
24	NTHUNGUNI SEC.	11	0	0	0	0	0	0	1	2	1	4	3	0	38	3.455	3.250	0.205
25	MIUMBUNI AIC	61	0	0	0	0	0	3	2	5	12	22	16	1	205	3.361	3.842	-0.481
26	MBUUNI SEC.	35	0	0	0	0	1	1	2	0	7	10	13	1	112	3.200	3.875	-0.675
27	KISOVO SEC. SCH.	51	0	0	0	0	0	2	1	6	4	19	19	0	161	3.157	3.333	-0.176
28	KING'O'NG'OI	32	0	0	0	0	1	0	1	3	4	11	10	2	100	3.125	3.013	0.112
29	THINU SEC. SCH.	39	0	0	0	0	0	1	1	1	4	15	16	1	112	2.872	3.143	-0.271
30	ABC KWANGENGI	21	0	0	0	0	0	0	0	2	1	10	8	0	60	2.857	2.652	0.205
31	KITUVU SEC. SCH.	37	0	0	0	0	0	0	1	1	6	12	16	1	104	2.811	3.641	-0.830
32	ST. PAULS' MITAB.	19	0	0	0	0	0	0	0	0	0	5	13	1	42	2.211	2.231	-0.020
	TOTALS/M/SCORE	1932	0	6	61	98	141	165	187	286	346	401	236	10	9417	4.874	4.750	0.124

2016 KCSE ANALYSIS KATHIANI SUBCOUNTY

S/N	SCHOOL	Entry	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	MS 2016	MS 2015
1	KATHIANI GIRLS	106	0	2	4	15	22	27	18	13	4	1	0	0	7.113	7.85
2	ST. CATHERINE	55	0	0	2	7	11	9	16	6	3	1	0	0	6.818	8.16
3	ABC MITABONI	128	0	0	0	1	8	11	22	41	27	14	4	0	5.039	6.22
4	KATHIANI BOYS H.	238	0	1	3	3	12	16	28	53	57	42	23	0	4.660	8.47
5	KINYAU SEC. SCH.	29	0	0	0	0	2	1	2	4	5	13	2	0	4.069	3.57
6	KAANI LIONS SEC.	86	0	0	0	1	2	1	10	12	21	28	11	0	3.977	4.63
7	MBEE SEC. SCH.	63	0	0	1	1	0	3	2	8	19	19	10	0	3.889	4.36
8	KITIE SEC. SCH.	58	0	0	0	0	0	4	5	8	10	18	13	0	3.759	3.67
9	KITHUNGUINI SEC.	107	0	0	1	1	2	5	6	11	21	30	30	0	3.692	4.98
10	KALIKYA SEC.	33	0	0	0	0	0	1	2	5	7	8	10	0	3.515	3.97
11	ST. VINCENT IMILINI	29	0	0	0	0	2	0	0	2	6	9	10	0	3.345	3.73
12	KALILUNI GIRLS	38	0	0	0	0	0	0	2	5	7	13	11	0	3.316	4.74
13	NGOLENI SEC.	130	0	0	0	1	0	5	5	19	17	36	39	8	3.315	3.84
14	NGIINI SEC. SCH.	75	0	0	0	0	2	0	4	7	14	21	25	2	3.280	5.24
15	KIKOMBI SEC.	61	0	0	0	0	0	3	2	4	5	23	25	3	3.197	3.49
16	GEN. MULINGE	121	0	0	0	0	2	0	6	9	21	38	45	0	3.182	4.05
17	MBUUNI SEC.	44	0	0	0	1	3	1	0	1	4	12	20	2	3.159	3.2
18	MITABONI H. SCH.	63	0	0	0	0	0	0	2	2	17	22	20	0	3.111	5
19	KAUTI SEC. SCH.	37	0	0	0	0	0	1	1	3	4	12	15	1	3.000	3.8
20	KAEWA SEC. SCH.	112	0	0	0	0	0	0	1	5	19	40	46	1	2.857	4.55
21	KAIANI SEC. SCH.	32	0	0	0	0	0	0	2	0	6	7	16	1	2.813	4.03
22	MIUMBUNI AIC	58	0	0	0	0	0	1	2	3	6	13	30	3	2.759	3.36
23	KING'O'NG'OI	32	0	0	0	0	0	0	2	0	4	8	15	3	2.656	3.12
24	NTHUNGUNI SEC.	23	0	0	0	0	0	0	0	2	3	4	12	2	2.609	3.45
25	THINU SEC. SCH.	42	0	0	0	0	0	0	0	0	1	12	26	3	2.262	2.87
26	IKOLENI SEC.	18	0	0	0	0	0	0	0	0	2	5	6	5	2.222	3.6
27	REV. KITONYI SEC.	37	0	0	0	0	0	0	0	0	1	8	26	2	2.216	4.2
28	ABC KWANGENGI	26	0	0	0	0	0	0	0	0	1	5	18	2	2.192	2.85
29	ST. PAULS' MITAB.	19	0	0	0	0	0	0	0	0	2	0	15	3	2.158	2.21
30	ST.BENEDICT	31	0	0	0	0	0	0	1	0	0	5	20	5	2.129	3.58
31	KISOVO SEC. SCH.	47	0	0	0	0	0	0	0	1	2	4	30	10	2.021	3.15
32	KITUVU SEC. SCH.	30	0	0	0	0	0	0	0	0	0	2	24	4	1.933	2.81
	TOTALS/M/SCORE	**2013**	**0**	**3**	**11**	**31**	**68**	**89**	**141**	**224**	**316**	**473**	**597**	**60**	**3.722**	**4.87**

APPENDIX: V

RESEARCH AUTHORIZATION

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: 020 400 7000,
0713 788787,0735404245
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/17/05984/20149** Date: **24th November, 2017**

Julie Mutindi Musyoka
South Eastern Kenya University
P.O. Box 170
KITUI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"School based factors influencing students' performance in Kenya Certificate of Secondary Education in public secondary schools in Kathiani Sub-County, Machakos County"*** I am pleased to inform you that you have been authorized to undertake research in **Machakos County** for the period ending **24th November, 2018.**

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

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GP Kalerwa

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Machakos County.

The County Director of Education
Machakos County.

APPENDIX: VI

RESEARCH PERMIT

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 16662

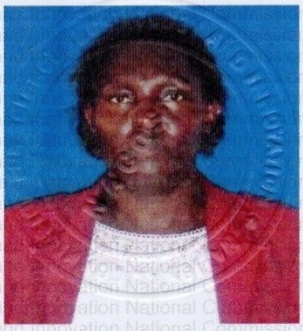
CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MS. JULIE MUTINDI MUSYOKA
of SOUTH EASTERN KENYA UNIVERSITY, 258-90104 MITABONI,has been permitted to conduct research in *Machakos County*

on the topic: *SCHOOL BASED FACTORS INFLUENCING STUDENTS PERFORMANCE IN KENYA CERTIFICATE OF SECONDARY EDUCATION IN PUBLIC SECONDARY SCHOOLS IN KATHIANI SUB-COUNTY, MACHAKOS COUNTY*

for the period ending:
24th November,2018

Permit No : NACOSTI/P/17/05984/20149
Date Of Issue : 24th November,2017
Fee Recieved :Ksh 1000



.....
Applicant's Signature

G P Kaleiwa
.....
Director General
National Commission for Science, Technology & Innovation