TEACHERS' PERCEPTION OF THE EFFECT OF TEACHER CHARACTERISTICS ON THE INTERNAL EFFICIENCY OF PUBLIC SECONDARY SCHOOLS IN KERICHO COUNTY, KENYA

Daniel Kipyegon Chelule

A Research Thesis Submitted to the Institute of Postgraduate Studies and Research, Kabarak University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Economics and Planning of Education

Kabarak University

August, 2016

DECLARATION

I declare that this research thesis is my original work and has not been presented or published for the award of a degree in any University.

Student's Signature_____

Student's Name: DANIEL KIPYEGON CHELULE

Admission No: GDE/1236/09/11

RECOMMENDATION

To the Institute of Postgraduate Studies:

This thesis entitled "Teachers' Perception of the Effect of Teacher Characteristics on the Internal Efficiency of Public Secondary Schools in Kericho County, Kenya" written by **Daniel Kipyegon Chelule** has been submitted for examination with our approval for the degree of **Doctor of Philosophy in Education (Planning & Economics)**

_____

Prof. Theodore M.Osano Ayodo

Kabarak University

_____

Kabarak University

Dr. Betty Jeruto Tikoko

COPYRIGHT

ACKNOWLEDGEMENTS

For the grace to undertake this great task, I wish to honour God Almighty for ordering my steps.

I am sincerely indebted to my Supervisors, Prof. Theodore Mordecai Osano Ayodo and Dr Betty Jeruto Tikoko for their support, guidance and patience throughout the process.

I acknowledge the encouragement and patience of my wife Felistus and children Shalom, Allan, Emmanuel and Victoria.

Special appreciation goes to Mr. Kibet Korgoren, Mrs Betty Koskei and Staff members of Kericho Tea Boys High School for their input, suggestions and encouragement.

The County Director of Education (Mr Matthews Isutsa Aboka), the Sub-County Director of Education (Mrs Alice Kirui) and the Sub-County Quality Assurance and Standards Officer (Mr Fredrick Maoga), all from the Ministry of Education in Kericho gave me access to vital documents. I thank them most sincerely along with all the Principals and teachers who participated in this study.

DEDICATION

I dedicate this work to my departed parents, Richard and Mary Sabulgong, for setting me and my siblings on the path of truth, hard work and quest for knowledge

ABSTRACT

World initiatives in education such as Education for All (EFA) and the Millennium Development Goals (MDGs) have seen many governments make access to education central to their national development strategies mainly by reducing education costs. This has seen many governments invest heavily in education with Kenya allocating a third of her annual budget to education. However, despite this kind of investment, there is little empirical evidence to show that learners are benefitting commensurately. Studies suggest that the human resource plays a crucial role in school efficiency. This study sought to determine teachers' perception on the effect of teacher characteristics on the internal efficiency of public secondary schools. The Systems Approach and Production Function Theories were used to relate teacher characteristics (inputs) and internal efficiency of schools (output). Internal efficiency was measured in terms of students' academic outcomes at Kenya Certificate of Secondary Education. This study was conducted within Kericho County. It was based on five objectives which were to: establish the nature of internal efficiency; examine the effect of teacher qualification on internal efficiency; determine how teacher work experience affects internal efficiency; establish the effect of teacher workload on internal efficiency and to determine the influence of teacher turnover on internal efficiency of public secondary schools in Kericho County. The target population was 1318 teachers with the sample size being 298. Cluster sampling was used to sample three districts out of the five in the County. Simple random sampling was used to select teachers while the CDE, three DEOs and the ten Principals were selected using purposive sampling. Sampling of schools was based on school type such as national, county and district/day. Descriptive survey design was used to investigate the problem. Both quantitative and qualitative methods of data collection which included questionnaire, interview and document analysis were used. The questionnaire, interview guides, document checklist and audio recorder were used to collect and record data. Findings reveal that 23.5% of public secondary schools in Kericho County are efficient, 47.1% are moderately efficient while the remaining 29.4% are inefficient. Further, the study found a relationship between internal efficiency of schools and school type, whether national, county or district. The study showed that both teacher qualification and experience are perceived to positively affect internal efficiency while teacher workload and turnover are perceived as negative predictors of internal efficiency. This study concludes that teacher trainees joining pre-service teacher training meet minimum requirement in their teaching subjects and that practicing teachers pursue professional development courses. Recommendations are made to Teachers Service Commission to improve their terms of service to ensure retention of qualified and experienced teachers. Suggestions for further research on the effect of other variables other than teacher characteristics on internal efficiency of secondary schools are also made, among others.

Key words: Teacher Characteristics, Internal Efficiency

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

CDE	County Director of Education
EFA	Education for all
FPE	Free Primary Education
FSE	Free Secondary Education
KCSE	Kenya Certificate of Secondary Education
KNEC	Kenya National Examinations Council
MDGs	Millennium Development Goals
OECD	Organization for Economic Cooperation and Development
PISA	Programme for International Student Assessment
SCDE	Sub-County Director of Education
SCQASO	Sub-County Quality Assurance & Standards Officer
TSC	Teachers Service Commission
UNESCO	United Nations Educational Scientific and Cultural organization

OPERATIONAL DEFINITION OF TERMS

Cohort

This refers to a group of pupils (students) who join the first grade of a given level of education in the same school year, and subsequently experience the events of promotion, repetition, dropout or successful completion of the final grade, each in his or her own way.

Internal Efficiency

Internal efficiency refers to the flow of students through the education system with minimum wastage. This study estimated internal efficiency using the school Mean Score which is an indicator of pass rate.

Mean Score

An average score calculated for the candidates in a given school based on their individual grades at KCSE. The value ranges from 1 (least) to 12 (highest) ascribed correspondingly to grades E (least) to A (highest).

Pass Rate

The proportion of students in a cohort leaving form four that attains the minimum qualification to proceed to tertiary education. In this study, the pass grade is set at C- (minus). The higher the proportion of students attaining grades above the pass grade, the higher the internal efficiency.

Public Secondary School

In Kenya, it refers to an institution offering the second phase of the 8-4-4 education system, that is, form one to four, and which receives teachers and funding from the government.

Teacher Characteristics

Factors attributable to teachers which are thought to affect their performance of duties. These are: teacher qualifications, experience, workload and turn-over.

Teacher Experience

The length of time in years a teacher has been in continuous active service after graduation from College or University

Teacher Qualification

The highest academic and professional level a teacher has attained

Teacher Turnover

This refers to the rate at which teachers leave a school due to transfers or attrition

Teacher Workload

The number of lessons a teacher must teach within a school week

Transition Rate

The number of pupils (or students) admitted to the first grade of a higher level of education in a given year, expressed as a percentage of the number of pupils (or students) enrolled in the final grade of the lower level of education in the previous year.

Wastage Rate

This refers to human and material resources spent or 'wasted' on pupils who have to repeat a grade or who drop out of school before completing a cycle.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The goal of achieving basic education has been on the international agenda since the UN declaration of Human Rights in 1948 affirmed that basic education be made free and compulsory for all children in all nations. This agenda was re-affirmed in subsequent initiatives in education such as World Declaration for Education for All (EFA) in Jomtien, Thailand in 1990 and a follow up ten years later at Dakar, Senegal. The Dakar framework for Action in particular urged countries to pursue improvements in learning achievements such that an agreed percentage of an appropriate cohort attains or surpasses a defined level of necessary learning achievement. In most developing countries, education wastage which includes repetition, low transition and dropout from school is quite high for both boys and girls. Herz, et al (1991) indicates that wastage is associated with resources in school, socio-economic status and was highest in low income countries where transition rates were low and dropout and repetition rate in secondary schools were high. These components of educational wastage negatively impact on the attainment of Millennium Development Goals (MDGs) and Education for All (EFA) goals and targets as set out by the Dakar Framework in April, 2000, but also on National development. For the government to achieve the aspirations of EFA and other global anticipated outcomes, deliberate attempts must be made to stem and control wastage.

Various stakeholders and players consider education a basic need and a basic right. Studies across the globe indicate that countries with high literacy rates among women and men have lower levels of fertility, low infant and mortality rates, longer life expectancy and are politically mature for democratic governance. Further, Education improves people's ability to take advantage of the opportunities that can improve their well-being as individuals and be able to participate more effectively in the community and markets. This could explain why EFA as well as millennium development goals (MDGs) have been embraced globally. Many African governments embraced the Jomtien agenda by widening access to education either through elimination of fees or reduction of education costs (UNESCO, 2008 & USAID, 2007).

As a result enrolment in basic education rose from 84 million in 1990 to 106 million in the year 2000 and it is estimated to rise to 140 million by 2015 (USAID, 2007).

Table 1: Student Enrolment by Type of Educational, Training Institution and Sex, 2010 – 2013

		2010		2011		2012		2013*	
Gender		**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Enrolment in Primary School	'000	4,751.9	4,629.3	4,977.7	4,880.2	5,026.5	4,968.7	5,149.1	5,033.4
Enrolment in Secondary School	'000	885.5	767.8	948.7	819.0	1,019.0	895.8	1,127.7	976.6
Enrolment in Universities[1]	'000	107.7	69.9	117.7	80.6	135.4	105.1	193.2	131.4
Enrolment in Other Institutions[2]	'000	56.4	54.7	68.5	65.3	92.5	66.0	106.1	79.0

1. Includes students in National Universities and Private accredited Universities and unaccredited universities.

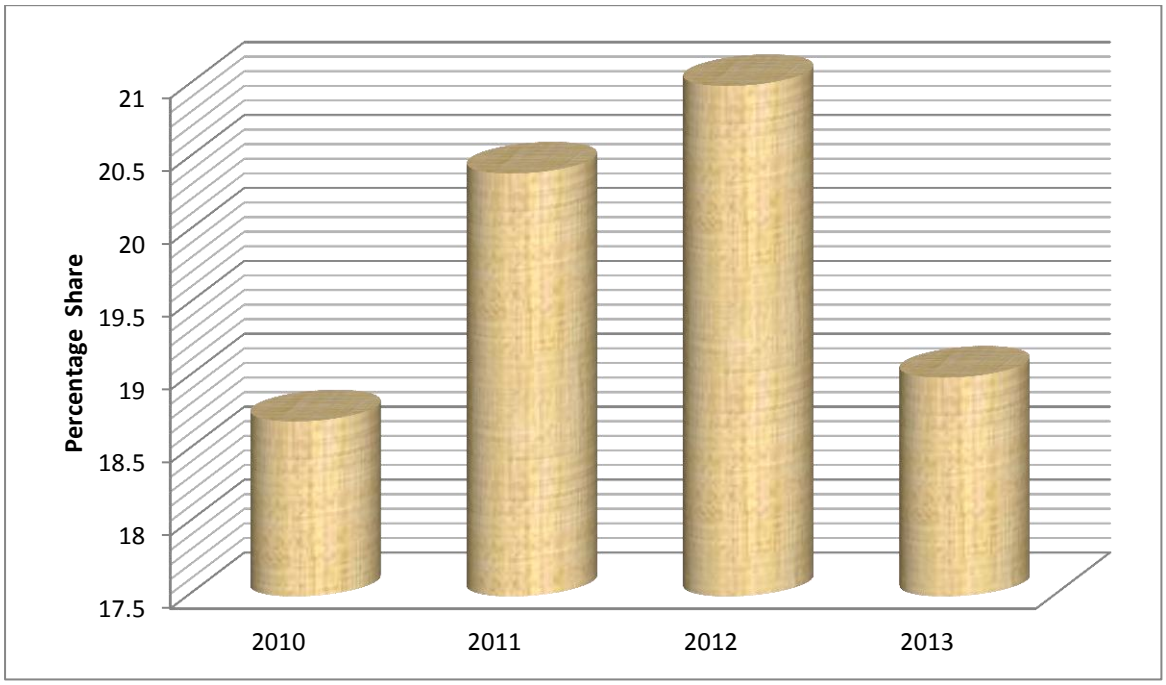
2. Includes students in Teacher Training Colleges, Polytechnics, Technical Training Institute & Institutions of Science & Technology.

Source: UNESCO, 2013

Considerable efforts have been put in place by the government of Kenya for the provision of affordable secondary education in order to meet the diverse benefits which accrue both to the society and the individual. The share of recurrent expenditure to education has continued rising and by 1990 it amounted to 36% of the total government recurrent expenditure as shown in Figure 1 (Republic of Kenya, 1992). This expenditure on education represents 6% of Gross Domestic Product which is deemed as a very high proportion by global standards. This is a clear statement of the government's commitment towards education. Despite these, serious concerns have been raised in regard to wastage in Kenyan secondary schools. Wastage is a function of the dropout, repetition and completion rates. Many secondary

schools are characterized by inefficiency in form of dropout, low promotion rates, repetitions and cases of non-completion.

Figure 1: Ministry of Education Budget as a percentage of Total Government Budget



Over a period of ten years, 1992-2002, every secondary school cohort suffered not less than 10% school dropout. The highest dropout rate for girls was 50% in 1997/2000 cohort. The average dropout and completion rates for girls in the period under consideration were 20% and 80% respectively. For boys, they were 14% and 87% respectively (Achoka, 2006). These figures indicate high wastage within the sector bearing in mind that the government has a huge investment in education as the input does not positively correlate to the output in the sector.

According to United Nation Children's Fund, based on Kenya Demographic Health Survey 2003 data, the national secondary school dropout was 27.4% with a rate of 25.5% for males and 29.6% for females. The national secondary school repetition rate was 1.7% with rate of 1.8% and 1.4% for males and females respectively. The completion rates in secondary schools have also been going down from 86.4% for the years 1987-1990 to 79.0% for the years 1997-2000 (UNICEF Report, 2008). In an attempt to mitigate the challenge of wastage, the Kenyan Government through the Ministry of Education came up with amicable policies on promotion and continued provision of special funds for the purchase of essential facilities

like furniture and even construction of tuition blocks alongside essential facilities like laboratories in schools.

Sessional Paper Number 14 of 2010 demonstrates this with the Government seeking to align the establishment of secondary schools with budgetary allocation for school infrastructure and teacher recruitment (Republic of Kenya, 2010). Further, it aimed at mobilizing resources for the construction and rehabilitation of schools as well as the provision of equipment to deserving areas, especially ASAL and urban slums. In all these efforts, the government's intended position is to address the various challenges facing the secondary school education sub-sector. The first objective of this study was to determine the status of efficiency of public secondary schools given the huge investment in education industry which seems not to be commensurate with the output. The expectation of all stakeholders is that schools should optimally utilize the limited resources to ensure that students go through the school system for the least number of years expected and thus promote high internal efficiency and access in the system.

Table 2: Ministry of Education Budget as a percentage of Total Government Budget

Other Education Indicators	**Unit**	**2010**	**2011**	**2012**	**2013***
Secondary teacher/ Student ratio (public)	ratio	1:32	1:31	1:32	1:32
Primary teacher/ Student ratio (public)	ratio	1:54	1:57	1:57	1:52
MoE Budget as % of Total Gov't Budget	%	18.7	20.4	21.0	19.0
Teachers' Personal Emoluments as a % of Ministry of Education Recurrent Budget	%	77.5	78.8	79.5	83.0
Secondary GER	%	47.8	48.8	49.3	56.2
Secondary NER	%	32.0	32.7	33.1	39.5

Kenya's policy to achieve universal primary education (UPE) and offer quality basic education has to be seen as its response to developments in the wider international context. As a signatory to both the Dakar Framework for Action and the Millennium Agenda an even greater emphasis has been put on Kenya to strive to achieve some of the common aims found in the Dakar Framework and the Millennium Agenda such as UPE by 2015.

Kenya upholds education as a fundamental right and recognizes it as pivotal for the attainment of self fulfillment and national development (GoK, 2007; MoE, 2006 & Sifuna, 2005). In her efforts to achieve EFA goals and MDGs, Kenya re-introduced free primary education (FPE) in 2003 and subsidized secondary education (SbSE) in 2008. As a result of the two strategies, enrolment of students rose from 5.9 million in 2003 to 7.6 million in 2006 and currently stands at 9.7 million (Global Monitoring Report {GMR}, 2010) in primary schools. In secondary schools, enrolment rose from 1.1million to 1.4 million upon implementation of SbSE in 2008 (MOE Strategic Plan of 2005 – 2010).

Policy driven emphasis on access has seen expanded enrolment and provision of facilities in most African countries. Most of them have invested heavily in education with most spending up to a third of their Gross Domestic Product (GDP). Kenya for example allocates a third of her annual budget to education (Table 2). However, despite this kind of investment, there is minimal empirical evidence of what students are learning in both primary and secondary schools (GMR, 2012). This situation has led educational researchers to ask questions as pertains to the state of basic education from the perspective of learning outcomes and efficiency of school systems in achieving EFA goals and MDGs (GMR, 2012).

There have also been concerns about returns on investment in education which have called for close scrutiny of the impact of educational funding upon finite characteristics such as students' performance judged in terms of their examination results (GMR, 2012). In developing countries there has been emphasis by education policy makers to make public schools as efficient as they can possibly be (Fertig, 2000). Developing nations must therefore concern themselves with enhancing the internal efficiency of schools by searching for ways of increasing the total learning output of the system without increasing total systems cost (Farell & Oliveira, in Fertig, 2000).

Efficiency is measured by comparing education expenditure with education outcomes. Pertinent questions which guide policy makers when defining efficiency are whether governments are spending appropriate amounts of money on each level of education and whether it is making appropriate choices on quantity verses quality in education (MOES, Uganda, 2008).

Internal efficiency has been described as the extent of the ability of educational systems to minimize costs and reduce wastage resulting from repetitions, dropouts and failures. Internal efficiency is also highly linked to issues of resource allocation and utilization. An internally efficient school therefore is one which turns out graduates without wasting any student-year (Pitan, 2012). Indicators of internal efficiency are graduation and wastage rates (Pitan, 2012).

A number of studies have so far been done in the field of internal efficiency of schools (Adeyemi & Adu, 2012; Pitan, 2012; MOES, Uganda, 2008; Fertig, 2000; Akintayo, 1990). Some of these studies have explored the impact of economic characteristics of the school such as physical structures as well as learning and teaching resources on academic outcomes (Hanushek, 2007). Others have sought to identify whether and to what extent school characteristics such as leadership qualities of the Principal, teacher characteristics, size of student body and disciplinary environment around the school affect learning outcomes (Stoll & Fink, 2003; Cotton, 1996). Student learning have also been shown to be determined by factors outside teachers' control (such as family background) or by unpredictable and mysterious influences (Gatabu, 2012; Barineka, 2012; Drummond & Stipek, 2004). There are also studies which have examined the relationship between human resource utilization and internal efficiency in secondary schools (Pitan, 2012).

In recent years, more attention has been paid on educational processes especially how teachers and administrators use inputs to frame meaningful learning experiences for students (UNICEF, 2000). Opinions have been expressed to suggest quality of schooling depends upon quality of teachers (Fullan, 2007). In fact, Adeyemi and Adu (2012) clearly summarize the significant role of teacher characteristics in their view that the quality of any education system is the aggregate quality of teachers who operate in it (ibid). Similarly, studies have attributed low achievement of pupils in schools to teachers' inadequate knowledge of subject matter (Uwezo East Africa, 2013). A study done in South Africa by Mji and Makgato (2006) reveal that teachers' outdated practices and lack of basic content knowledge result in poor teaching standards which were exacerbated by the large number of unqualified teachers who teach in overcrowded and ill-equipped classrooms. They warn that a combination of all these factors has produced a new generation of teachers who perpetuate a cycle of mediocrity.

In Kenya, evaluation of the education system is done by Kenya National Examination Council (KNEC) which administers examinations at the end of both the primary and secondary phases of education. Schools are thereafter rated on the basis of performance

where efficient schools post high mean scores (above 8.0) and inefficient ones post low mean scores (below 6.0). A look at the 2014 KCSE results will help clarify the status of school internal efficiency in Kericho County.

Table 3: Kericho County 2014 KCSE Performance – Mean Grade Summary

KERICHO COUNTY 2014 KCSE PERFORMANCE – MEAN GRADE SUMMARY																	
S/ No	**SUB-COUNTY**	**ENTRY**	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D+**	**D**	**D-**	**E**	X	Y	P
1	KIPKELION	1346	0	4	36	68	110	155	159	211	249	248	89	4	9	0	4
2	BELGUT	2278	2	35	108	189	219	309	337	353	312	282	112	6	10	3	1
3	LONDIANI	1771	2	24	78	128	169	180	207	257	271	286	155	8	5	1	0
4	KERICHO	2209	21	144	197	208	207	255	307	318	270	196	80	1	3	0	2
5	BURETI	3304	77	192	264	310	304	275	337	327	396	42	267	27	1	124	0
	TOTALS	10928	102	399	683	903	1009	1174	1347	1466	1498	1435	703	46	28	128	7

Source: KSSHA Journal, 2015

From the statistics, it was noted that the number of students who attained the minimum university qualification of C+ and above were 4,270 or 39.15% of the candidature. In 2013, those with C+ and above were 3,663 which is equivalent to 35.11% of candidature. This implies that in 2014, there was an increase of 4.04% in the quality grades. On the other hand, in 2014, the wastage grades of D+ and below were 3,682 or 33.76% of the candidature. In 2013, the wastage grades of D+ and below were 4,111which is equivalent to 49.40% of candidature. This means that wastage grades in 2014 decreased by 15.64% compared to 2013. The increase in quality grades and a corresponding drop in wastage is an indicator of improved internal efficiency of the schools in the County. However, it is evident that in both years, the pass rate is at an average of 37.13%.

On the other hand, the average wastage rate for the two consecutive years is 41.83%. Pass rates and wastage rates are both indicators of internal efficiency. The lower the pass rate and the higher the wastage rate, the lower the internal efficiency. In general therefore, it can safely be concluded that, schools in Kericho County are not efficient.

The KSSHA 2015 journal identifies certain contributors to the inefficiency noted in Kericho secondary schools. These include understaffing, little parental participation in school activities, high poverty levels, absenteeism related to fees collection, and low teacher commitment and motivation. Other emerging issues that impact negatively on the school internal efficiency are poor resource mobilization and utilization as well as examination irregularities.

The puzzle has always been why schools in the same catchment area with basically similar infrastructure post varying results. The role of the teacher is increasingly being questioned. This study therefore intends to explore the effect of teacher characteristics on students' performance at KCSE examinations and transition to tertiary institutions as a measure of school's internal efficiency.

1.2 Statement of the Problem

Studies on school efficiency identify human resource especially the teaching staff as central in ensuring that national goals and objectives of education are achieved; and that no matter how good programmes and characteristics of an institution are, without the teaching staff, attainment of institutional goals and objectives would be futile (Pitan, 2012). While this could be true to a certain extent, there are contrary opinions that teachers could actually be the impediment to the attainment of the said goals and objectives. There is also evidence that schools have varied outcomes at KCSE performance and transition rates to tertiary and institutions of higher learning despite having similar inputs. Could this mean that teacher characteristics contribute to the difference in learning outcomes? Literature also reveals that teachers can be classified into two categories – effective and ineffective teachers. Do these categorizations have any impact on students' outcomes and internal efficiency of schools? There was need therefore to conduct a study that would focus on the teacher as a key factor in the education process and how that teacher affects students' academic outcomes which are a measure of internal efficiency of the school.

Kericho County was chosen as an appropriate study site based on three considerations: KCSE performance over the last four years, teacher establishment and the researcher's proximity and familiarity with the research site. Over the last four years (2011 – 2014), quality grades (C+ and above) have ranged between 22.8% and 44.22% while poor grades (D+ and below) have ranged between 28.5% and 44.8% across the County's five districts. These statistics suggest that less than a half of the students who sat KCSE during that period transited to the

next level of education. This is indeed a pointer to internal inefficiency of schools in the County. Secondly, at the time of research the County had 1318 teachers across the 154 schools with a teacher – pupil ratio of 1:33. The standard teacher – pupil ratio upon implementation of FSE in Kenyan secondary schools was 1:45 (UNESCO, 2005). It can therefore be said that the County was fairly staffed. This begged the question, why the high percentage of poor grades in the County. Thirdly, the fact that the researcher worked in the County made it easier to access the target population and relevant documents for the study.

1.3 Purpose of the Study

The purpose of this study was to determine the effect of teacher characteristics on the internal efficiency of public secondary schools in Kericho County.

1.4 Objectives of the Study

This study was guided by the following objectives:

a) To establish the nature of internal efficiency of public secondary schools in Kericho County.

b) To examine the effect of teacher qualification on internal efficiency of public secondary schools in Kericho County

c) To determine how teacher work experience affects internal efficiency of public secondary schools in Kericho County
d) To establish the effect of teacher workload on internal efficiency of public secondary schools in Kericho County
e) To determine the influence of teacher turnover on internal efficiency of public secondary schools in Kericho County.

1.5 Hypotheses

The dictionary definition of a hypothesis is a proposition, or set of propositions, set forth as an explanation for the occurrence of some specified group of phenomena, either asserted merely as a provisional conjecture to guide investigation (working hypothesis) or accepted as highly probable in the light of established facts. In other words, it is a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.

This study tested the following hypotheses:

a) H_1: Public secondary schools in Kericho County are not internally efficient

b) H_2: Teacher qualification has no significant effect on the internal efficiency of public secondary schools in Kericho County
c) H_3: Teacher work experience has no significant effect on the internal efficiency of public secondary schools in Kericho County
d) H_4: Teacher workload has no significant effect on the internal efficiency of public secondary schools in Kericho County
e) H_5: Teacher turnover has no significant effect on the internal efficiency of public secondary schools in Kericho County

1.6 Significance of the Study

It is believed that findings from this study have not only added to the existing but scant literature on internal efficiency of secondary schools in Kericho county and in Kenya, but also offered lessons on the same to key stakeholders in education.

Findings from this study have described the nature of internal efficiency of schools in Kericho County. Findings, which are evaluative in nature, are useful as a basis for school appraisal and improvement efforts at school and County levels to make school systems efficient. Also, given that the education sector consumes up to a third of Kenya's annual budgetary allocation, the findings give an insight as to whether the government is getting value for its money or not.

Findings reveal that teacher characteristics have significant impact on student performance. This revelation is resourceful to both teachers and Principals in identifying and harnessing the characteristics which impact positively on students' outputs and improve on those that impact on students' outcomes negatively in order to maximize benefits from the school system.

Similarly, the findings on teacher characteristics that have a strong relationship with students' academic outcomes will be found beneficial to teacher trainers and T.S.C which is charged with hiring teachers. Teacher educators in charge of professional development courses or in-service courses for teachers also stand to benefit. Findings from the study are useful guides in designing needs-based programs that will re-tool practicing teachers with requisite knowledge and skills needed by the 21st century learner.

1.7 Scope of the Study

This study was conducted in public secondary schools in Kericho County. Key stakeholders in education were sampled either to give their responses or to provide relevant documents for the study. The effect of teacher characteristics on the internal efficiency of public secondary schools was explored.

1.8 Limitation of the Study

It was anticipated that the nature of the study, which was evaluative in nature, would affect the validity of findings. The key respondents in the study were teachers and yet the study sought to identify teacher characteristics which affect the internal efficiency of schools. There is a possibility that teachers may not have responded honestly but as expected by the study (placebo effect). These challenges were addressed through triangulation of data. Data on teacher characteristics was not only collected from the teachers but also from school Principals and district education offices in the County.

1.9 Delimitations

There are many factors that have an effect on the internal efficiency of public secondary schools in Kericho County other than teacher characteristics. This study only focused on four teacher characteristics, namely: qualification, experience, workload and turnover.

The internal efficiency of a school can be assessed by looking at the processes that take place in the school or at the outcomes. This study has only considered the outcomes of secondary education in terms of KCSE performance as a measure of internal efficiency.

1.10 Assumptions of the Study

This study was based on the assumptions that schools in Kericho County were either internally efficient or inefficient; that teachers had a significant influence on a school's internal efficiency; that the degree of internal efficiency may vary even in schools of the same status and that respondents would give honest responses to the research questions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review of the study. A literature review is a critical analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.The chapter begins with the Global Monitoring Report on Education for All goals and the historical development of basic education in Kenya. Thereafter, a general overview of literature on the meaning of internal efficiency and measures so far used is presented. The chapter then proceeds to discuss the effect of teacher characteristics on internal efficiency of secondary schools. The chapter ends by discussing the theoretical framework which grounds the study and the conceptual framework which explains the relationship between the independent and dependent variables.

2.2.0 The Status of EFA goals

The attainment of Education for All goals cannot be separated from the role of the teacher, who is the focus of this Study. At inception, the year 2015 was set out as the timeline of the attainment of EFA goals. The EFA Global Monitoring Report was first published in 2002 to monitor progress towards six Education for All goals enshrined in the historic Dakar Framework for Action. Currently, the Report looks beyond the six goals to a range of issues in education governance, finance and management, seeking more complex solutions to the current situation. It focuses on equality as the overarching policy goal of any government and as a key to measuring the success of initiatives by the international community. It also focuses on sound education governance as a critical tool to achieve new momentum towards the EFA goals.

The Seventh edition of the EFA Global Monitoring report argues that equity must be at the centre of the Education for All agenda. There has been strong progress towards many goals, but key targets for 2015 are yet to be achieved given that time is running out. Financing and governance have important roles to play. Governments are failing to tackle inequality, as are current approaches to governance. Developing countries are not spending enough on basic education and donor countries have not lived up to their commitments.

Stagnating aid to education is a serious concern for educational prospects in a large number of low-income countries. But increased financing without provisions built in to ensure equity will not benefit the most vulnerable and disadvantaged groups. A pro-poor approach to education policy is imperative for the goals to have meaning for the world's out-of-school children and 776 million adult illiterates. Projecting the enrolment needs of just two-thirds of those countries which account for 75 million children out of school today, the Report estimates that there still will be 29 million out of school in 2015.

Progress towards Education for All is one of the defining development challenges of the 21st century. The right to education is a basic human right and, as such, it should be defended as an end in itself. However, education is also the means to wider social, economic and political goals. In the current situation of economic crisis and competition of various interests, it is timely to stress this critical role of education as this Report does. Only educated citizens can achieve economic growth and this requires equalized access to quality education, now more than ever. No country or society today can afford to exclude anyone from education because of poverty, ethnicity, religion or gender. The Report argues at length about wider benefits of education in economic terms. For example it cites several studies which have found that one additional year of schooling lifts average annual gross domestic product (GDP) growth by 0.37%.

But education is more than skills for economic sustainability. Schools are cultural institutions where children learn the languages, history and culture of their respective societies, acquire social skills and self-confidence, broaden their horizons and address issues as full and active citizens. People who are denied this full broad-based education are less likely to participate actively in their societies and influence decisions that alter their lives and those of others. That is why education is also fundamental to democracy and government accountability.

Millennium Development Goals cannot be achieved without EFA, but neither will education goals succeed without progress in other development areas. The Dakar Framework for Action was adopted in 2000. In the same year at the United Nations Millennium Summit, world leaders adopted the Millennium Development Goals, which extended from the reduction of extreme poverty and child mortality to improved access to water and sanitation. The MDGs put education goals in this broader context, thus clearly linking achievements in one area with the development in others.

Indeed, as this Report illustrates, it is difficult to sustain progress in only one area of development. Halving poverty or cutting child mortality by two-thirds appears not to be a serious proposition, given the slow and unequal progress towards universal primary education (UPE). By the same token, achievement of UPE will not be feasible without increasing and equalizing access to food, sanitation, medicine and other life-sustaining resources. Children whose lives are blighted by hunger, poverty and disease are clearly not equipped for realizing their full potential in school. Public health and child mortality are both linked to education: the level of a mother's education is related to the mortality rate of her children less than five years of age, as this Report illustrates.

These links seem obvious but are too often forgotten in sector-narrow policy debates, and this is why the Report places so much emphasis on the interdependence of the MDGs and EFA. There has been significant progress towards the achievement of Universal Primary Education (UPE) since Dakar. For example, in 2006 there were over 40 million more children in primary school than in 1999. Sub-Saharan Africa and South and West Asia accounted for the bulk of the increase, with enrolment in the former increasing by 42% and in the latter by 22%. However, it is evident that based on current trends, the goal of achieving Universal Primary Education by 2015 will not be attained. As the GMR reveals, "Some 75 million children of primary school age are still out of school, and their numbers are coming down too slowly and too unevenly to achieve the 2015 target."

Serious disparities in access and completion vary between and within countries. Fifty-five percent of the children of primary school age who are not in school are girls and over 4 out of 5 of these children live in rural areas, mostly in South and West Asia and Sub-Saharan Africa. Child labour, ill health and disability are some of the major barriers to UPE. The Report painfully notes that children with disabilities are among the most marginalized and least likely to go school.

The GMR calls for integrated policy approaches aimed at removing the structural barriers that keep children out of school. It argues that many countries will have to strengthen their focus on out of school children. The Report also cautions that merely getting children into school is not good enough; retention, completion and learning outcomes are also critical. The GMR reveals that enrolment in secondary education has risen by nearly 76 million since 1999.

The average net enrolment ratio also rose from 52% in 1999 to 58% in 2006. However, many developing regions still lag behind. For example, in Sub-Saharan Africa, the secondary Net Enrolment Ratio was just 25% in 2006.

Countries that have made significant progress are those that are committed to providing universal access to basic education, which includes lower secondary and basic education. The Report argues that enforcement of compulsory schooling laws and the elimination of primary school leaving examinations are some key measures being taken by some countries to improve transition rates. EFA Goals 3 and 4 remain largely neglected. The Report notes that millions of teenagers have never attended primary school and many more have left school lacking the skills they need to earn a livelihood and participate fully in society. In addition, there are about 776 million adults - two-thirds of them women - lacking basic literacy skills. Illiterate adults constitute 16% of the world's population. On current trends, over 700 million adults will still lack basic literacy skills in 2015. The problem is compounded by the fact that many governments have given little priority to youth and adult learning needs in their education policies and strategies.

Equity of access to quality education remains a key challenge for further progress. The GMR 2009 Report shows that educational opportunities remain highly polarized – both between and inside countries. Being born in a developing country is a strong indicator for reduced opportunity. In OECD countries almost 100% of 6-years old children are in school, while in Sub-Saharan Africa only 20% of them attend school. By age 15, more than 80% of students attend secondary school in the OECD region, but in Sub-Saharan Africa there are only 70% enrolment and minority of them – in secondary level. This clearly illustrates limitations, not only of access to education but also to definite quality of education. However, inequalities within countries create an even starker picture of disparities. Income based disparities are reinforced by those based on gender, ethnicity and location. This is why one of the central messages of this report is that national governments and international development agencies need to strengthen the focus on equity in order to achieve the core goals of the Dakar Framework for Action.

What matters in education is of course not only access, but quality as well. Quality of education is much more difficult to measure and assess than quantity. This Report attempts to address the issue by relying on a few international studies, such as PISA, which show that some participating developing countries, such as Peru or Brazil, fall far short of average

achievements of students in the OECD countries. However, we should be cautious about using international comparative surveys as tools to measure education quality. True quality involves much more than what can be tested and depends on national contexts, curriculum and goals, and qualified and well resourced teachers above all. Teacher supply and quality therefore constitute the present education challenge. The GMR acknowledges the fact that delivery of good-quality education is ultimately contingent on what happens in the classroom, and teachers are in the front line of service.

Education International agrees and strongly argues that the most important determinant of educational quality is the teacher. Therefore, where the objective is to improve educational quality, improving the quality of the teacher is imperative. Furthermore, the attainment of both quality and equity depend, to a large extent, to the central role of teachers and school leaders. The Report aptly notes that governments have to train and recruit on a vast scale to achieve the EFA goals. It is estimated that the world will need approximately 18 million additional primary school teachers by 2015. The most pressing need is in sub-Saharan Africa, where an estimated 3.8 million additional posts must be recruited and trained by 2015 and in Asia, where the estimate is just under 8 million.

Good quality education depends in part on reasonable class sizes and Pupil/Teacher ratios (PTR). Yet the Report reveals that there are large regional and national disparities in PTRs. The approximate ceiling PTR usually used is 40:1, but there are large regional and national disparities. Some countries (such as Afghanistan, Chad and Mozambique) exceed a national average of 60:1, but within countries with lower national average PTR, huge disparities can exist between regions. Trained teachers are in short supply in many countries. Nearly half of the 40 countries with data both in 1999 and 2006 increased the presence of trained teachers. However, more than a third of the countries moved in the opposite direction, with percentages of trained primary school teachers declining. PTR and the recruitment of quality teachers are key elements in quality education, but quality teacher initial and in service training and motivation of teachers are crucial.

This is also related to job satisfaction. Yet the GMR states: “Evidence suggests that many countries face a crisis of teacher morale that is mostly related to poor salaries, working conditions and limited opportunities for professional development”. The GMR highlights several problems faced by teachers in developing countries. It points to problems of salary

levels, the doubtful use of contract teachers and the lack of evidence for introducing performance related pay structures.

Teacher motivation is a major problem in many developing countries, leading to a flight of teachers from the profession and a lack of new teachers to fill the gap. Governments often use unqualified, community or para-teachers to quickly 'solve' this problem, apparently creating better Pupil Teacher Ratios. However, the Global Monitoring Report warns that superficially positive outcomes have to be weighed against concerns that there may be a trade-off between the supply of contract teachers and overall education quality. Rather, something must be done substantially to enhance teacher recruitment policies: "One way of reducing the pressure for recruitment is to strengthen teacher retention. In many countries, large numbers of teachers are leaving the profession not just because of poor pay and conditions, but also because of inadequate support, large class sizes and low job status," the Report argues. On the basis of the findings, the Report makes recommendations to governments, donors and non-governmental actors. From the 2009 Global Monitoring Report, three key messages can reasonably serve as a summary of its recommendations.

First, education is a human right and its role as a catalyst for social justice and sustainable development must be upheld. Secondly, to realize this, the role of teachers is essential. Therefore there is the need to attract, train and retain qualified teachers in all classrooms. To achieve this, participatory management and predictable aid should be developed. The sustained recruitment of unqualified teachers must be halted or perpetually reduced. Thirdly, the negative impact on EFA goals is partly a result of the non-delivery of commitments by the donors, despite high level statements and declarations. Focus therefore, should be on more investment in equitable education and in quality teachers to ensure that EFA goals are attained.

2.2.1 Historical Development of Basic Education in Kenya

The expansion of learning institutions has been one of Kenya's greatest achievements in the education sector since independence in 1963. Kenya has witnessed an impressive increase in the number of learning institutions, training of teachers, curriculum reforms and increased participation by groups which previously had little or no access to schooling, especially enrolment by gender. Kenya's achievement in the development of basic education was a showcase among Sub-Saharan African countries during the World Conference on Education for All in 1990 at Jomtien, Thailand. Between 1964 and1990, the Gross Enrolment Ratio at

both primary and secondary school levels had increased from 47 percent to 101.8 percent and from 2 percent to 29.4 percent respectively. However, after 1994, the Jomtien enthusiasm burnt out and by 1999 the education sector was in a crisis. The government therefore appointed the Commission of Inquiry into the Education System of Kenya (the Koech Commission) in 1999. The mandate of the commission was to find ways and means of salvaging the sector and how to expand the provision of quality education and training.

Similarly, it must be noted that Kenya has undergone numerous changes in the overall structure of its provision of education to its children since independence. These changes are contained in the various working papers, committees and commissions. Some of the aforesaid which have had significant impact on Kenya's education terrain will be discussed in the ensuing sub-sections.

2.2.1(a) The Kenya Education Commission 1964 (Ominde Commission)

This was the first commission after independence and its mandate was to look into the Kenya's education system. Some of its key recommendations were: provision of Universal Primary Education (UPE) and special attention to provision of education in the Arid and Semi-Arid Land (ASAL) areas. The implementation of the UPE was to start in 1965 and was to be completed in 1971. Ominde Commission is credited for providing new post-independence direction for education sector in Kenya including laying down the national goals of education, which were later reiterated in both Ndegwa (1970) and Gachathi Reports (1976)

2.2.1(b) The Education Act of 1968

This Act guided the entire education sector for 35 years (1968 – 2003). The Education Act(1968) stated that the Minister "shall promote the education of the people of Kenya and the progressive development of institutions devoted to the promotion of education, and shall secure the effective cooperation, under his general direction or control, of all public bodies concerned with education in carrying out the national policy for education" (Education Act Cap 211, ii (3) (i), 1968).

Education and training in Kenya is governed by this Act of 1968 and other related Acts of Parliament such as TSC Act, KNEC Act, Board of Adult Education Act, Universities Acts & charters, Children's Act, among others. However, the biggest challenge is that all these pieces of legislation are not harmonized and are not adequately responsive to the emerging issues and trends in the sector. The legal framework has not kept pace with developments in the sector; for example the expanded role of parents and communities through School Management Committees and PTAs in education management and financing as well as the role of civil society groups in education provision, planning, policy development, implementation and monitoring.

The role of other governmental agencies, such as the local authorities is not spelt out or recognized in the existing legal framework. Of interest is the TSC Act, which has established a highly centralized system of teacher management that creates a top-heavy secretariat and allows only limited decentralization through PDEs and DEOs for deployment and discipline. All these legislations need to be brought in harmony with the Children's Act under one comprehensive framework law.

2.2.1(c) The Ndegwa Commission, 1970

Ndegwa Commission was mandated to look into the working conditions of the civil service and how national goals of education could be integrated to accelerate the rate of national development. Its key recommendations were: an education that promotes national unity as well as cultural and social equality; diversification of the secondary education curriculum by including technical and vocational subjects in schools to enable secondary school leavers not proceeding to higher institutions to acquire skills that may enable them be self-employed; decentralization of the distribution of primary school equipment with the aim of increasing access; increasing the number of teacher training colleges and reviewing their training

structure; restructuring the inspectorate arm of the Ministry to make it more effective and efficient. Unfortunately, its recommendations were largely ignored.

2.2.1(d) The National Committee on Educational Objectives and Policies, 1975

This was the second major national commission on education, popularly known as Gachathi Report. It was constituted against the background of a presidential decree which abolished tuition fees in ASAL districts in 1971 and the second decree of 1973, which abolished fess for pupils in grade one to four. One of the radical recommendations of this Committee was the adoption of 9-4-2-3 system of education which meant an extension of the primary circle from seven to nine years, four years of junior secondary, and two years of high school and three years of university education. Other recommendations included; integrating the *harambee* schools in to the national education system, expanding and improving teacher education to include guidance and counseling and promotion of teachers on merit. The committee also noted that expansion of education was going on at the expense of quality and relevance. But just like the previous commissions, little was done to implement recommendations from Gachathi except perhaps the review regulations on teacher promotions later in 1980.

2.2.1(e) The Presidential Working Party on the Establishment of a Second University, 1981

This report recommended the establishment of the current 8-4-4 system of education, where the formal education system requires children to attend primary school for 8 years, secondary for 4 years and 4 years at University. Prior to this, there was the 7-4-2-3 system that required 7 years of primary education, 4 years of secondary school, 2 years of high school and a minimum of 3 years at the university. In the new system, the first 6 years were of primary schooling were meant to offer numeric and literacy skills while the last two were to provide basic education with practical orientation.

Whereas the need for a second university could not be disputed, the recommendation to change the education system did not go well with most Kenyans. Even more surprising was the speed at which the new system was to be implemented. The Ministry of Education had been given just one year to prepare and launch the programme.

The greatest challenge was that teachers were not adequately prepared for the new curriculum especially the technical subjects. There were also high costs associated with putting up of

workshops, home science rooms and laboratories. The resultant curriculum overload proved to be a big burden to pupils which led to rote learning and overemphasis on exams. Some of these effects have persisted to date.

2.2.1(f) The Presidential working party on education and manpower training for the next decade and beyond, 1988 (The Kamunge Report)

The recommendations of this report greatly altered the financing of education in Kenya through the introduction of the cost-sharing policy. The government found it too expensive to continue financing public secondary schools and universities. These institutions were henceforth required to finance most of their recurring expenses while the government was to concentrate on development. The Kamunge Report came close on the heels of two influential World Bank documents on education – Sub Saharan Africa: from Crisis to Sustainable Development (1986) and Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization and Expansion (1988). It was a big coincidence that this Presidential Working Party was launched the same year the World Bank released the document in support for cost sharing and user fees in education.

The Kamunge report institutionalized cost sharing in education and particularly payment of fees for primary schooling, a recommendation that was taken up almost immediately by the government as described in Sessional Paper no. 6 of 1988 on 'Education and Training for the Next Decade and Beyond'. It is instructive to note that immediately after this assignment Kamunge was appointed the Education Chief in the World Bank Country Office in Nairobi.

Under this new framework, the government was to meet salaries for teachers and the cost of education administration while parents were to provide for tuition, textbooks, and activity and examination fees. The communities on the other hand were to be responsible for putting up and maintaining physical structures. This was the straw that broke the back of education sector in Kenya and this is where the rain began to beat us.

Like the Mackay Report of 1981, the core recommendations of this Working Party were acted upon immediately and with some serious sense of urgency resulting into increased cost and decline in participation indices such as access, retention, completion and transition.

2.2.1(g) The Commission of inquiry into the education system in Kenya, 1998/9, (Koech Report)

Commonly referred to as TIQET (Totally Integrated Quality Education and Training), the Koech Report proposed a replacement of the 8.4.4 system with 7.4.2.3 in which the two years were meant for preparation for university entry. In its report, which was only made public in May 2000 after public outcry, the commission noted that even though the objectives of 8.4.4 system were good, its implementation was haphazard and coordination was poor right from the very beginning.

It covered virtually all aspects and sub sectors of education, making a total of 583 recommendations. The major recommendations of this report included the introduction of manageable curricula at all levels of education, the proposal for the enactment of a new all-inclusive legal framework to include aspects of education not addressed in the then Education Act such as the Early Childhood Education sub sector, and Technical and Special education. It also called for the consolidating of all laws that deal with education to be under one comprehensive Act. It is to date the most comprehensive report on the education system in Kenya but many of its recommendations have not been actualized.

It is also important to note that the Koech Report thorough reviewed reports of the past commissions on education and collected new data. The other recommendation of the Koech Report was the expansion of basic education to cover 12 years of primary and secondary education. An innovation in the report was the recommendation on the introduction of modular learning and credit accumulation in post-secondary education to allow for credit transfer between and within institutions.

2.2.1(h) The Master Plan on Education and Training, (MPET), 1997-2010

Whereas the failure to implement the Koech Report was blamed on huge resource implications, the government simply went silent on MPET, which was meant to provide policy direction in preparing the country for the much touted goal of industrialization by the year 2010. The focus of this document was rationalization of financing and governance of education and training for effective and efficient allocation, mobilization, and utilization of resources.

The major recommendations of this plan were improving efficiency and effectiveness in the education sector through empowerment of the different stake holders, increasing equity in

participation, reduction of costs to parents without necessarily increasing budgetary allocations from the exchequer and pushing for the enactment of a new Education Act.

That both The Master Plan on Education and Training (MPET) and Koech Reports were never implemented indicates the degree to which the government is averse to education reform. Some of the beautiful ideas envisaged in the MPET such as the enactment of a new education and training Act and the creation of a national education and training commission were just ignored.

2.2.1(i) The Draft Education Bill, 2003

For long, this was the most current policy document that addressed education in Kenya. The draft was intended to overhaul the 1968 education act to make it more in tune with the education needs in the country. The Draft Education Bill 2003 was overwhelmingly deficient in its treatment of key issues in the education sector. The Bill left out the proposals made in the MPET and Koech reports. Some major gaps in this bill can be noted. First, orphans and street children were not mentioned as people with special education needs. A guarantee for provision of equipment and learning materials for children and persons with special needs is necessary. Secondly, the bill failed to proclaim education as a fundamental human right, notwithstanding the fact that both the Children's Act and the Constitution are very explicit on this. Thirdly, the bill made very casual reference to other related laws or statutes and therefore did not provide a platform for the envisaged framework or comprehensive law. Fourthly, the bill did not seem to bring Early Childhood Education into the mainstream education as part of the basic education sub sector.

Fifthly, other issues which were not addressed properly by the bill include: role of communities in management and governance, cultural heritage and social integration, technical education (TIVET), private education, guidance and counseling, extra-curriculum activities.

However, the Bill had some strong points on participation, efficiency, quality and relevance, gender, adult and alternative education, health and environmental education and role of local authorities.

2.2.1(j) The National Conference on Education and Training Sessional Paper of 2004

The National Conference on Education and Training held in November 2003 brought together 800 key actors in the sector. This conference mandated the Ministry of Education to develop a new policy framework for the sector. As a result, the Ministry came up with Sessional Paper No. 1 of 2005 based on the conference report, which is believed to have provided one big leap towards a national education policy.

It is noteworthy that the paper looked at basic education as constituting 2 years pre-primary, 8 years primary and 4 years secondary. For the first time in the history of education development, this was an express recognition of early years of learning (ECD) as part and parcel of mainstream education system.

It further recognized the right to basic education and role of education in the promotion of human rights and democratization in the country. In general, the policy paper covered areas such as: philosophy and goals of education, participation and performance in sub sectors, management and planning, teacher development, information technology, research, financing and legal framework. This is one single most important document, which has drastically changed the direction of the education sector in Kenya, demanding the attention of all actors in education.

From the afore-going, it can be pointed out that the problem in Kenya is not the absence of well-articulated policy documents but rather the implementation of the recommendations in the existing documents.

2.2.1(k) Relevance and Quality of the 8-4-4 Curriculum

The 8-4-4-education system was aimed at introducing a practical orientation to education in order to meet the goals of equipping all learners with some basic technical and social skills to enable them venture successfully into self-employment. As is the case with primary education, the curriculum implementation has fallen short of its goals and continues to concentrate on preparing the learners for further or higher education and is generally examination oriented. Since only a small proportion of secondary school graduates proceed to university other tertiary training institutions, the curriculum and its implementation gives unrealistic and unrealizable aspirations to many of the participants at the secondary school level who do not proceed to university or the other tertiary forms of education and training.

2.2.1(l) The Basic Education, 2013

After the promulgation of the Constitution of Kenya, 2010, Acts of Parliament have been enacted to give effect to the Constitution and other enabling provisions. In summary, the Act sets out various provisions. In the first place, it seeks to promote and regulate free and compulsory basic education. Secondly, it provides for accreditation, registration, governance and management of basic education institutions. Thirdly, it seeks to provide for the establishment of the National Education Board, the Education Standards & Quality Assurance Commission & the County Education Board and for connected purposes.

2.2.2 Secondary School Education in Kenya

This is the third level in the Kenyan education system, after ECD and Primary schooling. Secondary school education caters for children in the 15-18 year age group. Secondary school education plays an important role in creating the country's human resource base at a level higher than primary education. Performance in Kenya Certificate of Secondary Education (KCSE) examination, which marks the termination of the four-year secondary education, is used for selection into university and training in tertiary colleges and professionals such as primary school teachers and entry into vocational and technical careers.

Kenya has three tiers of government secondary schools. The elite government schools, National Schools are the most prestigious secondary schools in the country. In 2004, these eighteen single sex boarding schools admitted approximately 3000 of the top primary school candidates from across the nation (Lucas and Mbiti, 2011). Relative to other schools, they have better facilities, offer a larger variety of courses, and provide a higher quality peer group. For instance as of 2007, 80 percent of teachers in National Schools had a degree compared with 68 percent in other public schools. In addition, National School teachers were twice as likely to hold advanced degrees compared to teachers in other schools. Moreover, these schools offered an average of 16 KCSE examinable subjects compared to 11 in subjects in other schools. These extra subjects were often costly or hard to offer such as German and Aviation (Lucas and Mbiti, 2011).

The almost 1,000 Provincial Schools, the second tier, admit the top remaining students from within a province. While the approximately 3,000 District Schools, the bottom tier, draw students from the district who could not gain admission into national or provincial schools. Over 100,000 students graduated from District Schools in 2008. Contrary to the situation in

primary school, the quality of private schools varies. Although there are some elite private schools, in general the schools are of lower quality than the National and Provincial Schools. In 2008 only 12 percent of secondary school graduates graduated from the 859 private schools.

Although secondary education has expanded considerably since independence, access still remains restricted with only 47% of pupils who complete primary level selected for entry into secondary level (MOEST, 2003) .The Ministry further points out that those selected represent only 27% of those eligible in this age group. Among the objectives of secondary education is the promotion of social equity through the provision of education to all Kenyans including those from disadvantaged communities and households, the girl child and the handicapped.

Overall performance in KCSE is weak. In 2008, only 25% of students scored at least a C+ on the KCSE, with girls less likely to score at least a C+ compared to boys. There were striking differences across the various school types. In 2008 the average KCSE score of students in National schools was approximately 9.6 (out of 12). In these schools 90 % of students scored at least a C+. Moreover there were no gender gaps in performance in national schools, which is very encouraging.

In contrast the average KCSE score in a Provincial School was 6.2 and only 43% of students scored at least a C+. Unlike national schools, there are small (but statistically significant) gender gaps in performance in this tier. The performance in District schools however, was appalling. The average KCSE score was approximately 4 points and merely 11% of students scored at least a C+. There were also significant gender gaps in the performance for both district and private schools. The proportion of boys achieving at least a C+ was almost twice the proportion of girls. There were also large regional disparities in the performance of students from Northeastern and Coast province. A mere 16% of students who were from Northeastern province scored at least a C+, and only 19% of students from Coast province achieved at least a C+. This compares very unfavorably to the performance of students from Nairobi and Nyanza, where 32% and 26% of students, respectively, achieved at least a C+.

While the differences in facilities, teachers and other inputs probably contributed to this difference, it is clear that these differences in performance are also driven by the different levels of academic preparation of the students. The average KCPE score of a 2008 KCSE candidate in a National school was 414 points, almost 100 points (1.5 standard deviations)

more than the provincial average of 322 and close to 150 (2.25 standard deviations) more than the district average of 266. The gap between national schools and private schools was almost as large as the gap between national schools and district schools, where the average KCPE score of a private school student was approximately 273.

Dropout rates and repetition rates provide an additional way to examine the overall quality of the secondary school system. Data from the MOE show that approximately 92 percent of the Form I class in 2004 reached Form 4 in 2007 (Ministry of Education, 2009). This was a marked improvement over the previous year where the progression rate for that cohort was 87%. As repetition rates were less than 2%, in 2003 (MOE), it is likely that much of the non-progression of students was actually driven by drop out rather than repetition rates.

2.2.1 Nature of Internal Efficiency

Efficiency is the optimal relation between inputs and outputs. An internally efficient educational system is one that turns out graduates without wasting any student-year or without dropouts or repeaters. Padmanabhan (2001), internal efficiency refers to the number of students who pass from one grade to the other and complete that cycle within the stipulated period.

According to Babalola (2003), internal efficiency is the extent to which resources made available to the educational system are being used to achieve the objectives for which the educational system has been set up. In this regard, the input into the system and the output from it needs to be measured. The inputs include classroom, teachers, furniture, textbooks, etc. and all these can be quantified as the cost per student per year. Thus, the input has to be in terms of student-years. The outputs of the educational system are the graduates from that system. One approach to the measurement of internal efficiency in education is the cohort analysis. The cohort analysis simply tells the history of a particular level of education to the time the group of students left the level. As such, it can show to what extent the educational system is able to use its raw materials (students) in the production of output (graduates). In this regard, the cohort analysis would show flow rates in the system such as the promotion rate, repetition rate and the dropout rate of students. If the system is able to see the students through the system in the shortest possible period, then the system is efficiency. In another form, an educational system is efficient if the wastage rate of the system is low.

Abagi & Odipo (1997), on their part opine that since "efficiency" implies maximizing inputs in an endeavour to produce optimum goods or services, the processes for which the available inputs are allocated and used are crucial. In a service sector like education, the processes themselves form part of the inputs. This demands that efficiency of education be conceptualized as a process as opposed to outcome. Confronting education policy challenges and options in Kenya needs systematic policy oriented research and strategic planning. More pertinently, it needs operational understanding of how terms like "efficiency" and "effectiveness "are used in education. This understanding is crucial because of the need to synchronize education policy with outputs of schooling and the demand of such products. The term "school efficiency" or "efficiency in education" features highly in debates on education. However, although it is frequently used it has never been explicitly defined. More often than not, the term is associated with learners' cognitive achievement, which is usually measured through examinations results.

Analyses of efficiency in education have generally been based on the cost at which the output is optimized. For example: if the students' mean score in national examinations is A in schools P and Q, but is achieved at a higher cost in school P than in school Q, it is concluded that the latter is more efficient than the former school.

While this kind of analysis would suffice in a closed analysis model, extra - and intra - school inputs (that is, the processes, such as official policies, attitudes towards education, classroom management, utilization of teaching/learning time, and pupils' motivation), which are also important in assessing school efficiency, would not be explained. Some studies have examined processes under which school variables work as inputs in education (Koros *et al*, 2013; Adeyemi & Akpotu, 2009; Hanushek, 2007).

As fore stated, efficiency and effectiveness in education have become part and parcel of the debate on reforms in education in both the developed and developing countries. However, the conceptualization of efficiency at various levels of education continues to vary considerably. Several issues emerge from the analysis of available literature on the issue: First, efficiency of education has been camouflaged by the desire to promote access to education by increasing education opportunities to school-age population. Many countries in Africa did focus attention on increasing resources to the education sector in a bid to achieve universal primary education (UPE) by the year 2000, a goal which to date is yet to be attained.

Countries like Kenya are now faced with the challenge of balancing the need to ensure efficiency of education and increasing access to primary, secondary and tertiary education.

Second, our knowledge about what education and school efficiency entails is limited. Not much is known about the efficiency with which various schools raise pupils' learning and/or achievement. But as the official budgetary allocation to education shrinks, inefficiency is a problem that needs to be understood and solved (Abagi & Odipo, 1997)

Third, as poverty increases and the level of investment in education declines, policy makers and planners are looking for innovative and viable strategies for improving the operation of the education system and making education promote national development. A question which has continuously confronted policy makers is how best to use available resources more efficiently in order to make education achieve its objectives at household and national levels. It is important to note that if efficiency is not well understood, it would be difficult for policy makers, planners and stake-holders to know and focus on critical elements which could boost effectiveness. As debates on constituents of efficiency in education continue, our knowledge about this concept has to go beyond examination results and include rates of repetition, drop-out and completion.

In Abagi and Odipo's study (1997) which sought to investigate efficiency of primary schools in Kenya, findings reveal that both school heads and teachers had a clear perception of an 'efficient school system'. In their view, in an 'efficient school' pupils get good points in the national examination. This means that a school's mean score in this examination is the clear measure of efficiency in our education system. The teachers' emphasis on examination results, as an indicator of school efficiency, is a pointer of the existing policy and philosophical gap in education. The emphasis reflects the reality of a situation, in which parents are indifferent to the curriculum, but more concerned with the steps schools and teachers take to improve children's good performance in national examinations. Similarly, the Ministry of Education and the politicians send direct or indirect signals to schools that children must pass the national examination as a sign of a school's efficiency or quality.

Educational efficiency is divided into two broad categories: external efficiency and internal efficiency. Psacharopoulos and Woodhall (1995) explain that external efficiency of schools may be judged by how well schools prepare pupils and learners for their role in society, as indicated by the employment prospects and earnings of students. Such measures depend on

external criteria rather than on results entirely within the school. Internal efficiency is viewed as the capacity of the educational system to turn out graduates at any level in the most efficient way, which is, without wastage, stagnation and repetition. It is also seen as the ability of the educational system to meet educational goals and objectives. Internal efficiency deals with the relationship between input and out puts within the education system or within individual institution. Output in this case is measured in relation to internal institutional goals rather than the wider objectives of the society. Internal and external efficiency of educational institutions are closely linked because the skills and attitudes developed must be of value to the society as a whole for the education system to be efficient (Psacharopoulos & Woodhall, 1995).

Psacharapoulos (1980) defined internal efficiency of an education system as the ability of an education system to turn out its graduates at any level in the most efficient way, without wastage, stagnation or repetition. An education system is internally efficient if maximum outputs are obtained from a given minimum input.

In this perspective, the meaning of efficiency has been based on a closed system model of analysis which deals with matching inputs (for example, availability of textbooks) and outputs (number of students completing, examinations scores) in education.

Wastage in the educational context refers to human and material resources spent or 'wasted' on pupils who have to repeat a grade or who drop out of school before completing a cycle. It denotes the inefficiency of a school system and refers also to the wasted opportunities for these children to develop the knowledge, skills attitudes and values they need to live productive lives and to continue learning (UNESCO, 1998). Educational wastage therefore exists in the following forms: (a) failure of the system to provide a universal education; (b) failure to recruit children into the system; (c) failure to hold children within the system; (d) failure of the system to set appropriate objectives; and (e) inefficiency in the achievement of such objectives.

On the contrary, some writers argue that in educational terms, it is not correct to consider dropouts and repeaters as wastage, because in their school career they have received a considerable amount of education. So, from an economic evaluation point of view, matured school leavers and repeaters may contribute to the economy. On the other hand, there are some that disagree that it is undeniable from the education evaluation point of view; both

dropout and repetition contribute heavy costs in education. When a school fails or is inefficient in achieving educational objectives, it is inevitable that there is wastage of human learning, school buildings, equipment and other instructional materials as well as the labour of teachers. An internally efficient school therefore is one which turns out graduates without wasting any student year (Pitan, 2012). Unfortunately, in reality educational systems operate inefficiently (Salerno, 2003). The most frequently suggested reason why children and adolescents in developing countries do not go to school or leave school early is that there are no schools to go to, or that there are not enough places in them. In addition the cost of attending school during periods of manpower shortage may be a determining factor, particularly in agricultural areas. Marriage customs may encourage early marriage and childbirth. Grave illness is also an important factor. Many children leave school early because they, or their parents, do not find what is taught at school relevant to their needs in future employment. Others leave because they are needed as helpers at home or on the farm. Finally, many parents feel that it is more important for their children to receive traditional education and training on the job rather than spend their time in classroom.

Indicators of internal efficiency are graduation and wastage rates (Pitan, 2012). A major aspect of educational wastage occurs when students leave the educational system prior to the termination of an educational cycle. Dropping-out in this sense is not related to the existence or duration of compulsory schooling and therefore leaving school before the minimum age is not regarded as dropping out. However, those who leave before the end of a cycle, but who have satisfied the compulsory education laws by staying at school until they have reached the minimum age, would be regarded as dropouts; and in countries which do not have compulsory education, a child who left school before completion of the stage in which he had registered would be regarded as a dropout. This definition conflicts to some extent with more general notions of premature leaving, interpreted as leaving before the minimum age. The term may also be applied to students leaving at the end of the compulsory period when a further period is considered desirable even though not required. A major aspect of educational wastage is the repetition by a student of a year of work in the same class or grade and doing the same work as in the previous year. This may occur at any level, from elementary to university.

Education economists understand internal efficiency as the amount of learning achieved during school age attendance, compared to the resources provided. The percentage of

entering students who complete the course is often used as its measure (Pitan, 2012). Internal efficiency has been described as the extent of the ability of educational systems to minimize costs and reduce wastage resulting from repetitions, dropouts and failures. Internal efficiency is also highly linked to issues of resource allocation and utilization. A system of education is therefore judged to be internally efficient if there is optimal enrolment, no wastages (dropouts and repetitions), reduced unit cost and presence of optimal class size as a result of the optimal enrolment (Salerno, 2003). Internal efficiency of schools and other educational institutions is achieved when educational resources are utilized in an optimal way (ibid). This may imply that there should be optimum enrolment of students in educational institutions so that the resources can be fully utilized. The resources used in education should be properly utilized by the enrolled number of students so that they can reap maximally.

This study has explored the role of the teacher in the school efficiency process.

2.2.2 Implications of Current Measures of Efficiency in Schools

Psacharopolous and Woodhall (in Koros *et al*, 2013) suggest that for us to assess the internal efficiency of education system, we need a statement of its aims and objectives together with a range of measures of output that reflect those various objectives and success with which they are achieved. Measures so far used include examination scores, cognitive tests in a wide range of subjects, the length of time needed for pupils to reach a required standard, scores on standardized tests of reading ability and of language, mathematics and science skills.

The internal efficiency of the school system can be measured through the student flow analysis method (Pitan, 2012). It analyses mainly the three things that happen once a cohort enters the school cycle: students may be promoted to the next grade; students may repeat a grade; or students may drop out of the school system completely. Such data can then be used to calculate wastage ratios. In other words, the assessment of internal efficiency and wastage in education uses techniques similar to those from cohort analysis in demography. A cohort is defined as a group of persons who jointly experience a series of specific events over a period of time. A school cohort is therefore a 'group of pupils (students) who join the first grade of a given cycle in the same school year, and subsequently experience the events of promotion, repetition, dropout or successful completion of the final grade, each in an individual way. There are three ways to analyze educational internal efficiency by means of the cohort student flow method, depending on the type of data collected. These methods are: true cohort, apparent cohort, and reconstructed cohort analyses.

The ideal way to obtain a precise assessment of wastage is through the use of the true cohort method, which involves either longitudinal study in monitoring the progress of a selected cohort of pupils through the educational cycle, or through retrospective study of school records in order to retrace the flow of pupils through the grades in past years. This method, however, is more costly and time-consuming and requires a good and reliable school-records system based on some sort of individualized pupil/student information. For this reason, this method is not yet generalized. In the absence of individualized pupil/student information internal efficiency in education can be assessed based on data for repeaters by grade together with enrolment by grade for at least two consecutive years using either the apparent or reconstructed cohort method.

The apparent cohort method is applied when there is no data on repeaters. Then the enrolment in the first grade in a particular year is compared with enrolment in successive grades during successive years and it is assumed that the decrease from each grade to the next corresponds to wastage.

This method, the most commonly used so far, produces much approximated estimates of drop-out and its main weakness is that it assumes that pupils can only be promoted or else drop-out of the school system. Repetition as one determinant of wastage is overlooked. This method is nevertheless appropriate for countries applying automatic promotion. A more practical and commonly used method is the reconstructed cohort method which places less demand on the availability of detailed data over time. To apply this method, data on enrolment by grade for two consecutive years and on repeaters by grade from the first to subsequent year will be sufficient to enable the estimation of three main flow-rates: promotion, repetition and drop-out. Once obtained, these rates may be analyzed first of all by grade to study the patterns of repetition and drop-out. Then, they are used in a reconstructed pupil-cohort flow to derive other indicators of internal efficiency.

How well these indicators describe the way in which a cohort actually progresses through a cycle of education depends of the validity of the assumptions on which this model is based and the reliability of the statistical data available for estimating the flow rates. The methodology of the reconstructed cohort flow model is based on the fundamental assumption that for pupils enrolled in a given grade at a certain year, there could be only three eventualities: (a) some of them will be promoted to the next higher grade in the next school

year; (b) others will drop-out of school in the course of the year; and (c) the remaining will repeat the same grade the next school year.

Based on calculated flow-rates, a cohort of a thousand pupils through the educational cycle may be simulated, with a number of important assumptions: first, that there will be no additional new entrants in any of the subsequent years during the life-time of the cohort, other than original cohort of a thousand pupils. Secondly, at any given grade, the same rates of repetition, promotion, and drop-out apply, regardless of whether a pupil has reached that grade directly or after one or more repetitions (hypothesis of homogenous behaviour). Thirdly, the number of times any given pupil will be allowed to repeat must be well defined. Fourthly, flow rates for all grades remain unchanged as long as members of the cohort are still moving through the cycle. Inputs of an education system from an economist's view include the structures and facilities, teacher quality, teaching and learning provision, curriculum, textbooks, pupils' background and entry behavior among others. Some studies already conducted focused on the various inputs but few have considered teacher characteristics (Pitan, 2012; Akintayo, 1990). This study therefore intends to explore the effect of teacher characteristics on students' performance at KCSE examinations and transition to tertiary institutions as a measure of school's internal efficiency.

2.2.3 Contributors to Inefficiency

Other than teacher factors, school-based factors and home- based factors are known to contribute to inefficiency. School-based factors likely to lead to educational wastage include large classes, teaching and learning methods, learning environment, syllabus coverage, absenteeism, poor academic performance and quality of teachers.

Teaching large classes have been found to adversely affect instructional practice of teachers as well as their motivation and morale (Shamim, 1998), Routine work like preparation, marking, homework as well as class work has proved to be very difficult for teachers. This situation has further been aggravated by the fact that pre-service training rarely prepares teachers to handle large classes (Valerien, 1991). Naidu, Neeraja, Ramani, Shivakumar, & Viswanatha (1992) point out that most teachers cannot handle the varied abilities and attitudes of many students in large classes and often felt that students are under-involved and disengaged from learning. There is also evidence that opportunities for effective teaching are

fewer in large classes compared to small classes because more time is spent maintaining discipline and class control (Blatchford, Russell, Bassett, Brown, & Martin; Shamim, 1998).

Similarly, students learning in large classes are affected physically, socially and emotionally. Due to large numbers in class, many students are crammed together in one small area; this makes them uncomfortable and thus unable to do their class work well. Many students also find it difficult to establish interpersonal skills and as such end up 'not fitting in'. Further, it becomes difficult to motivate students in large classes and as a result many rarely participate in active learning processes. Cotton (1996) who did a review of literature to explore the impact of school climate and class size on students performance found out that students in large classes had more socio-behaviour problems, participated less in class and extra-curricular activities, had lower attendance rate, were less positive towards school and had a higher percentage of drop-out rate compared to students in small class sizes.

Other school based factors contributing to educational wastage include: over emphasis on examination, poor school administration, teachers' conduct at place of work, distance to school, weather patterns and low career aspirations, among others.

A study conducted in Kenya by Okuom, Simatwa, Olel and Wichenje (2012) to assess factors that contribute to repetition and drop-out of pupils in Nyando District revealed the following: destruction of school infrastructure after floods, high absenteeism from school, low syllabus coverage, loss of learning hours after the floods and poor performance.

Other studies done in Kenya include Kamau (2011) and Gachungi (2011) whose aims were to determine the nature, trend and factors that led to educational wastage in Murang'a District and Nyeri Municipality respectively. They revealed school-based factors such as indiscipline, fee-problem, poor academic performance, teenage pregnancies and boys joining outlawed gangs.

It is generally believed that the family background is the most significant factor in a student's failure or success in school; and that quality of the relationships within the student's home environment has important effect on school performance. Literature on home-based factors leading to educational wastage (Drummond & Stipek, 2004; Nayak & Karmakar, 1994) reveal a number of variables within the family background that have strong correlation to students' successes or failures. Those variables include: family structure (socio-economic

status, single parent or both parent families), parents' level of education, parenting style and parental involvement in the child's education, among others.

There is empirical evidence which suggests that children from high and middle socio-economic status families are exposed to more conducive learning environments at home because of the provision and availability of resources which are supportive to learning. Parents from such socio-economic status have also been found to have keen interest in their children's education. On the other hand, children from deprived families have fee problems, often have to take time-off from school in order to work and do not have supportive structures for learning at home. In fact, many parents hardly get involved in their children's education; most of them believe that their role is limited to meeting their children's basic needs such as providing clothing, emotional support and socialization (Drummond & Stipek, 2004).

A study conducted in Tipura by Nayak and Karmakar (1994) to map out educational development and wastage revealed that of the children who dropped out of school, 72% came from families with low incomes (below 1000 Rupees), 50% had illiterate parents and 64% came from large families.

Similarly, studies done in other developing countries, for example Nigeria (Barineka, 2012) and Kenya (Gatabu, 2012) shed light on parental characteristics which impact negatively on student's performance. They include: parental dominance, parents pampering children to an extent of spoiling them and expecting too much from their children.

It is therefore imperative that all educational stakeholders recognize the impact of school and home-based factors on the success or failure of students. There is also need to identify and eliminate school and home characteristic that contribute to educational wastage and to identify and nurture those that enhance positive academic outcomes. What also emerges is the vital role parental participation plays in a child's success.

2.2.4 Forms of Internal Efficiency

Salerno (2003) describes four forms of internal efficiency; they are technical efficiency, allocative or price efficiency, economic or overall efficiency and scale efficiency. Technical efficiency is a measure of the extent to which an institution efficiently allocates the physical inputs at its disposal for a given level of output. Technical efficiency captures the extent to

which physical inputs are efficiently allocated. Allocative or price efficiency measures the extent to which inefficiency occurs because an institution is using the 'wrong' combination of inputs given what they cost to purchase. It is measured, for each institution being evaluated, by the distance between the isoquant and isocost. An isoquant (derived from quantity and the Greek word *iso*, meaning equal) is a contour line drawn through the set of points at which the same quantity of output is produced while changing the quantities of two or more inputs. An isocost line (equal-cost line) is a Total Cost of production line that recognizes all combinations of two resources that a firm can use, given the Total Cost (TC). Moving up or down the line shows the rate at which one input could be substituted for another in the input market.

Economic or overall efficiency considers both technical and allocative efficiency and captures the extent to which each institution lies off the isocost. Scale efficiency is frequently used in institutions of higher learning. Many empirical studies of higher education costs frequently seek to measure the extent to which institutions are operating at increasing (decreasing) returns to scale, which in turn helps to determine optimal size of an institution. However, since deviations from optimal size are clearly sub-optimal, they can be regarded as inefficiencies.

2.3 Teacher Qualification and Internal Efficiency in Secondary Schools

Teachers' level of training can be looked at in terms of teacher's academic and training levels, teaching experience, and job performance. Darling – Hammond (1998), defines a well-trained teacher as one who is fully certified and holds the equivalent of a major in the major subjects taught. The level of performance, both academic and non-academic performance, in any learning institution is connected to the level of training of its teachers. Teacher quality and its impact on students' academic outcomes has been an important issue in the greater educational debate (Whitcomb, Borko & Listen, 2007). Many educationists and studies are more concerned now than ever before on the effect teacher quality has on a teacher's competence and productivity. Quality of teachers encompasses the level of academic qualification, professional training, commitment as well as appropriate terms of service (Republic of Kenya, 1999).

Findings from the University of Texas at Dallas (UTD) Texas Schools Project gathered individual-level data on more than 10 million Texas students in grades K-12 from 1990 to

2002. By comparing the achievement of similar students within the same schools but assigned to different teachers, researchers were able to isolate the effects of the teacher on student achievement. In their analysis of these data, Rivkin, Hanushek, and Kain (2005) found that teacher quality differences explained the largest portion of the variation in reading and math achievement. As in the Tennessee findings, Jordan, Mendro, and Weerasinghe (1997) found that the difference between students who had three consecutive highly effective teachers (defined as those whose students showed the most improvement) and those who had three consecutive low-effect teachers (those with the least improvement) in the Dallas schools was 34 percentile points in reading achievement and 49 percentile points in math. From these studies, a number of teacher qualities were found to relate to higher student achievement. The first one was content knowledge. Effective teachers have a solid background in the subject area they teach as measured by a college major or minor in the field. Secondly, effectiveness comes with teaching experience. Teaching experience, typically five years or more, produces higher student results. Some studies further suggest that the effect of inexperience can be a significant obstacle to student achievement. Teacher training and credentials was the third indicator of effectiveness. Certified teachers are more effective than uncertified, particularly in mathematics.

In general, teachers with emergency certificates don't perform as well as those with traditional certification. The fourth teacher quality was the overall academic ability. Teachers with stronger academic skills perform better, whether these skills are measured by teachers' SAT or ACT scores, grade point average or selectivity of the college they attended.

Other scholars have carried out research on the impact of teacher training on student achievement in academics. Jacob & Lefgren (2004) found that marginal increases in in-service training have no statistically or academically significant effect on either reading or math achievement, suggesting that modest investments in staff development may not be sufficient to increase the achievement of elementary school children in high poverty schools. Harris &Sass (2006) studied the effects of various types of education and training on the ability of teachers to promote student achievement. They found that there is no evidence that either pre-service (undergraduate) training or the scholastic aptitude of teachers influences their ability to increase student achievement.

In the last six years, eight studies of teacher productivity in the U.S. have been conducted. Results of one study on elementary mathematics are about evenly split between positive and

insignificant effects of teacher experience on student achievement. In contrast, all but one of the eight recent studies that separately analyzed elementary reading found that student achievement is positively correlated with teacher experience. At the middle school level the findings are essentially reversed. Studies that include middle school consistently found positive effects of teacher experience on mathematics achievement whereas the findings for the effects of experience on middle school reading achievement are evenly split between positive and insignificant correlations. Three studies of high school teachers yield conflicting results. Aaronson, et al. (2007) and Betts, et al. (2003) found no significant correlation between teacher experience and student achievement while Clotfelter, et al. (2007) found strong positive effects. One difference in these studies is that Clotfelter, et al. utilizes course-specific end-of-course exams while the other studies rely on more general achievement exams. Except for positive correlations between possession of a masters degree and elementary mathematics achievement found by Betts et al. (2003), Dee (2004) and Nye, et al. (2004), recent research indicates either insignificant or in some cases even negative associations between possession of graduate degrees by a teacher and their students' achievement in either mathematics or reading.

In contrast to experience and possession of advanced degrees, the pre-service undergraduate training of teachers has received much less attention in the recent literature.

Two studies, Aaronson, et al. (2007) and Betts et al. (2003) consider the effect of college major on later teacher productivity, but fail to find a significant relationship between undergraduate major and the impact of teachers on student achievement. Three studies by Kane, et al. (2006) and Clotfelter. et al. found that inclusion of Teacher effects greatly reduces the potential bias associated with teacher attrition. Clotfelter, et al. considers general measures of the quality of the undergraduate institution attended and found little or no relationship to teacher productivity in elementary or middle school. In another study, Clotfelter, et al. (2007) does find a positive and significant relationship between the prestige of the undergraduate institution and productivity of high school teachers. Kane, et al. (2006) also analyzed the relationship between the teacher's undergraduate academic achievement and teacher productivity in elementary and middle school. The study found no significant relationship between the teacher's undergraduate academic achievement and subsequent teacher performance. It may be concluded from these studies that there are certain teacher

characteristics that may affect the achievement of students; however, the effect of teacher academic and professional training still needs to be investigated.

Fullan (2007) a renowned educational reformer of our time says that educational change depends on what teachers do and think and that classrooms become effective when quality people are recruited to teach and the work place re-organized to energize and reward teachers' accomplishments. In fact, low achievement of pupils in schools is attributed to teachers' inadequate knowledge of subject matter (Report by Uwezo East Africa, 2013). A study done by Mji and Makgato (2006) not only support Uwezo's views but further reveal that outdated practices used by teachers and lack of basic content knowledge result in poor teaching standards; and that poor teaching standards were exacerbated by the large number of unqualified teachers who teach in overcrowded and ill-equipped classrooms. They are concerned that a combination of these factors has produced a new generation of teachers who perpetuate the cycle of mediocrity.

A study conducted by Akinsolu (2010) in Nigeria to investigate how teachers affected students' performance in secondary schools highlight the significant role a teacher's qualification has on students' academic outcomes. Findings from the study reveal students learn more from teachers with strong academic skills and with degrees (bachelors or masters) in the subjects they teach than they do from those without. Akinsolu's study further reveals that unqualified teachers affect the quality of learning delivery in schools. Akinsolu's findings concur with those of Darling-Hammond (2000), Brewer (1995) and Ferguson (1991) who opined that the quality of the teacher was the most influential determinant of students' academic performance in secondary schools.

There are studies which have explored the effect of teacher influence on internal efficiency of schools. Adeyemi and Adu (2012) for example, examined the influence of teacher quality on internal efficiency of primary schools in Nigeria. Their findings reveal that indeed teacher quality had a significant relationship with internal efficiency of schools and that teacher qualification was the best predictor of teacher quality. This study sought to measure the effect of teacher qualification on students' outcomes in secondary schools in Kenya.

The Davy Koech Report(Republic of Kenya, 1999) which informed major reforms in Kenya's education system since the introduction of the 8-4-4 system of education aver that the quality of education depends largely on the quality of teachers. Quality of teachers is

therefore not only important in improving and sustaining quality of teaching and education in general but in the successful implementation of educational change.

In Kenya, minimum entry level for those training to be secondary school teachers is grade C at diploma level and C+ at undergraduate level. These entry levels are quite low compared to entry levels for other professional courses such as engineering, medicine or commerce. Pre-service training is broad and general, wanting in depth and specialization. Recruitment is also wanting because it does not give due consideration to interest and character of potential teachers (Wanzare, 2013). In fact, most teacher trainees have little interest in teaching as a career. These are indeed serious gaps in teacher quality which are likely to impact negatively on students' academic outcomes.

Teacher quality in Kenya is being addressed through various in-service programmes. The in-service policy aims to guide the country in ensuring that all teachers and teacher educators have access to and are provided continuous opportunities to improve their professional development (Sessional Paper no.1, 2005). Goldhaber and Brewer (1996) who investigated whether higher academic qualification and professional development had any impact on students' outcomes found out that only those students whose teachers had Masters Degrees in science subjects registered improved test scores. This could suggest that increase in a teacher's content knowledge as seen in the masters degree in science had a positive impact on student's performance in that particular subject. This study investigated what teachers consider as academic qualification and the impact of academic qualification on students' performance in Kericho County.

2.4 Teacher Work Experience and Internal Efficiency in Secondary Schools

There has been general concurrence among many scholars in the area of education reforms in the developed world that teachers' test-based productivity does not improve after their first few years in the classroom. Such arguments have been discussed severally and used to strongly advocate for recent changes in teacher personnel policies, such as those regarding compensation, transfers, and layoffs. Following a few other recent analyses (Harris & Sass, 2011; Wiswall, 2013; Ladd & Sorensen, 2013), researchers John Papay and Matthew Kraft examined this claim about the relationship between experience and (test-based) performance. In their case, the authors compared the various approaches with which the productivity returns to experience have been estimated in literature and put forth a new one.

Papay and Kraft identified three previous approaches, characterized as types of models, which have been employed to address this issue.

First, the Censored Growth Model (Rockoff, 2004). Relying on previous research showing that teachers don't exhibit productivity increases after 10 years in the classroom, the general idea here is to estimate the "year effects" using teachers with more than 10 years in the classroom (based on the assumption that these teachers will exhibit no experience effects), and then using these estimates to isolate experience effects among teachers with less than 10 years in the classroom. If any gains exist after the 10^{th} year of teaching experience, then this would generate bias in estimated experience effects, resulting specifically in understating the effects.

Secondly, the Indicator Variable Model (Harris & Sass, 2011), put simply, this approach sorts teachers into experience categories - for example, 0-5, 6-10, 11-15, 16-20, 21 or more years -- instead of the normal continuous experience variable, and then estimating the "year effects" using variation between teachers in each "band" (in a manner similar to the censored growth model, which does the same thing with teachers who have more than 10 years of experience). The disadvantage to this approach is that it operates on the assumption that teachers do not experience productivity gains *within* the bands. To the degree this assumption is violated, experience-driven productivity gains are again conflated with year-to-year transitions, and returns to experience are therefore underestimated.

Thirdly, Discontinuous Career model (Wiswall, 2013).This approach is quite different from the other two. It focuses on a subset of teachers: those who leave the profession and then return at a later date, for example, due to further studies, career change or medical reasons. Because of the interruptions, these teachers' experience profiles are not collinear with year effects (i.e., the relationship is not 1:1), thus allowing researchers to address the problem of conflating experience and year. It is also, however, subject to bias if first, teachers who leave and return are not representative of all teachers (external validity); and/or second, leaving and returning itself has an impact on productivity gains (internal validity).

Papay and Kraft proposed a fourth approach, one that uses the full sample of teachers (not just those with non-standard career patterns), and makes different assumptions about the relationship between experience and year. It is referred to as the Two-Stage Model. In the first stage, the year effects are estimated by, treating as a constant the improvement of each

individual teacher over time (that is, in other words, omitting teacher fixed effects), and instead modeling the relationship between year and productivity, controlling for experience. In the second step, the "year effects" estimated in stage one was incorporated as a control, thus enabling isolation of the productivity gains accruing specifically to experience. This also, however, requires assuming that each cohort of new teachers has the same initial effectiveness as all previous and subsequent cohorts in the data - i.e., that new teacher productivity does not vary over time.

In order to compare these four approaches, specifically the degree to which they violate the assumptions upon which they are based and whether or not such violation generate bias in the estimation of the experience/productivity relationship, Papay and Kraft used both simulations and empirical data. Their results can be summarized broadly as follows:

First, there is evidence that teachers' productivity, particularly in mathematics, improves most rapidly during their first few years, but that improvement continues in the later years. This violates the big assumption of the censored growth model and biases productivity returns estimates downward.

Secondly, the results of the indicator variable model are quite sensitive to the specification of the experience "bands." Using narrower "bands", for instance, fragmenting 5-10 year band into 5-7 and 8-10 years, the returns to experience become larger, suggesting that there may be bias from the assumption of no within-band productivity gains.

Thirdly, the experience/productivity relationship seems to vary meaningfully between teachers with standard and nonstandard career paths. This challenges the interpretation of the results of the discontinuous career model as being valid for all teachers.

Fourthly, there is some evidence that the main assumption of the two-stage model proposed by Papay and Kraft (that new teachers' initial productivity does not change over time) is violated, particularly in Reading. However, the magnitude of the resulting bias appears to be moderate.

These results as a whole indicate that teacher productivity improves most rapidly during teachers' first years, but they also suggest that improvement continues beyond five years, and perhaps even throughout the late career years, especially in Mathematics. These results are consistent with previous research in finding that the productivity returns to experience are

concentrated in the first few years in the classroom. Further, there is a general consensus among researchers and educationists that there exists a positive relationship between teacher's experience and students' academic performance. Similarly, research findings by Prieto and Altmaier (1994) indicate a significant positive relationship between prior training and previous teaching experience with teacher self-efficacy. Findings from their study reveal that graduate teaching assistants with prior training and teaching experience reported higher self-efficacy than their counterparts who did not. Although Prieto and Altmaier's study was done in the context of higher learning institutions, it nonetheless shows that teachers' effectiveness increase with years of teaching. Similarly, Woolfolk-Hoy and Spero (2005) who investigated changes in teacher self-efficacy during the early years of teaching found significant increases in teacher self-efficacy during student teaching, but a significant decrease the first year of teaching. They related this decline to the fact that novice teachers realized that teaching was beyond method and strategy.

Research has also been consistent in finding positive correlations between years of teaching experience and higher student achievement. Studies show that experienced teachers produce higher student test scores. A comprehensive analysis by Greenwald, Hedges &Laine (1996) examined data from 60 studies and found a positive relationship between years of teacher experience and student test scores. Similarly, the UTD Texas Schools Project data showed that students of experienced teachers attained significantly higher levels of achievement than did students of new teachers (those with one to three years of experience) (Rivkin, Hanushek & Kain, 2005). Further, it has been shown that schools with more inexperienced teachers have higher drop-out rates. In a related finding, an analysis of math achievement and dropout rates in a sample of California high schools found that schools whose dropout rates were in the highest 10 percent had 50 percent more new teachers than did schools in the lowest 10 per cent (Fetler, 2001)

While the debate on the effect of teacher experience is not conclusive, most studies seem to agree that the length of teaching experience makes the teacher more efficient and subsequently more productive. Most occupations consider employees' years of experience a relevant factor in human resource policies such as compensation systems, benefits packages and promotion decisions. The reasoning behind such policies is based on the belief that experience gained over time enhances knowledge, skills and productivity of workers (Ayibatonye & Ikechukusu, 2014; Omotoso, 2007; Ezekweseli, 2006). Looking at Nigeria,

though the issue of student's performance in relation to the teachers' level of training, characteristics and competence has remained a contested issue, there is a wide gap between the demand and supply of trained teachers in Nigeria (Esuh,2013). This has opened up educational institutions in Nigeria to teachers with no required academic and professional training.

Findings from this study agree with previous findings (Omatayo, 2014; Agbatogun, 2010) which claim that teaching experience positively correlate with higher students' achievements; and that the length of teaching experience is a consistent predictor of higher test scores. Agbatogun (2010) further claim that non-experienced teachers had negative impact on students as reflected by high drop-out rates and lower academic achievements. However, while the aforementioned claims could be true, Omatayo (2014) and Agbatogun (2010) are quick to caution that the length of service put in by a teacher does not guarantee quality experience and delivery. They opine that a teacher's productivity is determined by how best he/she is able to apply and display the proficiency acquired from training. The two researchers further identify other teacher characteristics such as salary, contentment, passion for students and interest in the profession which are likely to make a teacher more productive.

These findings agree with those of Safiya and Adegbemile (2014) who assert that teaching experience improves teachers' teaching skills and that students learned better when taught continuously by the same teachers. In the same breath, Ayibatonye and Ikechukusu (2014) opine that students taught by teachers with many years of teaching experience were better than those taught by teachers few years of experience. On teachers' experience, Gibbons et al., (1997) establish that teachers' experience and student achievement were directly related since the teachers have mastered the content and acquired classroom management skill to deal with different kinds of classroom problems. Adeyemi (2008) said that teacher experience and competence were the prime predictors of student's performance in all subjects in secondary schools in Ondo State, Nigeria. The findings of Kaur (2004) stated that in Singapore the problem of teaching Mathematics needed properly trained teachers / educators and recommended that the Ministry of Education equip mathematics teachers with necessary skills through in-service courses.

Findings from a number of studies (Wabuke, Barmao & Jepkorir, 2013; Akinsolu, 2010) indicate that teachers' years of experience is a measure of quality and thus imperative in the achievement of students' academic performance. These findings also support those of

Wanzare (2013) who advocate that experienced teachers need to be trained and retained in schools because learners achieve more when taught by them.

Wabuke *et. al*,(2013) in their study conducted in Kenya to investigate the influence of teacher experience on performance in Biology reveal that both teachers and students rated highly teachers with more years of teaching because they were considered to possess a wide range of knowledge which enhanced their performance at subject level. Kenya, in response to the demand for trained teachers, expanded her training of secondary school teachers between the years 2005-2009 (Republic of Kenya, 2010).

This study did not restrict itself to experience in any specific subject but collected stakeholder views on the influence of teacher experience on the internal efficiency of public secondary schools in Kericho County. The moderate levels of internal efficiency in Kericho County secondary schools could suggest that there is a gap in the demand versus supply of qualified and experienced teachers.

2.5 Teacher Workload and Internal Efficiency in Secondary Schools

Workload is the number of times a task has to be completed multiplied by the amount of time taken to complete that task. Total teacher workload can be defined as the sum of all workloads for the individual tasks. Under these terms, in order to address teacher workload and release more time to teach or take additional activities, either the number or range of tasks to be completed need to be reduced or re-balanced; or the amount of time it takes to complete these tasks be reduced or both. Reduction of it would mean increased efficiency of teachers in conducting elements of their jobs (Pricewaterhouse Coopers Report, 2004).

Studies that have focused on what constitutes teachers' workload have found that 77% of the teachers surveyed cited record keeping and clerical work, co-curricular activities and guidance and counseling as some of the work they undertake over and above teaching. A substantial number of teachers mentioned attending meetings as part of their workload. As a general rule most teachers accept meetings as a necessary aspect of their job. The most common concern expressed about meetings is that there are too many, and they are usually held at the end of the day when teachers are tired and stressed. On average, teachers spend 2 to 3 hours per week in meetings. Staff meetings take an average of 1 hour per week; however, for 35% of teachers it is more than 1 hour, but for 30% it means spending less than 30 minutes participating in such meetings (Canadian Teachers' Federation, 2003).

As to whether non-teaching responsibilities affected their efficiency, 79% of the teachers said these activities lowered their morale in core activities (Mohammad, Musarrat, Abdul, Khansa, & Akhtar, 2011).

On the one hand, Douglas McGregor's theory X of motivation (in which he assumes "employees inherently dislike work and will attempt to avoid it, whenever, possible. They must be coerced, controlled, or threatened with punishment to achieve desired goals") supports the notion of "management by stress". Workload is one positive way to enhance stress level on employees (Weissman, 2001).

On the other hand, work related stress has negative impact on the performance and health of employees (Mackay, 2004). HSE report (UK) describes that work-related stress costs UK employers about £353 million to £381 million per annum, according to the prices in 1995-96 (Jones, 2003) and the cost of number of days lost due to stress is almost double of this figure. Previous research identifies six variables (involving many elements) affect performance of employees (Yang, 2004). Workload is one of them. The empirical examination strengthen the hypothesis that workload has significant impact on the performance of employees (Yang, 2004).

Belliveau, Liu and Murphy (2002) single out class size as one of the major measures of teacher workload. The question that is often raised with regard to this is whether larger class sizes hurt teachers' efficiency? This concept has been debated by several educators and researchers from diverse philosophical perspectives. While studies by Colby (2000), have found a relationship to exist between class size and teachers efficiency, those of Pennycuick (1993) have found no significant relationship between the two variables. Most educational research has confirmed that small classes do yield significant benefits for students, particularly in the early schooling, but it appears that achievement gains are greater when classes contain fewer than 20 students, and that students whose classes are small in the primary grades retain their gains in elementary, middle and high school. While small classes benefit all types of students, much research has shown that the benefits are greatest for disadvantaged students with special learning problems (Biddle & Berliner, 2002).

Research and common sense generally suggests that smaller class size can help to improve the quality of the classroom experience for both the teacher and the student. For the student it should mean more individual attention and for the teacher it should mean more time to devote

to the needs of the individual student. This increase in individualized attention should result in a classroom where students are better able to learn and master the academic, teamwork and personal management skills they need to be successful in our modern knowledge-based economy. Better skills should also mean higher student achievement for all students and this should lead to a decrease in the number of students who require special education services, now and in the future. The research conclusions about the issues of class size are as clear-cut as any in education. Not only do substantial reductions in class size result in improvements in student achievement, there is also evidence that it boosts teachers' morale and job satisfaction (Scherer, 2002).

Teacher workload is an issue which has caught the attention of educationists both at research and policy making levels. It not only affects the teacher's performance but also recruitment and retention in the education sector. A study on teacher workload done in the UK by Price-waterhouse Coopers and commissioned by Department for Education and Skills (DfES) in 2001 led to the teacher workload agreement which set out a series of reforms aimed at addressing teacher workload issues. The reforms were as follows:

a) The first reform (September 2003) exempted teachers from administrative and clerical tasks including bulk photocopying, managing pupil data, chasing absences and producing class lists.
b) The second reform (September 2004) set limits on the extent to which teachers were expected to cover for absent colleagues. Initially the limit was 38 hours a year.
c) The third reform (September 2005) stipulated that teachers be given 10% of their normal timetabled teaching time for planning, preparation and assessment.

The same study also identified the reasons behind increased teacher workload. They include: routine non-teaching tasks, student discipline issues, pupil behavior and welfare issues, extra-curricular activities, professional development programs and curriculum reforms, among others.

Teacher workload has been found to affect teacher's productivity and more specifically students' academic outcomes. A study carried out in New-Zealand to map out teacher workload problems revealed that more time spent on administration and curriculum development adversely affected the quality of their classroom teaching, lesson preparation as well as extra-curriculum activities (Ingrason, Kleinhenz, Beavis, Barvica, Cathy & Wilkinson, 2005). The study also revealed that increased teacher workload affected

emotional and physical health of teachers – it affected friendships, relationships, family life and leisure activities. In addition, the study identified a number of workload issues which include the number of hours worked, lack of control/ownership, and effective use of staff.

Teachers without management responsibilities were found to work an average of 52 hours per week during term time. Middle and senior managers worked more hours 18 than teachers (56.2 in primary schools, 58.6 in secondary schools). Head Teachers worked the highest number of hours (60.8 in secondary schools, 58.9 in primary schools). Teachers and head teachers were found to work more intensive weeks than other comparable professionals and managers. Over the course of a year, teachers' hours of work were comparable with those of other managers and professionals, but those of Head Teachers were greater.

Some head teachers, senior teachers and teachers reported perceptions of lack of control and ownership over their work. This was largely because they felt compelled to complete so much documentation and 'paperwork', which, in their view, did not directly relate to teaching and learning and could be done by support staff.

The investigators found that many routine non-teaching administrative tasks in schools were being carried out by teachers. The possible solution to this – employing more non-teacher support staff – was being impeded by several factors. One of the factors was cost. Hiring support staff has monetary implications whereas teachers can be assigned certain additional tasks other than teaching at no extra cost. Secondly, there was concern about role demarcation. Many teachers felt that some non teaching duties, such as student supervision should only be carried out by teachers. Space and infrastructure was the third factor. Some schools lacked space and suitable working conditions for non-teacher support staff.

The study noted various ways of using ICT to make teachers' work less laborious and more effective in terms of both management and curriculum. However, the use of ICT was hampered by certain restrictive factors. First, there was the lack of equipment at school and at home the researchers noted that this was especially significant in view of the amount of work teachers did outside the school day and at home. Further, a number of homes and schools had no connection to electricity. Secondly, most teachers lacked computer literacy skills, due in part to insufficient or unsatisfactory training. Thirdly, there was a lack of software compatibility and failure to share software and expertise between schools. Fourthly, technical

support to institutions was not forthcoming. Fifthly, poor management led to a lack of central direction within a number of schools.

The Report identified a need to redesign some processes, in order to increase efficiency and effectiveness. These processes included lesson planning, marking students' work, student supervision, and reporting and assessment. They also included the structure of the school day and aspects of timetabling.

Many teachers were experiencing great pressure as a result of the perceived mismatch between rising expectations of schools and increasingly poor student behaviour. The teachers felt that currently, there was diminishing support from parents and caretakers. This issue was clearly more significant in some schools than in others. Also noted was the fact that many teachers disliked spending time away from their classes to participate in professional development opportunities. Their absence also caused difficulties at the school. After school, professional development was untenable because teachers were tired at the end of the day and because of the extra workload.

The role of the head teacher was raised by teachers who believed that they (the head teachers) did not always recognise the workload issues involved in constantly striving for high quality. Some school heads did not to see the need to help manage staff workload in these circumstances. Only one third of head teachers believed it was their responsibility to actively manage teacher workload, stating that this was the professional responsibility of teachers. One problem for head teachers who attempted to reduce teachers' workload was the pressure from agencies outside the school to improve standards.

Some tasks that teachers found burdensome were generated at the school, rather than at the system level. These included requirements for detailed lesson plans, student records of achievement and reports to parents. These were sometimes linked to Principals' perceptions of requirements from inspection teams.

Head teachers' and managers' workload issues were also noted. Head teachers' workloads were higher than the average for comparable professionals – by 300-400 hours per year. They felt the pressures of the nature and pace of change, and the need to show achievement of high quality education in their schools. Some felt inadequately supported by staff and ICT. Senior teachers and middle managers reported strains in combining teaching with pastoral and administrative roles. Some felt inadequately trained and supported in carrying out their

management roles. Planning and preparation for their teaching suffered as they struggled to find time for pastoral and management duties.

Teachers faulted the role of government in that they felt that possible demands on their workload were not always taken into account when new initiatives were being planned at national and local levels. They believed that changes often placed schools at a disadvantage because of inadequate notice and insufficient training and support. Issues of trust were also identified. Teachers said that their views and aims were often in sympathy with those of the government. They wanted to be able to deliver higher standards but often felt impeded by lack of trust. They asked for fewer demands for documentation and more freedom to innovate and take risks.

The study noted the need to address these issues by improving the effectiveness of the support being given to schools. We believe there is much to be gained in addressing these issues. Key to the options for improvement was the more effective use of the considerable investment being made in schools in terms of achieving improved teacher morale, better retention rates and school managers equipped more fully to respond to demands made for change. The key to this was creating and supporting, on an annual basis, the capacity and the professionalism needed to underpin the drive for higher standards that parents and pupils are entitled to expect (Pricewaterhouse Coopers, 2001).

The study suggested that, specifically, the strategy to reduce workload would need to first, remove excessive tasks from teachers, senior managers and head teachers. Secondly, improve teachers' sense of ownership of their work and long term commitment to teaching and make them feel trusted. Thirdly, schools should be enabled to make better use of support staff. Fourthly, schools need to be facilitated to make better use of ICT. Fifthly, schools need support in redesigning processes and facilitation of more co-operative planning. Sixthly, there was need to improve the timing and availability of Professional Development opportunities. Finally, there was noted the need to improve change implementation and communication between central government and its agencies and schools.

Studies from developed countries like USA, Canada, UK and Australia reveal that on average teachers without management responsibilities worked 52 hours per week and those with responsibilities worked 58.6 hours in secondary schools (The International Teacher Project of

2000). In Kenya, teacher workload varies from school to school but on average, secondary school teachers work 27 lessons (of 40 minutes each) per week.

Reche, Bundi, Riungu and Mbugua (2012) in their analysis of students' poor performance in certain parts of Kenya found no significant relationship between the number of lessons taught by teachers per week and learning outcomes. For instance, their study found that about 80% of the teachers had between 36-40 lessons per week out of possible 40 lessons, 19.68% had lessons between 31 and 35 lessons out of a possible 40 lessons. These findings suggested that most of the teachers were not overloaded, a situation that called for better learning outcomes. Contrary to the expectations, the study reported not marked difference in learning outcomes between teachers with lesser or more lessons per week. The study thus concluded that workload was not a major determinant of learning outcomes.

Workload refers to the intensity of job assignments. It is a source of mental stress for employees. Stress is an active state of mind in which human being faces both an opportunity and constraint (Robbins, 1996). There are various ways that stress symptoms or outcomes are reflected in the workplace. In stress, outcome that is desired from an employee is generally perceived to be both uncertain and important (Robbins, 1996).

If outcome of an activity is well known earlier or the employee has no interest to enjoy the fruit of task completion or to avoid the consequences of non-accomplishment, the potential stress cannot become actual stress. Besides workload, many other variables have their impact on the stress level of human beings. On the basis of previous studies, the stress factors at work may be classified into four groups that are the working conditions (including shift problems, weekend duty, inadequate pay, long working hours, discrimination, and safety issues), relationships at work (including poor relationships at horizontal and vertical levels), ambiguity in authority and responsibility (including ill-defined role, functions, expectations, and duties), and organizational structure and climate (including communication policy and practice, major changes in the workplace, culture of the organization, and lack of participation in decision-making). In organizations, reaction of people toward workload is different. Some tackle much better while others suffer in destructive consequences. Just as workload differs as a function of the individual, it also differs as a function of one's type of occupation. Some occupations are, inherently more work loaded than others. All the stress strain relationships have an apparent impact on the organization and industry. A research on

the topic describes that certain individuals, in different occupations, are increasingly exposed to be under unacceptable level of workload stress (Schultz, 2002).

2.6 Teacher Turnover and Internal Efficiency in Secondary Schools

Employee turnover have been found to affect organizational performance at both individual and organizational levels. Studies on this area of study (Dess & Shaw, 2001; Carmel & Harrison, 1998 & Huselid, 1995) found out that higher labour turnover undermines performance through the loss of organization's social and human capital. Their findings further reveal that frequent turnover disrupts groups and social ties which in turn lead to low productivity because those who leave take away important information about the organization. In their examination of the relationship between turnover and organizational performance at the board level, Glebbeeck, Arie and Erik Bax (2004) concluded that top management change is inversely related to performance of an organization. Yet some research reports the opposite finding. For instance proponents of job matching theory predict that workers less suitable for the firm leave earlier; hence, there is room for labour turnover to improve performance by clearing the workforce of poor worker-job matches (Ilmakunnas, Pekka, Maliranta, Mika & Vainiomäki, 2005).

Human resources professionals continually work to control their companies' employee retention and turnover rates. Retention is the term given to keeping loyal employees on board with your company. Turnover is the term given to the rate at which you lose existing employees and replace them with new ones. According to Babcock (2005), understanding employee retention and turnover, and how you can use each to your advantage, can enhance your human resources policies and build a productive workforce.

Retaining employees carries obvious advantages. Armstrong (2001) observed that long-term employees generally have higher productivity and efficiency on the job than newer employees, due to their length of experience with the firm. Loyal employees also improve operational processes and train incoming employees. According to Cole (2000), loyal employees can also be loyal customers and avoid word-of-mouth advertisers in certain cases. Especially for manufacturers and sellers of consumer products, loyal employees' entire families sometimes purchase and use the products.

Higher pay can be justified by the higher productivity of experienced workers, but there comes a point at which the law of diminishing returns sets in. The law of diminishing returns states that, for every additional unit of investment in certain situations, you receive less of a marginal return

(Elliot, 1991). Beer (1981) observed that employee turnover incurs opportunity costs to employers. As experienced workers are replaced by new hires, productivity can drop dramatically. Not only are new hires very unproductive compared to experienced workers, but trainers' productivity drops during training periods as well. The cost of placing employment advertisements and paying head-hunters must be factored in, as well. The advantage of high turnover is the lower labour expenses associated with employees not sticking around long enough for pay raises. Companies offering positions that do not require skilled labor benefit from the labor-cost savings of higher turnover (Egan, 1995). Staff turnover can have a negative effect on an organization. It can lead to a loss of productivity, profitability, corporate knowledge, and skills and competencies. In addition, staff turnover is not just an issue for the organization experiencing staff turnover; it can also cause headaches for external organizations communicating with them. It can be hard to maintain a relationship with an organization with high staff turnover, and it can be difficult to know how to effectively communicate with them through this period. Often correspondence between organizations relies on staff to staff communication, and the loss of one of these members affects the way the organizations interact.

However, as stakeholders and indeed institutions have experienced staff turnover, it has become one of those things that are expected and must be planned for.

The factors that make up a company's productivity are complex and constantly changing. One factor that impacts negatively on productivity is high employee turnover. Based on the assertion that staff turnover impacts on the productivity of an organisation or institution, efforts should be made to mitigate on the negative effects of turnover on productivity. Such areas of focus may include training costs, institutional knowledge or memory, hiring process and morale of staff.

When an organization’s employees are constantly leaving, it is difficult to maintain the same level of output. That's mainly because new employees need time to train and get used to the work before they reach full productivity. Training costs can have a big impact on a company’s productivity and profitability. Managers and new employees are busy with tasks that are not directly related to operating the business and producing products, services and sales. Instead, they are being paid for work that will not benefit the company until the employee is fully trained. The less turnover an institution has, the less training expense will be needed and the higher productivity will be achieved.

Employees with a long tenure in a company have what is known as institutional knowledge or memory. This means that not only do they understand how the equipment, technology and business processes work, they also understand who to talk to in order to get things done. For example, a long tenured employee will know which data in the business process management are important to update and view. A new employee will not have this knowledge. He can only build it up over time and with the help of coworkers.

Firms with higher turnover require much larger investments in recruiting and hiring new employees. Depending on how intensive the hiring process is, management must devote an increasing percentage of their time to fielding through applications, interviewing candidates, hiring them and handling paperwork. This gives them less time to devote to proactive duties that can boost productivity. High turnover usually has a negative effect on the morale of the remaining employees. Whether workers are being laid off or leaving of their own volition, the remaining employees end up being insecure about their own jobs. In addition, many will have to take on additional duties when someone leaves, which can create resentment and lead to lower morale. Low morale tends to make employees less enthusiastic and productive.

In the school set-up, the situation is no different. A study conducted by Schneider (2003) in the USA found out that indeed almost all teachers were transferred more than once in their teaching careers and that higher teacher turnovers had a direct bearing on learning outcomes. While arguing against and for staff turnover, Guthrie (2001) asserts that high turnover lowers firm's incentives to provide staff training programs and, therefore, reduces productivity. On the other hand, turnover can help employers and employees to avoid being locked in sub-optimal matches permanently, subsequently increasing productivity. According to the two scholars, turn over only becomes undesirable when it is too high and frequent, otherwise at optimal rate, turnover has great benefit to the organization.

It is equally important to understand why teachers transfer. In most cases teachers leave when they encounter environments that lack essential professional support. These include job dissatisfaction, poor working conditions, low salaries, increased workloads, poor motivation, and lack of space for participation in key decisions affecting the school, among others.

Reducing the frequency with which children are taught by a successive stream of novice teachers may be one step of improving education quality (Duze & Rosemary, 2013). Teacher retention initiatives are often based on the recognition of the need to keep in classrooms

teachers who are qualified and utilize effective teaching strategies, demonstrated by increased student achievement year after year (ibid). UNESCO (2000) further reveals that a teacher workforce that is committed in staying in the school resulted in students receiving appropriate instruction and increasing their achievements.

The effect of teacher turnover on students' academic performance in Kenyan secondary schools is a phenomenon which has not been exhaustively studied. The situation is worsened by the inconclusive nature of the scant findings on the same. There was need therefore to conduct a study which would unearth the real nature of turnover in secondary schools and its effect on students' academic outcomes.

2.7 Theoretical Framework

A theoretical framework consists of concepts and existing theory that is used for a particular study. The theoretical framework is used to demonstrate an understanding of theories and concepts that are relevant to the study and relate it to the broader areas of knowledge being considered. The selection of a theory depends on its appropriateness, ease of application, and explanatory power. The theoretical framework is used to strengthen the study in various ways. First, it is an explicit statement of theoretical assumptions which allow the reader to critically evaluate. Secondly, the theoretical framework connects the researcher to existing knowledge. Guided by a relevant theory, the researcher is given a basis for hypotheses and choice of research methods. Thirdly, articulating the theoretical assumptions of a research study permits intellectual transition from mere description of an observed phenomenon to generalization about various aspects of that phenomenon. Fourthly, having a theory helps one identify the limits to those generalizations. A theoretical framework specifies which key variables influence a phenomenon of interest and highlights the need to examine how those key variables might differ and under what circumstances. An appropriate theory therefore explains the meaning, nature, and challenges associated with a phenomenon.

This study was anchored on two theories. Firstly, the 'systems approach theory' which is a modification of the General System Theory formulated by Ludwig von Bertalanffy in 1968 (Weckowicz, n.d). Secondly, the Production Functions Theory associated with sociologist, James S. Coleman. The ensuing paragraphs will discuss the theories and justify their suitability for this study.

2.7.1 Systems Approach Theory

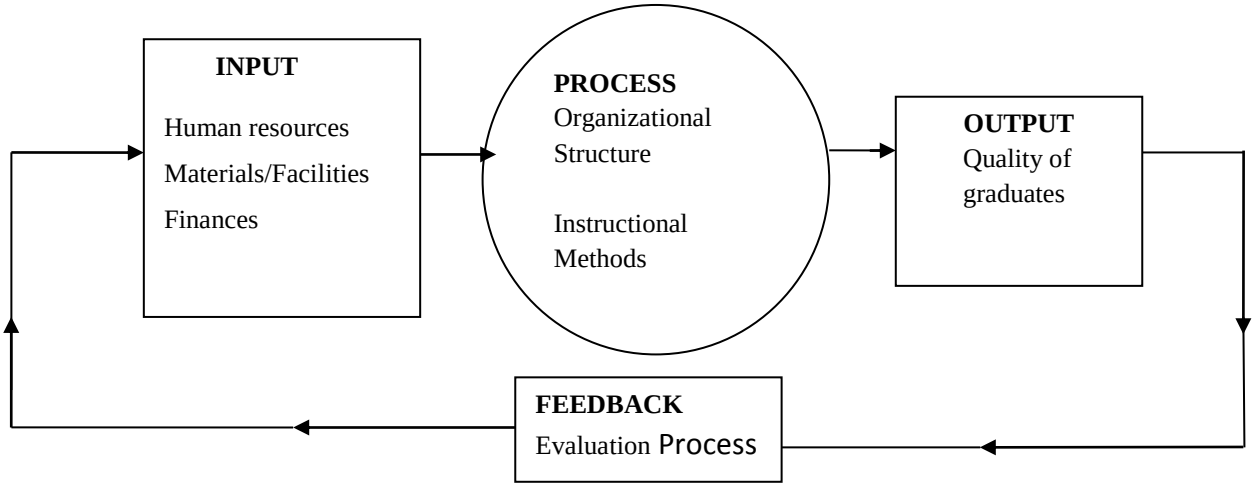
Bertalanffy formulated this theory to explain the similarities in the functioning of diverse phenomena such as living organisms, machines, galaxies and organizations. He viewed systems as complexes of elements standing in interaction. Other scientists who have tried to define systems are Kast and Rosenzweig who view it as an organized unitary whole, composed of two or more interdependent parts delineated by identifiable boundaries from its environmental supra-system (Kondalkar, 2009)

From the foregoing definitions, distinct parts of the system emerge:- a well defined goal; more than one element or parts(namely, the sub-systems, system and supra-system); all elements working in harmony or interdependently with each element having its own function which contributes in achieving the goal of the system; and a provision for feedback. This means that the systems approach has an in-built feedback provision which takes care of the system's progress in the right direction (Ayot & Patel, 1987).

Education and the school(s) can both be seen as open systems. Schmuch (1977) is of the view that schools are essentially living systems and without people in them they would be nothing but concrete and paper. As living systems therefore, schools are in constant process of interaction with other institutions and their communities. Schmuch (1977) further explains that, although the school is a living dynamic organization and a complete system on its own, it is a sub-system of the nation's education system which in turn is a sub-system of the larger supra-system called the environment. Ayot and Patel (1987) concur with Schmuck. They argue that the school can be considered a system because it receives raw materials (students) whose behavior is transformed through the process of education. The output then is of adults whose behavior has been transformed and the quality of their transformation certified by the quality controller.

A system has four basic elements, namely: inputs, process, outputs and the feedback. Figure 2 displays the fundamental elements of a system.

Figure 2: Key elements in the Systems Approach Theory



Source: www.buzzle.com/articles/systems-approach-to-management.html

The society is the environment as well as the supra-system of schooling; it is the environment from which the school receives its goals, since it operates through key stakeholders (MOE, BOM and PTA) who are part of the society. And because of the inputs and the outputs as well as the nature of interaction between the environment on one hand and the teachers and students on the other, the school then can be considered as an open system that takes in something from the environment and gives out something in return. The task of the teacher in the learning situation is to facilitate learning by arranging the environment in such a way that optimum learning conditions for students are created.

The basis of using the general systems approach to explain how teacher characteristics (input) affect internal efficiency of schools measured in terms of students' academic outcomes at KCSE (output) is informed by the view that an organization should be studied not merely as a formal arrangement of superior and sub-ordinates or as a social system in which people influence each other but as a total system in which the environment, the formal arrangement, the total systems and technical systems are constantly interacting (Dale,1984). Dale's views not only highlight the key steps in the learning process (inputs, process and outputs) but also the role played by elements in every step towards the realization of the system's goals.

In the school system, the first step – inputs include human, material and financial resources; also included is the existing knowledge in the society as well as constraints such as education policies, goals of education, societal values and expectations of parents. This study however seeks to focus on specific characteristics of the teacher and how their interaction with other elements in the system (such as students) affects internal efficiency of the school system.

The second step is that of the through – put process. In the school system, this will include the organizational structure of the school as well as instructional methods used by the teacher. This step will actually be the focus of this study because the study will seek to examine how each teacher aspect interacts with the school environment especially the student, who is the measure of efficiency. The third step is that of outputs. In the school system, outputs are students who are expected to be educated and better equipped to serve themselves and society. Some of the outputs go back to the society as inputs. This study sought to analyze output by looking at KCSE results of each selected secondary school in Kericho County in terms of good and poor grades. The general systems theory has a feedback system which is evaluative in nature and as such it provides the necessary information about the performance of a system so that appropriate modifications can be effected on the objectives and other inputs.

2.7.2 Production Function Theory

A production function can be defined as the specification of the minimum input requirements needed to produce designated quantities of output. An *education production function* is an application of the economic concept of a production function to the field of education. It relates various inputs affecting a student's learning (schools, families, peers, neighborhoods, etc.) to measured outputs including subsequent labor market success, college attendance, graduation rates, and, most frequently, standardized test scores. The original study that eventually prompted interest in the idea of education production functions was by a sociologist, James S. Coleman. The Coleman Report, published in 1966, concluded that the marginal effect of various school inputs on student achievement was small compared to the impact of families and friends. Later work, by Eric A. Hanushek, Richard Murnane, George Psacharapoulos and other economists introduced the structure of "production" to the consideration of student learning outcomes (Hanushek, E. A., & Kimko, D. D., 2000).

In general, economic output is *not* a (mathematical) function of input, because any given set of inputs can be used to produce a range of outputs. To satisfy the mathematical definition of a function, a production function is customarily assumed to specify the *maximum* output obtainable from a given set of inputs. The production function, therefore, describes a boundary or frontier representing the limit of output obtainable from each feasible combination of input. Assuming that maximum output is obtained from given inputs allows economists to abstract away from technological and managerial problems associated with

realizing such a technical maximum, and to focus exclusively on the problem of allocative efficiency, associated with the *economic* choice of how much of a factor input to use, or the degree to which one factor may be substituted for another. In the production function itself, the relationship of output to inputs is non-monetary; that is, a production function relates physical inputs to physical outputs, and prices and costs are not reflected in the function (Daly, H. 1997).

In the decision frame of a firm making economic choices regarding production—how much of each factor input to use to produce how much output—and facing market prices for output and inputs, the production function represents the possibilities afforded by an exogenous technology. Under certain assumptions, the production function can be used to derive a marginal product for each factor. The profit-maximizing firm in perfect competition (taking output and input prices as given) will choose to add input right up to the point where the marginal cost of additional input matches the marginal product in additional output. This implies an ideal division of the income generated from output into an income due to each input factor of production, equal to the marginal product of each input.

The inputs to the production function are commonly termed factors of production and may represent primary factors, which are stocks. Classically, the primary factors of production were Land, Labor and Capital. Primary factors do not become part of the output product, nor are the primary factors, themselves, transformed in the production process. The production function, as a theoretical construct, may be abstracting away from the secondary factors and intermediate products consumed in a production process. The production function is not a full model of the production process: it deliberately abstracts from inherent aspects of physical production processes that some would argue are essential, including error, entropy or waste, and the consumption of energy or the co-production of pollution. Moreover, production functions do not ordinarily model the business processes, either, ignoring the role of strategic and operational business management. The production function is central to the marginalist focus of neoclassical economics, its definition of efficiency as allocative efficiency, its analysis of how market prices can govern the achievement of allocative efficiency in a decentralized economy, and an analysis of the distribution of income, which attributes factor income to the marginal product of factor input (Guerrien, B. & Gun, O., 2015).

A production function can therefore be expressed in a functional form as follows:

$$Q = f(X_1, X_2, X_3, \ldots\ldots\ldots\ldots..)$$

Where Q is the quantity of output and X_1, X_2, and X_3 are the quantities of factor inputs (such as capital, labour, land or raw materials).

A production function model can thus be formulated from this theory by treating education institutions as production units. This production unit utilizes inputs such as students, teachers, classrooms, textbooks, finances, laboratories; play grounds, lockers etc. to produce outputs in form of graduates at different levels of the education system. This relationship between inputs into the education system and output from the education system is what is referred to as the production function (Psacharapoulos and Woodhall 1985 and Todaro 1992).

This relationship can be represented symbolically as follows:

$$Q = f(A, B, C, D \ldots).$$

Where Q denotes the output as a function of variables A, B, C, and D.

A - These may denote a variety of measures of school environment like; Physical facilities, quality of teachers, availability of the teachers, number of text books available, amount of time students are exposed to the above variables and quality of school facilities.

B - This could represent individual and family background characteristics like: Family income, Social class and parental educational attainment

C - This may represent the student's ability and initial level of education

D - This may denote influences by peers. This can be either positive or negative in nature.

The above equation or function cannot be used as it is in the education system. Therefore it has to be broken down to represent a wastage production model which would also be a function of the various factors that combine to determine whether a student (input) would finish a cycle, repeat a grade or drop out before completing a cycle. Hence the wastage

production function can be expressed as a relationship between wastage which represents (repeaters and dropouts) and the factors that influence wastage.

This can be expressed as:

> W= f (a_1, a_2….a_n) Where: W denotes the level of wastage and a_1, a_2….a_n are the factors influencing wastage in public secondary schools.

The common factors of wastage in public secondary schools include lack of fees, school promotion policy, availability and quality of sanitary facilities and premarital pregnancies.
In this study however, the scope did not allow factors of wastage to be explored. It is however important to note that internal efficiency is related to wastage as a reciprocal:

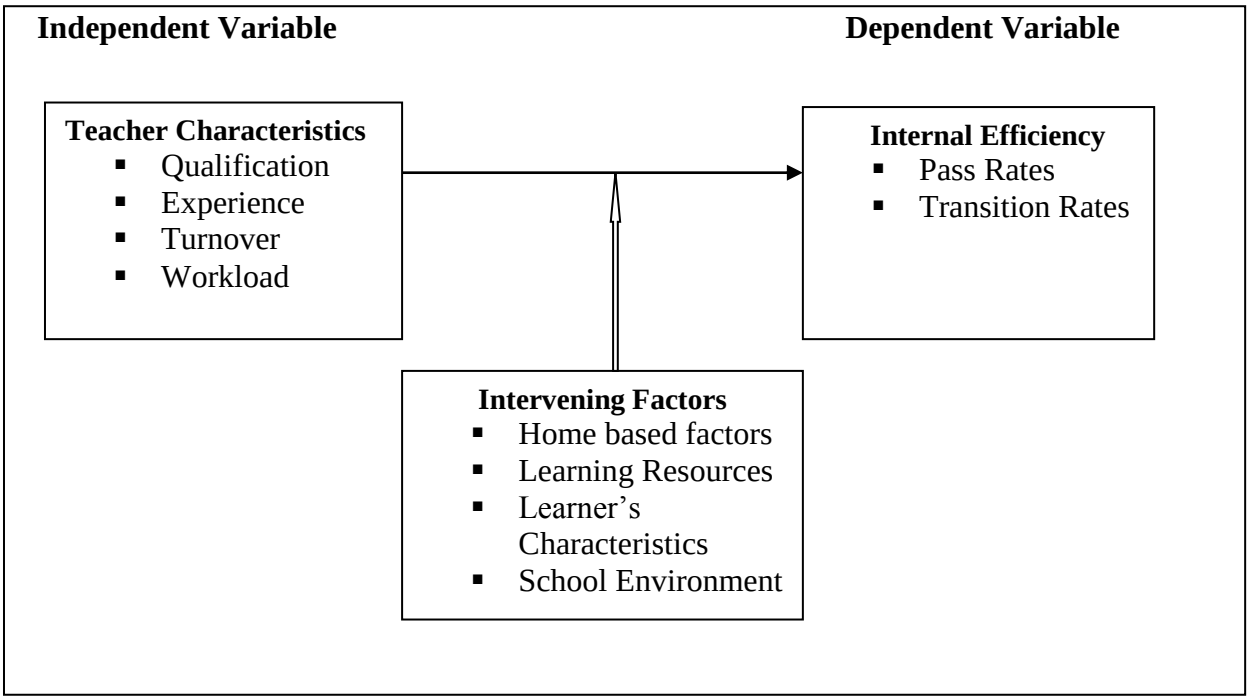
> Internal Efficiency = 1/ (Wastage)

2.8 Conceptual Framework

According to Lacey (2010), a conceptual framework identifies the researcher's 'world view' of the study area and so delineates the assumptions and preconceptions about the area. Robson (2002) suggests that a conceptual framework is often developed as a diagram, which Parahoo (2006) refers to as a conceptual model. A conceptual framework is a type of model that illustrates the nature of relationship(s) between independent and dependent variables (Orodho, 2009). Polit & Beck (2004) suggest that the role of conceptual framework is to make the research findings meaningful and generalizable. They suggest that the linking together of findings into a coherent structure can make them more accessible and so more useful to others.

This study sought to establish the strength of the relationship between selected teacher characteristics (independent variables) and internal efficiency of secondary schools in Kericho County which was measured in terms of pass rates at KCSE examinations and transition rates to tertiary institutions (dependent variables). Figure 2 depicts the relationship between the two variables and also other variables (intervening) which were likely to influence the phenomenon studied.

Figure 3: Conceptual Framework



Source: Researcher's own concept map

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology. The research design, study site and population are described. The rationale for sample size is given. Methods of data collection, recording and analysis are discussed. Likewise, instruments of measurement are also described.

3.2 Research Design

A research design is a model or an action plan upon which the entire study is built; it dictates the manner in which a study is conducted and provides the road map of a study in terms of the sample, data collection instruments and analysis procedure. Approaches on the other hand, are paradigms, research frameworks, which may be either quantitative or qualitative or both (mixed approach), Creswell (2003)). A particular research design may adopt one approach or both. For instance, in a cross-sectional survey design, one may decide to use quantitative approach or both (mixed approaches); other studies like a case study, ethnography study, phenomenological study, grounded theory study and content analysis study are mainly qualitative. The major factor that should be considered in choosing the research design to adopt is an understanding of the type of research being undertaken. In other words, the research design is dictated by the type of research.

This study adopted a descriptive survey design. “A survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables” (Mugenda & Mugenda, 2003, p.165). Descriptive survey is a method of collecting information by interviewing or administering questionnaires to a sample of individuals (Orodho in Kombo & Tromp, 2006). A survey is normally employed in research to describe attitudes, beliefs, opinions and relationships (Cohen, Manion & Morrison, 2007) and the nature of existing phenomena.

Survey method was preferred because of its inherent features. First, survey design ascertains correlations. This study sought to ascertain the relationship between teacher characteristics and internal efficiency of public secondary schools in Kericho County. Second, survey captures data from multiple sources. This allowed the researcher to use varied methods of data collection which included questionnaire, interview and document analysis. Third, survey allows the acceptance or rejection of the hypotheses, which was a significant step in this study. Last but not least, survey study gathers data on a one – shot basis and hence deemed economical and efficient by the researcher (Cohen, Manion & Morrison, 2007).

3.3 Location of the Study

This study was conducted within Kericho County which is one of the 47 counties created under the Constitution of Kenya (2010) and occupies approximately 2,439 square kilometres. It is located within the Rift Valley region of Kenya and comprises five administrative districts, namely: Kericho, Kipkelion, Bureti, Londiani and Belgut. The County is home to the Kipsigis people who are part of the Kalenjin community and Kericho town is its headquarters. As per the national census of 2009, the County population was 758,339. Kericho County is home to Kenya's biggest water catchment area, the Mau forest and therefore most economic activities revolve around agriculture. Agricultural activities include tea production, maize and dairy farming, horticulture, pyrethrum, pineapples, sugar cane and stevia crop. Kericho County is Kenya's leading producer of tea and home to the largest tea plantations.

The County has several educational institutions. There are many public and private primary schools, 154 public secondary schools, five universities and several middle-level colleges. According to the County Director of Education (CDE), the 2014 KCSE results revealed that:

a) The County candidature rose from 10433 in 2013 to 10928 in 2014 translating to 4.74% increase

b) Quality grades (B+ and above) were 1184 which was 8.45% of the total candidature

c) Wastage grades (D+ and below) were 3682 which was 33.76% of the total candidature

d) The overall County Mean Score in 2014 was 5.9471

The CDE further attributed the generally low performance to understaffing and low teacher commitment, among other factors (Kericho KSSHA Journal, 2015).

3.4 Population of the Study

A population refers to an entire group of individuals, events or objects having a common observable characteristic (Mugenda & Mugenda, 2003). In this study, the target population refers to all teachers in Kericho County's public secondary schools employed by the Teachers Service Commission (TSC). All secondary school teachers employed by TSC have undergone pre-requisite teacher training either at diploma or degree level. They are also expected to have acquired pedagogical content knowledge in at least two teaching subjects.

Kericho County had a total of 154 public secondary schools with a similar number of Principals in 2014. The education sector is headed by a County Director of Education (CDE) and five District Education officers (DEOs) at the district level. The districts are Kericho, Belgut, Bureti, Londiani and Kipkelion. The County had a population of 1318 teachers employed by TSC in the same year. This is the target group from which the study sought its findings.

3.5 Sampling Procedure

Sampling is the process of selecting a representative sample of a total population (Kothari, 2003). Sampling is a process or technique of choosing a sub-group from a population to participate in the study; it is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected (Ogula, 2005).

Cluster sampling was used to sample three districts (Kericho, Belgut and Londiani) out of the five in the County. In cluster sampling, a cluster (a group of population elements), constitutes the sampling unit, instead of a single element of the population. The sampling in this technique is mainly geographically driven. The main reason for cluster sampling is cost efficiency (economy and feasibility). The sampling frame is also often readily available at cluster level and takes short time for listing and implementation. The technique is also suitable for survey of institutions (Ahmed, 2009) or households within a given geographical area. However, cluster sampling is not without disadvantages. First, it may not reflect the diversity of the community.

Secondly, other elements in the same cluster may share similar characteristics thus providing redundant information, i.e. similar information from the others in the cluster. Thirdly, it provides less information per observation than a Simple Random Sample of the same size. Fourthly, standard errors of the estimates are high, compared to other sampling designs with the same sample size. Cluster sampling was preferred because of the assumption that clusters are geographically close and therefore provide ease of access and also because it is not humanly possible to conduct a small scale study of this nature in a wide geographical area.

From each cluster (district) stratified sampling was used to identify the types of schools which were included in the study. Stratified sampling procedure is the most effective method of sampling when a researcher wants to get a representative sample of a population. It involves categorizing the members of the population into mutually exclusive and collectively exhaustive groups. An independent simple random sample is then drawn from each group. Stratified sampling techniques will provide more precise estimates if the population being surveyed is more heterogeneous than the categorized groups. This technique enables the researcher to determine desired levels of sampling precision for each group, and provides administrative efficiency. The main advantage of the approach is that it is able to give the most representative sample of a population (Hunt & Tyrrell, 2001).Schools were categorized into three strata, namely: National, County, District and day schools.

Simple random sampling was then used to select participant schools from each of the three strata. Simple random sampling provides the base from which the other more complex sampling methodologies are derived. To conduct a simple random sample, the researcher first prepared an exhaustive list (sampling frame) of all members of the population of interest which in this case was the schools as per categories. From this list, the sample was drawn so that each school had an equal chance of being drawn during each selection round (Kanupriya, 2012).

To draw a simple random sample without introducing researcher bias, computerized sampling programs and random number tables are used to impartially select the members of the population to be sampled. Subjects in the population are sampled by a random process, using either a random number generator or a random number table, so that each person remaining in the population has the same probability of being selected for the sample (Friedrichs, 2008).

Two sampling techniques were used to select participants. Simple random sampling was used to select teachers because it ensures representativeness of the target population. Purposive sampling was used to select the CDE, the three DEOs and ten Principals (Table 4). In purposive sampling procedure, the researcher chooses the sample based on who he/she thinks would be appropriate for the study. The main objective of purposive sampling is to arrive at a sample that can adequately answer the research objectives. The selection of a purposive sample is often accomplished by applying expert knowledge of the target population to select in a non random manner a sample that represents a cross-section of the population (Henry, 1990). A major disadvantage of this method is subjectivity since another researcher is likely to come up with a different sample when identifying important characteristics and picking typical elements to be in the sample. Given the subjectivity of the selection mechanism, purposive sampling is generally considered most appropriate for the selection of small samples often from a limited geographic area or from a restricted population definition. This is the case with the identification of the ten Principals in Kericho County which has close to two hundred heads of schools. The knowledge and experience of the researcher making the selections is a key aspect of the ‘‘success’’ of the resulting sample (Michael, 2011). A case study research design for instance, employs purposive sampling procedure to arrive at a particular ‘case’ of study and a given group of respondents. Key informants are also selected using this procedure.

The ten Principals purposively identified were those with comparably more experience. For this study therefore, purposive sampling allowed the researcher to use own discretion to choose participants deemed to possess relevant information on the problem which was being investigated. Sampling of schools was based on the following categories: National, County and district and day schools. The distribution of the schools was gender-based as follows: National (1 Boys, 1 Girls), County (3 Boys, 3 Girls) and District/Day (9 Mixed) as expressed in Table 5.

3.6 Sample size

The required sample size was influenced by: the size of the population the sample sought to represent, the number of variables in the data gathering instrument, the requirement for statistical analysis and the degree of confidence required from the findings (Cohen & Manion, 2003; Page & Meyer, 2000. Determination of sample size differs depending on the research design.

For instance, survey research design requires huge sample size for the purpose of representation; in census, everyone in the target population is selected to participate in the study, hence the sample size is equal to the size of the target population; in experimental research design, with treatment and control groups, the sample size may differ in each group. There are different ways of determining a sample size. The following sample size formula for infinite population (more than 50,000) is used to arrive at a representative number of respondents when population estimate is known (Godden, 2004):

$$n = \frac{Z^2 \times p\,(1-p)}{M^2}$$

Where:

n = *Sample Size for infinite population*

Z = *Z value (e.g. 1.96 for 95% confidence level)*

P = *population proportion (expressed as decimal)*

M = *Margin of Error (for instance 5% or 0.05)*

If the target population is finite, Krejcie & Morgan's or Taro Yamane's formulae will be found useful in determining the sample size.

Krejcie & Morgan's formula:

$$S = \frac{X^2 NP\,(1-P)}{d^2\,(N-1) + X^2 P\,(1-P)}$$

Where:

S = *Required Sample size*

X = *Z value*

N = *Population Size*

P = *Population proportion (expressed as decimal)*

d = *Degree of accuracy (expressed as a decimal)*

Taro Yamane's formula:

$$n = \frac{N}{1+Ne^2}$$

Where n = sample size

N = population size

e = error of sampling method

Whereas it was most ideal to involve the entire population of secondary school teachers in Kericho County in the study, it was not humanly possible because of time, financial constraints and the enormity of data. For these reasons, the study chose to calculate the teacher sample using Taro Yamane's formula (Yamane, 1973)

The formula is as follows: $n = \frac{N}{1+Ne^2}$

Where n = sample size

N = population which is 1,164 teachers

e = error of sampling method = 0.05

$$n = \frac{1164}{1+ 1164(0.05)^2}$$

$$= 298 \text{ teachers}$$

Besides teachers, the study sample also included the County Director of Education, 3 DEOs and 10 Principals.

Table 4: Sampling of Participants

Stakeholders	Target population	Sample size
CDE	1	1
DEOs	5	3
Principals	154	10
Teachers	1164	298
Total	**1324**	**312**

Table 5: Sampling of schools and teacher distribution

School type	Target population	Sample size	Teacher Distribution
National schools	2	2	44
County schools	60	6	119
District/Day schools	92	9	135
Total	**154**	**17**	**298**

3.7 Methods of Data Collection

Three methods of data collection were used to gather data. These were questionnaire, interview method and document analysis. Each of these methods is discussed in the ensuing paragraphs.

3.7.1. Questionnaire

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Although they are often designed for statistical analysis of the responses, this is not always the case. The questionnaire was invented by the Statistical Society of London in 1838. Questionnaires have advantages over

some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data. However, such standardized answers may frustrate users. Questionnaires are also sharply limited by the fact that respondents must be able to read the questions and respond to them. Thus, for some demographic groups conducting a survey by questionnaire may not be concrete.

A questionnaire is a written list of questions answered by respondents so that information sought is collected. Questionnaires contain highly structured and closed-ended questions which yield quantifiable data. Usually, a questionnaire consists of a number of questions that the respondent has to answer in a set format. A distinction is made between open-ended and closed-ended questions. An open-ended question asks the respondent to formulate his own answer, whereas a closed-ended question has the respondent pick an answer from a given number of options.

Open format questions or open-ended questions give the respondent an opportunity to express own opinions in a free-flowing manner. These questions don't have a predetermined set of responses and the respondent is therefore free to answer whatever he/she feels is right. By including open format questions in a questionnaire, one can get true, insightful and even unexpected suggestions. Qualitative questions fall under this category. An ideal questionnaire would include an open-ended question at the end of the questionnaire that seeks feedback and/or suggestions for improvements from respondents. Multiple choice questions, where respondents are restricted to choose among any of the given multiple choice answers are known as closed format or closed-ended questions. There is no fixed limit as to how many multiple choices should be given; the number can be even or odd. One of the main advantages of including closed format questions in a questionnaire design is the ease at performing preliminary analysis.

These questions are ideal for calculating statistical data and percentages, as the answers set is known. Closed ended questions can also be asked to different groups at different intervals to efficiently track opinion about an entity of common interest over time.

Questionnaire method is commonly used in survey studies and was preferred in this study because it was deemed an efficient way of generating large amounts of data, of reaching a wide population and was easy to administer (Robson, 2002; Mugenda & Mugenda, 2003). It

also ensures confidentiality and thus gathers more candid and objective responses (Lydiah & Nasongo, 2009). The main modes of questionnaire administration include face-to-face questionnaire administration, where an interviewer presents the items orally; paper-and-pencil questionnaire administration, where the items are presented on paper; computerized questionnaire administration, where the items are presented on the computer and adaptive computerized questionnaire administration, where a selection of items is presented on the computer, and based on the answers on those items, the computer selects following items optimized for the respondent's estimated ability or trait.

The questionnaire method (Appendix C) was used to collect data from teachers that yielded information on the nature of internal efficiency of schools in Kericho County and the effect of teacher characteristics under investigation on the internal efficiency of the sampled secondary schools. The questionnaire collected teachers' biographical data and measured five variables in the study which affect internal efficiency of public secondary schools. The variables are: nature of internal efficiency in public secondary schools in Kericho County and teacher characteristics which include academic qualification, work experience, work load and transfers which affect internal efficiency. The questionnaire had closed response items which were arranged in the order of the research objectives. Instructions were given in the questionnaire on how to respond to the items. Specifically, the participants were expected to respond to the questions on a five point Likert scale with the following descriptors: Definitely Untrue (DU) – 1, Untrue (UN) – 2, Neutral (N) – 3, True (T) – 4 and Definitely True (DT) – 5. The more positive a response was, the larger the value assigned to it. As a criterion, any teacher characteristic was judged as an important variable if it had a mean of 3.0 or higher.

3.7.2 Interview

Interview is a purposeful interaction where one person tries to get information from another (Gay, Mills & Airasian, 2006). Interviewing involves asking questions and getting answers from participants in a study. Interviewing has a variety of forms including: individual, face-to-face interviews and face-to-face group interviewing. The asking and answering of questions can be mediated by the telephone or other electronic devices (e.g. computers). Interviews can be structured, semi-structure or unstructured. A good interview guide also acknowledges four important facts of human social interactions that influence what people are likely to say to you. These four facts are: (1) Research questions are not the same as interview questions; (2) People's espoused theories differ from their theories-in-use; (3)

Interviews are social occasions; and (4) Testimony by itself is relatively weak form of evidence.

All interview guides are developed iteratively - questions are developed, tested, and then refined based on what one learns from asking people these questions. When conducting semi-structured or unstructured interviews, the interviewer develops a 'loose' guide, with general questions designed to open up conversation about the topic. Often, this includes a series of follow-up questions or probes, prepared in advance, in order to elicit certain types of information from the informant. It is important, however, to recognize that the interviewer must be a good listener, and that the best probing is that which is responsive, in the moment, to what the interviewee is saying. The interviewer should pause from time to time to allow the interviewee time to think and speak.

While every interview requires a somewhat different structure, certain principles and techniques are applicable to all. Each interviewing schedule should be characterised by three major parts: the opening, the body and the closing.

The opening should always make the respondent/interviewee feel welcomed and relaxed. In addition, the opening should clearly indicate the objectives of the interview and make it clear what topic areas will be addressed. The interviewer should also provide some information to motivate the respondent to answer the questions. Motivating the respondent might involve offering an incentive for participating or an explanation for how the information will be valuable to society. Finally, the opening should indicate the expected length of the interview.

The body of the interview schedule always lists the topics to be covered and potential questions. The number of questions and the exact wording of the questions depend on the type of interview schedule used. The interview may be non-scheduled with only the topics and subtopics listed. A non-scheduled interview generally leaves out potential probing questions to allow the interviewer to adapt to the interaction that unfolds. The non-scheduled interview, however, requires a highly skilled interviewer, provides no means of recording answers and presents problems in controlling the time factor. Beginning interviewers often rely on a moderately scheduled interview that contains major questions and possible probing questions under each. This schedule still allows some freedom to probe into answers and adapt to the situation. In addition this type of schedule aids in recording answers and is easier to conduct. We will be using the moderately scheduled interview format for our in-class

interview. The closing should maintain the tone set throughout the interview and should be brief but not abrupt. Interviewers should summarize the main issues discussed during the interview, discuss the next course of action to be taken, and thank the respondent for his or her time.

This method was preferred because it gave the study an opportunity to gather in-depth data from participants regarding teacher characteristics which affect internal efficiency of schools. Questions relating to teachers' academic qualifications, teaching experience, work load and transfers were asked. The study also sought to understand why respondents found the aforementioned characteristics important determinants of internal efficiency of schools.

Semi structured interview were used because of its inherent characteristics of adaptability and flexibility. This would enable the researcher to probe deeper into participants' views on the phenomenon under study. Face to face interviews were conducted with the CDE, 3 DEOs and 10 Principals. Interview guides were used to keep interview sessions focused, to ensure reliability of questions asked and gather substantial data within the time provided. An audio recorder was also used to keep an accurate record of the interviews, to enable the researcher give full attention to the participants and to capture the non-verbal communication. Each interview session took approximately one hour.

3.7.3 Document analysis

The study also engaged in document analysis as a method of data collection. Document analysis involves obtaining data from any number of sources deemed relevant to the study. Document analysis enabled the study to access information which was not easily got through communication or observation (Robson, 2002). Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic. Analyzing documents incorporates coding content into themes similar to how focus group or interview transcripts are analyzed. A rubric can also be used to grade or score a document. The three primary types of documents include public records, personal documents and physical evidence.

Public records are the official, on-going records of an organization's activities. Examples include student transcripts, mission statements, annual reports, policy manuals, student handbooks, strategic plans, and syllabi. Personal documents are first-person accounts of an individual's actions, experiences, and beliefs. Examples include calendars, e-mails,

scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers. Physical evidence means physical objects found within the study setting (often called artefacts). Examples include flyers, posters, agendas, handbooks, and training materials.

Documents which were analyzed include: Kericho County's KCSE results for the past five years (2010 – 2014) with special attention to pass rates, school types and the number of secondary schools in the County as well as data on teachers. The aforementioned documents were analyzed so as to establish the efficiency or inefficiency of secondary schools in the County and identify teacher characteristics which impact on internal efficiency of schools. The study was guided by the assumption that schools of the same type (district, county or national) impact on internal efficiency differently and that teacher characteristics could be the reason for those differences. A checklist (Appendix C) was used to guide the study on the documents to be analyzed and areas of focus in each document. The checklist therefore ensured systematic and objective analysis of all key documents needed for the study.

3.8 Validity

Validity is the degree to which results obtained from analysis of data actually represent phenomenon under study (Mills, 2007). It is the truthfulness and correctness of a statement. Validity is meant to ensure that the findings produced are an accurate depiction, theorization or explanation of the phenomenon studied. Day in Mills (2007) argues that a valid account is one which can be defended as sound because it is well grounded conceptually and empirically. In other words, validity is the extent to which a test measures what it is supposed to measure. The question of validity is raised in the context of three points: the form of the test, the purpose of the test and the population for whom it is intended. Validity can be categorized into various types, namely:-content validity, face validity, criterion-oriented or predictive validity, concurrent validity and construct validity.

Content validity is about ascertaining if the test instrument covers the entire behavior or area of study under investigation. It is a comparison of the test task with the content of the behavior. This is a logical method, not an empirical one. For example, a test on the knowledge of East African Geography would not have content validity if most questions were limited to the geography of Kenya. Basically face validity refers to the degree to which a test appears to measure what it purports to measure. Criterion-Oriented or Predictive

Validity correlates the scores obtained from a current performance to predict a future performance based on the scores obtained currently by the measure. The later performance is called the criterion and the current score is the prediction. This is an empirical check on the value of the test – a criterion-oriented or predictive validation. Concurrent validity is the degree to which the scores on a test are related to the scores on another, already established, test administered at the same time, or to some other valid criterion available at the same time. Example, a new simple test is to be used in place of an old cumbersome one, which is considered useful; measurements are obtained on both at the same time. Logically, predictive and concurrent validation are the same, the term concurrent validation is used to indicate that no time elapsed between measures. Construct validity is the degree to which a test measures an intended hypothetical construct. Many times psychologists assess or measure abstract attributes or constructs. The process of validating the interpretations about that construct as indicated by the test score is construct validation. This can be done experimentally, e.g., if we want to validate a measure of stress among school Principals.

We could have a hypothesis that stress among Principals increase when students threaten to go on the rampage. In this case then, the threat of students going on a rampage should increase stress scores.

In a broader sense, validity can be categorized into internal and external validity. Internal validity refers to whether the effects observed in a study are due to the manipulation of the independent variable and not some other factor. In-other-words there exists a causal relationship between the independent and dependent variable. Internal validity can be improved by controlling extraneous variables, using standardized instructions, counter balancing, and eliminating demand characteristics and investigator effects.

External validity refers to the extent to which the results of a study can be generalized to other settings (ecological validity), other people (population validity) and over time (historical validity). External validity can be improved by setting experiments in a more natural setting and using random sampling to select participants.

Respondent validity was enhanced by carrying out member checks with the interviewed sample to find out whether they agreed with the interpretation made of their data. Likewise, internal validity was taken care of by ensuring that the variables which the study sought to measure were the right ones. The relationship of the variables in question was guided by the

theoretical framework (Figure 2) and the conceptual framework (Figure 3). Quality of study findings was also ensured through care during data analysis, adherence to ethical standards during conduct of research and seeking the views of experts. In the current study, validity was enhanced by piloting the research instruments using the split half method.

Based on the pilot results, there was no need to modify the instruments since the questions asked elicited the desired responses.

3.9 Reliability

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 2003). Reliability is concerned with the accuracy and consistency in which instances, events or segments of data are assigned the same category on different occasions (Hammersley, 1992).

The intention of the reliability test is to ensure that findings which are arrived at would correspond to those found by another researcher who followed same procedures. Research requires dependable measurement. Measurements are reliable to the extent that they are repeatable and that any random influence which tends to make measurements different from occasion to occasion or circumstance to circumstance is a source of measurement error. Reliability is the degree to which a test consistently measures whatever it measures. Errors of measurement that affect reliability are random errors and errors of measurement that affect validity are systematic or constant errors (Gay, 1996).

Determination of reliability can be done using any of the following methods of correlation: Test-retest, equivalent forms and split-half reliability. Test-retest reliability is the degree to which scores are consistent over time. It indicates score variation that occurs from testing session to testing session as a result of errors of measurement. Equivalent-Forms or Alternate-Forms Reliability are two tests that are identical in every way except for the actual items included. These are used when it is likely that test takers will recall responses made during the first session and when alternate forms are available. The two scores are then correlated. The obtained coefficient is called the coefficient of stability or coefficient of equivalence. The challenge with this method is the difficulty of constructing two test forms that are essentially equivalent. Besides, both tests require separate administrations compared to the Split-Half Reliability test which requires only one administration. This is especially appropriate when the test is very long. The most commonly used method to split the test into

two is using the odd-even strategy. Since longer tests tend to be more reliable, and since split-half reliability represents the reliability of a test only half as long as the actual test, a correction formula must be applied to the coefficient. Split-half reliability is a form of internal consistency reliability.

Other forms of reliability which are estimates based include Rationale Equivalence Reliability, Internal Consistency Reliability and Standard Error of Measurement. Rationale equivalence reliability is not established through correlation but rather estimates internal consistency by determining how all items on a test relate to all other items and to the total test. Internal Consistency Reliability is an estimate of reliability that is essentially equivalent to the average of the split-half reliabilities computed for all possible halves.

Reliability can also be expressed in terms of the standard error of measurement. It is an estimate of how often you can expect errors of a given size.

Specifically, two types of reliability were enhanced in this study: stability and representative. Representative reliability of data was ascertained by piloting the research instrument on a sample similar to the research participants. During piloting, stability of the instruments was tested using Cronbach's reliability co-efficient test which yielded an alpha value of 0.85. This was an indication of a high reliability of the research instrument because it was above 0.7. Pearson's product moment correlation coefficient (r) was determined using the formula:

$$r = \frac{\sum xy}{NS_X S_Y}$$

Where x and y are deviation scores, that is, x = X - $\overline{X}$ and y = Y - $\overline{Y}$

And S_X and S_Y are sample standard deviations, that is,

$$S_x = \sqrt{\frac{\sum(X - \overline{X})^2}{N}}$$

This says that the correlation is the average of cross products (also called a covariance) standardized by dividing through by both standard deviations.

Reliability of data in this study was further enhanced by triangulating information sought, that is, by using multiple sources of data to investigate the phenomenon under study

3.10 Data Collection Procedures

To commence the study, an introductory letter from Kabarak University's Institute of Postgraduate Studies was obtained and used to seek research permit from the National Commission on Science, Technology and Innovation. The research permit was then used to gain entry to the research site through the CDE. An information sheet was used to explain the nature and purpose of the study to all gatekeepers. The teachers were given self-administered questionnaires which they filled at their own convenience and were collected at an agreed date. The CDE, three DEOs and ten Principals were interviewed at appointed times with the researcher.

3.11 Data Analysis

Data Analysis is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data. According to Shamoo & Resnik (2003), various analytic procedures "provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data...''. While data analysis in qualitative research can include statistical procedures, many times analysis becomes an ongoing iterative process where data is continuously collected and analyzed almost simultaneously. Indeed, researchers generally analyze for patterns in observations through the entire data collection phase (Savenye &Robinson, 2004). The form of the analysis is determined by the specific qualitative approach taken (field study, ethnography content analysis, oral history, biography, case study, etc) and the form of the data (field notes, documents, audiotape, videotape, etc). An essential component of ensuring data integrity is the accurate and appropriate analysis of research findings. Improper statistical analyses distort scientific findings, mislead casual readers (Shepard, 2002), and may negatively influence the public perception of research. Integrity issues are just as relevant to analysis of non-statistical data as well.

Descriptive and inferential statistics were used to analyze data from questionnaires after appropriate data coding. Descriptive statistics describe patterns and general trends in a data set. Descriptive statistics were used to examine or explore one variable at a time. Descriptive statistics used include frequencies, percentages and mean. Inferential statistics were used to test the associations and relationships between independent and dependent variables. The study measured gender, age and work load at nominal level. The t-test was used to determine

the variation of internal efficiency with gender while analysis of variance (ANOVA) was used to assess its variation with age. Chi-square was used to test for association between teacher workload and internal efficiency. The association between internal efficiency and turnover was also tested using Chi-square. The study used Cramer's V to determine the strength of the relationship between variables. Cramer's V is derived from Chi-square.

Teachers' level of education (qualification) was measured at ordinal level, with *Spearman's rho* used to analyze its relationship with internal efficiency. Work experience was measured at interval level, with *Pearson Correlation* used to test its relationship with internal efficiency. Data analysis was aided by the use of SPSS (22.0 Version). Results of the study were summarized and presented in tables.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents and discusses findings of the study. Data on teacher characteristics and their effect on the internal efficiency of public secondary schools in Kericho County, Kenya were analyzed using SPSS (22.0 Version). Findings, according to the research objectives, are presented in the form of descriptive and inferential statistics.

4.1 General Demographic Information

General information on the return rate of the questionnaires and demographic data is given in this section.

4.1.1 Return Rate of Questionnaires

This section presents data on the return rate of interview sessions and questionnaires. The return rate of all targeted interviewees was 100%. The interviewees were: one County Director of Education, three DEOs and ten Principals. Questionnaires (298) for teachers were sent to all the sampled schools, filled and sent back after some time. Out of these, 247 were returned. This represents 82.88% of the total sample. The return rate for teachers is as shown in Table 6.

Table 6: Return Rate of Questionnaires

		Issued		**Returned**	
Type of School	No	F	%	F	%
National	2	60	100	40	66.67
County	6	133	100	122	91.73
District	9	105	100	85	80.95
Total	**17**	**298**		**247**	**82.88**

Key: F-Frequency, %- Percentage

4.1.2 Demographic Data on Age, Experience and Level of Education

Table 7: Age, Experience and Level of Formal Education

			Level of Education			
Age			Diploma	Degree	Masters	Total
20-30	Experience	0-5	3	96	11	110
		6-10	1	2	0	3
		11-15	0	1	0	1
	Total		**4**	**99**	**11**	**114**
31-40	Experience	0-5	3	20	1	24
		6-10	0	27	3	30
		11-15	2	8	1	11
		16 or more	0	1	0	1
	Total		**5**	**56**	**5**	**66**
41-50	Experience	6-10	0	2	0	2
		11-15	0	8	1	9
		16 or more	1	31	5	37
	Total		**1**	**41**	**6**	**48**
51&above	Experience	16 or more	14	2	3	19
	Total		**14**	**2**	**3**	**19**
TOTALS			24	198	25	247

Table 7 presents demographic information on teachers' level of education, age and experience. Of the 247 participants, 24 had diploma, 198 had bachelor's degree and 25 had master's degree. This means that a majority of teachers in secondary schools have undergraduate degrees.

The majority of the respondents had about 5 years of teaching experience. A large number (114) of the respondents were those between 20 to 30 years of age followed by those in 31 to 40 years (66) while a few (19) were over 50 years old. Findings from the study reveal that the majority of teaching staff in secondary schools in Kericho County are young graduates.

Variation of Internal Efficiency (IE) with Age

The variation between age and internal efficiency (IE) was determined using ANOVA. Table 8 shows a summary of the relationship between Age and Internal Efficiency.

Table 8: ANOVA table for variation of Internal Efficiency (IE) with Age

	Sum of Squares	*df*	Mean Square	F	Sig.
Between Groups	7.863	3	2.621	4.900	.203
Within Groups	129.991	243	.535		
Total	137.854	246			

Table 8 shows that there is no significant difference between age and internal efficiency (Sig. 0.203, $p < 0.05$).

Variation of Internal Efficiency (IE) with Gender

The researcher also sought to find out whether internal efficiency varies with gender. Independent sample t- test was used to establish their relationship. The results are indicated in Table 9

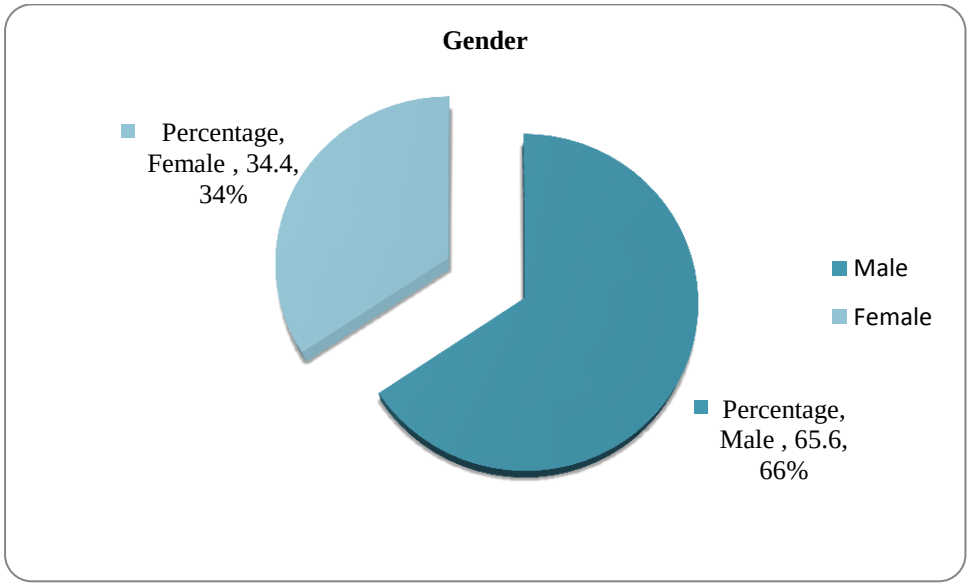
Table 9: Summary of the t-test of the relationship between gender and internal efficiency

	Gender	Frequency	Mean	Std. Deviation	t	Sig
Internal Efficiency	Male	162	1.81	.741	.618	.155
	Female	85	1.81	.733		

The results in Table 9 show that both male and female respondents had the same arithmetic mean (1.81) implying that there is no gender difference in teachers' internal efficiency. This is verified by the t value of 0.618 and calculated significance of 0.155 which is greater than alpha 0.05. This means that there is no significant difference between gender and internal efficiency.

Table 9 shows that about 162 (65.6%) of the respondents were males while 85 (34.4%) were females. This indicates that majority of the respondents were of the male gender and this is also represented by a larger pie in Figure 4

Figure 4: Respondents Gender Distribution



Source: Generated from Table 6

The results in Table 6 show that both male and female respondents had the same arithmetic mean for internal efficiency (1.9412) implying that there is no influence of teacher gender on school internal efficiency. This is verified by the t value of 0.618 and calculated significance of 0.155 which is greater than alpha 0.05. This means that there is no significant difference between gender and internal efficiency.

4.2 Findings of the Study

This section presents findings of the study. Descriptive statistics of each objective and the hypotheses test used to achieve the objectives of the study are given.

4.2.1 Nature of Internal Efficiency (Description of the dependent variable)

This Section presents findings of the nature of the internal efficiency of secondary schools in Kericho County. The nature of the internal efficiency was determined by analyzing KCSE results in the sampled schools for a period of 5 years (2010 to 2014). In this study, internal

efficiency was conceptualized to mean, pass rate (C- and above) and transition rates to the higher levels of learning. Since transition rates are directly dependent on pass rates, the latter was used to estimate the internal efficiency. Pass rates were then assigned descriptors as follows: one (1) for pass rates below 50% (inefficient), two (2) for pass rates of 50% to 69% (moderately efficient) and three (3) for pass rates of 70% and above. Table 10 presents descriptive statistics showing the mean for the respective question on the dependent variable.

Table 10: Internal Efficiency Mean

Level	Descriptor Points (P)	Frequency (F)	PF
Efficient	3	4	12
Moderately Efficient	2	8	16
Inefficient	1	5	5
		$\sum f = 17$	$\sum pf = 33$

$$\text{Mean Internal Efficiency} = \sum pf / \sum f$$

$$= \frac{33}{17} = 1.9412$$

Table 10 shows an aggregated internal efficiency mean of 1.9412. The mean implies that many secondary schools in Kericho County are operating at an average level of internal efficiency (moderate efficiency).

The study further sought to find out the percentage distribution of internal efficiency levels. Findings are presented in Table 11.

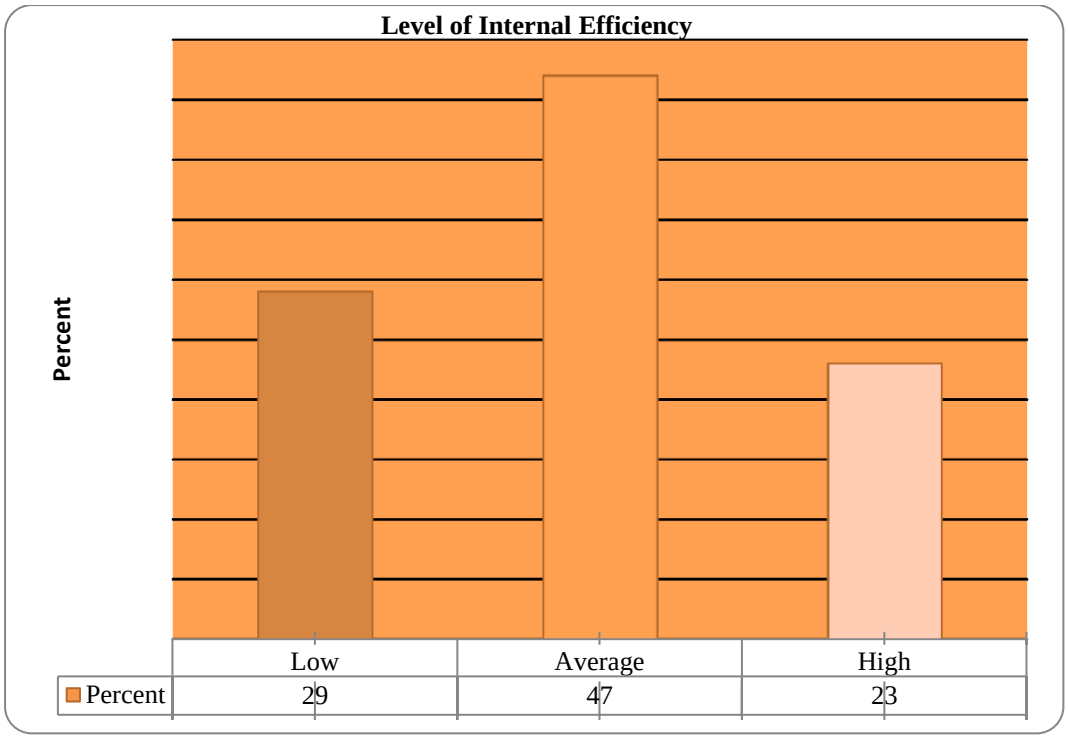
Table 11: Percentage Distribution of Internal Efficiency Levels

Level of Internal Efficiency	Frequency	Percent
Inefficient	5	29.4
Moderately efficient	8	47.1
Efficient	4	23.5
Total (N)	17	100.0

Findings from Table 11 shows that 23.5% of secondary schools in Kericho County are efficient, 47.1% are moderately efficient and the rest of the schools (29.4%) are inefficient.

In other words, Table 8 shows that less than a quarter of the schools had high internal efficiency, almost a half were moderately efficient and the rest of the schools had low efficiency. These results were graphically represented as shown in Figure 5

Figure 5: Level of internal Efficiency



Source: Generated from table 4.3.2

Table 13 overleaf presents a summary of the KCSE mean scores for the year 2014 in the sampled schools as well as their level of internal efficiency.

Findings from Table 13 reveal that one out of the four schools ranked as efficient was National while three were County schools. One National school was moderately efficient and the rest were either County or District. All the inefficient schools were of the District and Day category.

Table 12: Sampled Schools 2014 KCSE Mean Score

School	Entry	KCSE 2014 Mean	%	Level of Internal Efficiency
S1	95	9.7474	81.22	Efficient
S2	223	9.5721	79.77	Efficient
S3	280	8.8925	74.1	Efficient
S13	183	8.689	72.4	Efficient
S14	153	8.242	68.68	Moderately efficient
S7	120	7.7311	64.43	Moderately efficient
S8	315	7.4076	61.73	Moderately efficient
S9	363	7.0249	58.54	Moderately efficient
S10	60	6.7833	56.53	Moderately efficient
S15	112	6.35	52.92	Moderately efficient
S4	141	6.1655	51.38	Moderately efficient
S16	139	6.02	50.17	Moderately efficient
S11	56	5.6364	46.97	Inefficient
S5	33	5.6061	46.72	Inefficient
S12	64	5.0794	42.33	Inefficient
S6	46	4.6739	38.95	Inefficient
S17	27	4.56	38.00	Inefficient

Source: Kericho County Education Office, 2014

Key: % - Percentage of school mean out of the possible 12 points.

From Tables 11 and 12 it can be inferred that school type may determine the level of school internal efficiency. For example, all efficient and moderately efficient schools were either County or National Schools. In the Kenyan context, schools of the aforementioned types have fairly well developed infrastructure, are well resourced and admit students with high marks at

K.C.P.E. However, the fact that a National school and a District school are both in the moderately efficient category may infer that infrastructural development, resources and entry behavior may not be the only determinants of school internal efficiency.

Findings from the interviewees reveal three categories of schools (efficient, moderately efficient and inefficient) based on performance as well as the underlying reasons for the performance. Bridging the gap between the three levels of efficiency in schools has become a growing concern among educational planners and managers in recent years. The shift of attention towards strategies which focus on school functioning, rather than the overall education system, is inspired by several considerations. Firstly, reforms have very often targeted the provision of inputs in the system, rather than the processes of teaching and decision-making in particular in schools, which are crucial in explaining differences in quality. Secondly, many reforms in the past tried to focus on isolated components of the system, for instance, the teacher or the textbook. However, improving the efficiency of individual components does not automatically lead to improving an organization. Processes are contextual and their improvement depends upon the capacity of each school to become an effective organization. Thirdly, reforms were not adapted to the very varied needs of the individual schools, characterized as they were by a general, system-wide strategy. Schools do not all function in more or less the same way and reform strategies need to recognize this.

4.2.1(a): Efficient Schools

There were four efficient schools, one was National and three were County schools. Their mean scores at KCSE ranged from 8.6 to 9.7 during the research period. The interviewees identified a number of reasons for the good performance. They include: a general commitment by all school stakeholders towards continuous quality performance; a school culture that values teamwork, hard work, care and retention of students in school throughout the term; close monitoring of students' performance right from form one and professionalism.

To explain the high level of professionalism, one Principal said "all lessons must be attended or made up for should a teacher miss. We cover the syllabus on time and we have clear examination policy which must be adhered to at all times. We also have a comprehensive induction program for form ones which help instill our school culture" (Interviewee 3, 08/05/2015). The efficient schools also had strong career development/ mentorship programs

that help students understand and work towards their chosen career paths; and sound financial management that ensures prudent resource mobilization and utilization.

A study done in the UK to review efficiency of schools reveal ways in which schools achieve efficiency. They include regular benchmarking and exchange programs with other efficient schools, networking, sharing of financial expertise as well as teaching/learning materials (Robbins, 2013). Findings from this study and those from previous studies such as the Robbins (2013) suggest that efficient schools have norms and cultures which can be considered as best practices in enhancing efficiency. What emerges out clearly is their common practice of benchmarking and sharing of ideas. This could suggest that there is need to identify, document and share best practices on improving efficiency of secondary schools.

4.2.1(b): Moderately Efficient Schools

These are schools whose KCSE Mean Scores ranged from 6.02 to 7.73. Most Principals described their performance as having stagnated at a Mean Grade of C while some observed a steady improvement from D+ to C+. Findings from the schools described as 'stagnant' revealed among others, the following reasons for the status: Inadequate support of parents towards academic programs; inadequate resources; low entry behavior of most students; teachers' reluctance to embrace change. Some of the schools in this category were Day schools and the expressions of one of the Principals summarizes the unique challenges of such contexts: "…being a day school means we run on a time scale of nine hours which is shorter compared to the hours of boarding schools. When students go back home, what is learned in school is undone at night. Our students are exposed to all sorts of negative influences such as drugs, discos and sex. Our girls get pregnant. Outside people are responsible. Some girls live alone. Some are mature students with children" (Interviewee 1, 24/04/2015). Other reasons given by the Principals to explain their performance include unstable family backgrounds, re-admission policies that see mature entrants continuing with schooling and poor fees remittance.

Principals who described their schools as 'steadily improving' gave the following reasons for the performance: stable, focused and committed school leadership and operational systems put in place. One Principal observed "our performance has steadily improved for the last three years because we phased out the boys. We are now a pure girls school" (Interviewee 5, 10/05/2015). The views of Interviewee 5 concur with findings of Bii and Nzevu (2013) whose study investigated factors which influence internal efficiency of secondary schools in

Bureti District, Kericho County. Bii and Nzevu's study revealed that girls- or boys-only schools had better pass rates at KCSE examinations, had fewer repeaters and drop-outs as compared to mixed secondary schools.

4.2.1(c): Inefficient Schools

KCSE mean scores of schools in this category ranged from 4.5 to 5.6. Findings from the interviews revealed reasons for inefficiency in the third category of schools. They include: low entry behavior; absenteeism due to fee problems; weak curriculum implementation; administrative weaknesses; poor community support for schools in their area; and shortage of staff resulting in schools depending on high school leavers being utilized as teachers. Most schools in this category were district day secondary schools. The study done in the UK to review efficiency in school system (Robbins, 2013) revealed reasons for efficiencies which are similar those cited by Principals in the 'inefficient schools' category despite the different contexts in which the studies were conducted.

The Robbins (2013) DfE Report revealed that lack of capacity and capability in small schools, geographical restrictions as well as inefficient and inadequate premises they operated from contributed towards their inefficiency. These conditions described in the Robbins (2013) DfE Report are synonymous to those in most of the Kenyan district and day secondary schools which are characterized by low students' entry behavior, inadequate resources and exposure to destructive external influence. In summary, it can therefore be inferred that other than the teacher, there are other factors which affect a school's internal efficiency.

Ranking of public schools has become a feature of the educational landscape, locally and internationally. The aim of ranking is usually to distinguish the 'best' schools from the 'worst' schools in order to reward, sanction, intervene or guide students and parents (Stiefel, Had Amor & Schwartz, 2004). As a result of ranking, a number of features have emerged for each school category. Common features of schools which successfully educate their students (efficient) include strong emphasis on high quality, focused instruction supported at the highest levels of school hierarchy, high expectations for all students and regular evaluation of their performance; and in general, are safe, well organized schools (Stiefel *et. al,* 2004). The Robbins (2013) DFE Report also reveals that the most efficient schools maximize their investment in teaching staff and teaching/learning resources that make the greatest difference to pupil outcomes; and are also creative in minimizing all other running costs.

The aforementioned school efficiency levels are similar to those identified by the Principals despite the different contexts of the studies. Silvernail and Stump (2012) describe efficient schools as schools that exhibit higher academic performance and higher returns on spending as well as achieving both of these standards regardless of economic and social conditions in the local community. In this regard therefore, some District Type schools (Table 9, School 10) could be considered efficient despite the entry behavior of learners and resources which are low compared to those of County and National schools.

Similarly, studies reveal features of inefficient schools. In her categorization of school cultures, Stoll (1998) identifies features of sinking schools which are described as 'stuck and inefficient'. They include ineffective norms of isolation, blame, self reliance and have lost faith of improvement. Such schools are often in deprived areas with staff that is unable to change and often blame parents for not supporting their children. Stoll (1998) suggests that such schools need dramatic and significant support for the change to be realized. A number of schools in this study which are categorized as inefficient have similar characteristics with those in Stoll's study (1998).

In summary, the findings of this study reveal that 23.5% of the secondary schools in Kericho County are efficient, while 47.1% are moderately efficient with the remaining 29.4% being inefficient. In his 2014 report, the County Director of Education revealed that 35.11% KCSE 2013 candidates qualified to transit to universities while those with wastage grades (D+ and below) were 39.40% (Kericho County KSSHA Journal, 2014). The CDE in his 2015 report revealed a similar trend in KCSE 2014 performance. University qualifiers were 39.15% while the wastage grades were 33.76%, Kericho County KSSHA Journal (2015). These statistics generally correspond with the findings of this study. It is noteworthy that the Government of Kenya's Master-plan for Education and Training (1997-2010) notes that the majority of schools fall short in promoting the learning needs of their students leading to poor academic performance (Lydia & Nasongo, 2009).

Previous research findings reveal conflicting views on the effect of school type on internal efficiency of schools. Alimi, Elinola and Alabi (2012) who investigated the influence of school type on internal efficiency of schools in Nigeria found out that there was no significant difference in examination scores of students in private and public secondary schools. They however identified causes of inefficiencies in both school types as poor teaching personnel and lack of resources. On the other, findings of a study done by Philas and

Wanjobi (2011) reveal that indeed school type affect student's performance in mathematics more so because it determines how a school will be equipped. The findings of Philas and Wanjobi (2011) are very relevant to the context of Kenyan secondary schools which are resourced according to school type. Generally, what emerges from efficiency studies is the significant role of resources, whether human, physical or financial. In fact, Olutola (1989) avers that schools with quality educational resources posted better examination results.

4.2.2 Effect of Teacher Qualification on Internal Efficiency

Descriptive Analysis of Teacher's Qualification

The participants' views on what characterizes teacher qualification were analyzed to get the mean, standard deviation and skewness. Content mastery had the highest mean (4.2672) followed by continuous professional development (mean = 4.1579) then pedagogical content knowledge (mean = 4.0324). All the items scored above average and were negatively skewed meaning that the participants rated these items highly as to characterize teacher qualification. The results are given in Table 13.

Table 13: Teacher Qualification Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness
TQ1	247	4.00	1.00	5.00	3.8097	1.17573	-1.334
TQ2	247	4.00	1.00	5.00	3.9838	1.07434	-1.038
TQ3	247	4.00	1.00	5.00	3.6842	1.08831	-.815
TQ4	247	4.00	1.00	5.00	4.2672	1.01686	-1.374
TQ5	247	4.00	1.00	5.00	4.0324	.88286	-1.028
TQ6	247	4.00	1.00	5.00	4.1579	.86213	-1.308

Key: TQ1- Entry behaviour TQ2- Grade in teaching subject TQ3- Professional Qualification TQ4- Content mastery TQ5- Pedagogical content Knowledge TQ6- Continuous professional development

Table 14: Description of Teacher qualification

	Percentage (%)				
	DU	U	N	T	ST
Entry behaviour	10.1	5.3	3.6	55.5	25.5
Grade in teaching subject	2.4	12.1	7.3	40.9	37.2
Professional Qualification	4.9	11.7	15.4	46.2	21.9
Content mastery	0.8	10.9	4.0	29.1	55.1
Pedagogical content Knowledge	2.0	2.8	16.6	47.0	31.6
Continuous professional development	1.2	5.7	6.1	50.2	36.8

KEY: DU: Definitely Untrue, U: Untrue, N: Neutral, ST: Strongly True

Table 14 shows that 10.1% of the respondents did not perceive teacher entry behaviour as characterizing teacher qualification while more than a half (55.5%) agreed and about a quarter (25.5%) strongly agreed. A higher number (55.1%) were of the view that content mastery characterized teacher qualification while a few (0.8%) strongly disagreed. Concerning continuous professional development, slightly more than half (50.2%) agreed that it constitutes teacher qualification, about 36.8% strongly agreed while 1.2% strongly disagreed.

The researcher further sought to find out how teacher qualification items correlated to each other. Table 15 gives the results.

Table 15: Inter-Correlation of Teacher Qualification items

	TQ1	TQ2	TQ3	TQ4	TQ5	TQ6
TQ1	1					
TQ2	.570**	1				
TQ3	.447**	.450**	1			
TQ4	.339**	.339**	0.045	1		
TQ5	.379**	.330**	.188**	.436**	1	
TQ6	.385**	.220**	.160*	.396**	.459**	1

n= 247 ** P< 0.01

Key: TQ1- Entry behaviour TQ2- Grade in teaching subject TQ3- Professional Qualification TQ4- Content mastery TQ5- Pedagogical content Knowledge TQ6- Continuous professional development

All the five characteristics of teacher qualification were found to be positively and significantly correlated to each other except for the correlation between content mastery and professional qualification which did not show any statistical significance. This implies that all the six items need to be in place in determination of teacher qualification.

In line with the first objective of the study, the researcher sought to find out how different items of teacher qualification influence students' performance. Using the scale of minimum of 1 and a maximum of 5, a mean of 2.5 was seen to be average and above 2.5 was most desirable. Results are shown in Table 16.

Table 16: Statistics of effect of teacher qualification on students' performance

Item	Min	Max	Mean	Std. Deviation
A teacher with higher academic qualifications teaches better	1	5	2.7814	1.14534
Students perform better when taught by teachers with subject mastery	1	5	4.2744	.88816
A teacher with high grade in teaching subject is effective	1	5	3.3721	1.09850
Quality of the teacher determines quality of the students' outcomes	1	5	3.7256	1.04302
Students learn more from teachers with strong academic skills	1	5	3.8698	1.12813
Students perform better when taught by teachers who regularly attend professional development programmes	1	5	4.0791	.96590
Teachers' inadequate knowledge of subject matter leads to low achievement	1	5	4.0465	1.14291
Unqualified teachers affect learning	1	5	3.7535	1.21119

Table 16 shows that students taught by teachers with subject mastery and those who regularly attended professional development programmes had higher means of 4.2744 and 4.0791 respectively. Higher academic qualifications had the lowest mean of 2.7814; however it was above the average score.

Table 17: Description of effect of teacher qualification on students' performance

Item	Percentage (%)				
	DU	**U**	**N**	**T**	**ST**
A teacher with higher academic qualifications teaches better	14.2	31.2	23.1	26.3	5.3
Students perform better when taught by teachers with subject mastery	1.6	6.1	3.6	41.3	47.4
A teacher with high grade in teaching subject is effective	5.3	15.4	21.1	42.5	15.8
Quality of the teacher determines quality of the students' outcomes	4.0	9.7	15.0	49.8	21.5
Students learn more from teachers with strong academic skills	10.1	7.3	8.1	41.3	33.2
Students perform better when taught by teachers who regularly attend professional development programmes	1.6	6.1	11.3	40.9	40.1
Teachers' inadequate knowledge of subject matter leads to low achievement	4.9	8.1	7.3	30.8	49.0
Unqualified teachers affect learning	8.9	11.7	6.5	42.9	30.0

Findings in Table 17 reveal that teacher qualification has a significant effect on students' performance and subsequently, on the internal efficiency of schools. Likert scale was used to measure the level of significance of each item. Any item with a mean of 3.0 and above was deemed significant. Of the eight items rated, all except one had a mean score of 3.0 and above. The only item perceived by teachers to have less impact on students' performance was academic qualification, which had a mean of 2.781. Items shown to have the greatest positive effect on students' performance (and therefore school internal efficiency) were subject mastery (4.2744) and professional development (4.0791).

From Table 17, 14.2% of the respondents strongly disagreed that a teacher with higher academic qualifications teaches better and more than a quarter (31.2%) disagreed with this view. Less than a quarter (23.1%), were neutral while 26.3% agreed and a few (5.3%) strongly agreed.

Almost a half (47.4%) strongly agreed that students perform better when taught by teachers with subject mastery, and 41.3% agreed. A few of them (1.6%) strongly disagreed while 6.1% disagreed. This implies that majority of the respondents were of the view that it enables the students to perform better. Majority of the respondents (41.3 %) also agreed that students learn more from teachers with strong academic skills while a few (7.3%) disagreed. In regard to unqualified teachers and effect on learning, most of the respondents (42.9%) agreed that they affect learning, 30.0% strongly agreed while 6.5% were neutral. About 11.7% disagreed while 8.9% of the respondents strongly disagreed that it affects learning. It can be concluded that majority of the respondents agreed that unqualified teachers affect learning.

Hypothesis Testing

To determine the effect of teacher qualification on internal efficiency, the following null hypothesis was formulated:

H_{o1}: Teacher qualification has no influence on internal efficiency.

Spearman's rho correlation coefficient was used to test the null hypothesis and the results presented in Table 18.

Table 18: Spearman's rho correlation of Internal Efficiency with Teacher Qualification

			Internal Efficiency	Teacher Qualification
Spearman's rho	Internal Efficiency	Correlation Coefficient	1.000	.223**
		Sig. (2-tailed)	.	.001
	Teacher Qualification	Correlation Coefficient	.223**	1.000
		Sig. (2-tailed)	.001	.

n= 247**. Correlation is significant at the 0.01 level (2-tailed).

Table 18 shows that there is a significant difference between teacher qualification and internal efficiency. This is proved by Spearman's rho value of 0.223 and its calculated sig = 0.001, which is less than alpha= 0.01. The null hypothesis is therefore rejected.

The researcher was interested in finding out the relationship among the different teacher qualification items and internal efficiency. Multiple regression analysis was employed to establish the predictive weight of each of the six teacher qualification items on internal efficiency. The results are presented in Table 19.

Table 19: Beta coefficients for Teacher Qualification items

Model		Standardized Coefficients Beta	Sig.
1	(Constant)	21.331	.000
	Entry behaviour (TQ1)	.072	.015
	Grade in teaching subject (TQ2)	.069	.029
	Professional Qualification (TQ3)	.039	.014
	Content mastery (TQ4)	.121	.025
	Pedagogical content Knowledge (TQ5)	.051	.002
	Continuous professional development (TQ6)	.077	.023

a. Dependent Variable: Internal Efficiency

Table 19 shows that all the six teacher qualification items significantly and positively predict internal efficiency in secondary schools. Content mastery had the highest predictive power (β= 0.121, $p<0.05$) followed by continuous professional development (β= 0.077, $p<0.05$). Professional qualification had the least predictive power of internal efficiency (β=0.039, $p<0.05$). The adjusted R^2 indicated that teacher qualification accounts for 11% of the change in internal efficiency.

Table 20: Adjusted R^2 of Teacher qualification

Model	R	Adjusted R Square	Std. Error of the Estimate
1	.169[a]	.110	.74702

[a.] Predictors: (Constant), TQ1, TQ2, TQ3, TQ4, TQ5, TQ6

Table 19 and Table 20 give rise to the following equation:

$\hat{y}$= 21.331 + 0.072(TQ1) + 0.169(TQ2) +0.039 (TQ3) + 0.121 (TQ4) +0.051 (TQ5 +0.077 (TQ6) (R^2=0.110) $p < 0.05$

Most Principals interviewed were of the view that teacher qualification was very important and had a positive effect on the internal efficiency of a school. One Principal described a qualified teacher as one who "…has subject and content mastery. Learns more and researches more on better ways of teaching. Performs better…yes, teacher qualification is key to performance" (Interviewee 3, 08/05/2015). This description denotes that teacher qualification goes beyond academic qualification. It includes professional qualification such as better ways of teaching and lifelong learning "researches more on better ways of teaching" (Interviewee 3, 08/05/2015) . The Principals gave a number of reasons as to explain why teacher qualification is an important variable in school efficiency. First, that a teacher with higher academic qualification had a higher sense of self-esteem and confidence, which is an important factor in content delivery in any subject area. Secondly, higher academic qualifications broaden a teacher's perspective and give him/her a deeper insight of academic issues and a bigger picture of what the role of a teacher entails. Thirdly, a teacher's higher academic qualification is a source of motivation to students and affords the teacher respect from the students. All the interviewees seemed to agree that higher qualification in a teacher's teaching subject was the most important. One Principal exemplified the significance of academic qualification "opens up one's mind in whatever field it is; provokes one's thinking. The higher you go a better footing you find yourself in teaching. A teacher who stagnates academically settles for mediocre things" (Interviewee 3, 08/05/2015).

The views of the Principals resonates those of Adeyemi and Adu (2012) who opine that the quality of any education system is the aggregate quality of teachers who operate in it; and those of Mji and Makgato (2006) who warn that that teachers' outdated practices and lack of basic content knowledge result in poor teaching standards. It is also interesting to note that

the views of the Principals contradict those of teachers who rated academic qualification as item with the least significance (2.78) on internal efficiency as compared with the others (refer to Table 9). It is equally important to note that all Principals had or were pursuing masters degrees. This could explain their perspective.

Findings from this study agree with the opinions of other scholars such as Adeyemi and Akpotu (2009), Chukiu (2003) and Akinsolu (2010). They all agree that there exists a positive relationship between quality of teachers and students' academic performance; and that qualified teachers are the key drivers of internal conditions in schools which enhance effectiveness. These views concur with the study findings. Similarly, the DfE Report of 2013 identified access to highly skilled teachers as one of the internal drivers of efficient schools in the UK. This may suggest that for a school to be efficient, its teachers should be qualified. Meyer, Mullens and Lorres (2000) describe quality teachers as those who are better trained, more experienced and licensed in the subjects they teach. Qualified teachers are believed to have classroom management skills, able to ensure student discipline and have effective study and work habits (Duze & Rosemary, 2013). Akinsolu further explains that students learn more from teachers with strong academic skills (2010). Hammond (2000) asserts that no education system can rise above quality of its teachers. This would thus suggest that students cannot be expected to score highly if the teacher had a low grade in the teaching subject. These studies indicate that teachers had a positive attitude towards teacher training and its effectiveness in classroom situation including actual instruction/academic work, classroom management, evaluation procedures, assignments, and developing human relationships with students, principal, and society in general. Similarly, students also had positive opinion about teachers general characteristics, clarity and effectiveness of presentation, developing student interest/involvement in learning, broadening student outlook, and developing good relationship with student. It was concluded that teacher training was positively related to effective teaching. This relationship was statistically significant and positive for overall student achievement.

It is to be noted therefore that student learning is a product of the interaction between students and teachers, and both parties contribute to this interaction. Similarly teachers who have a positive attitude about themselves and their profession are more effective to increase the quality of student learning. The more the teachers regard their opportunity to implement effective teaching practices the better their students will perform. However, it may be argued

that one to one relationship between teacher training and students' achievement is somewhat difficult to measure as there are a number of variables that cannot be neglected as pointed out by different researchers. For example, Gay (1996) says that from the fact that two variables are highly correlated, one cannot conclude that one is the cause of the other, there may be a third factor which 'causes' both of the related variables. Similarly, Broadfoot, Osborn, Gilly, & Bucher (1993) described that any teaching learning relationship will be defined by certain constant features that relate to the nature of the task itself, and these will also be influenced by a range of contextual influences such as the age of pupils, how many there are and their motivation for being there. On the other hand, teacher effectiveness cannot sensibly be separated from school effectiveness. One aspect of this which is beginning to receive the attention of researchers and policy makers in developing countries is the level of school resources. It can be understood that teachers, however well educated and trained, are rendered less effective if the school lacks the basic facilities, equipment and materials necessary for teaching and learning. Bauer (2004) pointed out that student performance may be caused by any number of factors, including what's taught in schools, a student's native intelligence, and out-of-school learning opportunities that are heavily influenced by a students' home environment. The same were identified as the intervening variables in this study. The results of the study concluded that there is significant co-relation between teacher training and students' performance.

4.2.3 Effect of Teacher Work Experience on Internal Efficiency

Description of Teacher work Experience

The participants responded on the items that were considered to constitute teacher work experience. On-job experience had the highest mean of 4.0364 while teaching experience before pre-service teacher training had the lowest mean score (2.9069).

This implies that most teachers did not consider the amount of time spent before pre-service teacher training to be profound in determining teacher work experience. However, all the items were above the mean score meaning that they constituted teacher work experience. This is also reflected in the negative skewness by all the items (Table 21).

Table 21: Teacher Work Experience Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness
TE1	247	4.00	1.00	5.00	3.8138	1.00291	-.935
TE2	247	4.00	1.00	5.00	3.7166	.96306	-.809
TE3	247	4.00	1.00	5.00	2.9069	1.03762	-.054
TE4	247	4.00	1.00	5.00	3.5142	1.08519	-.460
TE5	247	4.00	1.00	5.00	4.0364	.96834	-1.156

Key: TE1: Number of years one has taught, TE2: Teaching experience after pre-service teacher training, TE3: Teaching experience before pre-service teacher training, TE4: Lessons learnt from those who taught us, TE5: On-job experience.

Table 22: Description of Teacher Work Experience

	Percentage (%)				
	DU	U	N	T	ST
Number of years one has taught	3.2	8.9	15.0	49.0	23.9
Teaching experience after pre-service teacher training	2.0	12.6	14.6	53.4	17.4
Teaching experience before pre-service teacher training	8.1	30.8	27.1	30.4	3.6
Lessons learnt from those who taught us	4.5	14.2	25.5	37.2	18.6
On-job experience	2.0	8.1	8.5	47.0	34.4

From Table 22, about 3.2% of the respondents strongly disagreed that the number of years one has taught characterizes teacher work experience, 8.9% disagreed, 15.0% were neutral while about a half (49.0%) agreed and 23.9% strongly agreed. This implies that majority of the respondents were of the opinion that the number of years that one has worked characterizes teacher work experience. More than a half (53.4%) agreed that teaching experience after pre-service teacher training characterized work experience, 17.4% strongly agreed while 12.6% disagreed and 2.0% strongly disagreed. This implies that majority of the respondents were of the view that teaching experience after pre-service teacher training characterized teacher-work experience. Pertaining teaching experience before pre-service

teacher training, 30.4% agreed that it comprised teacher work experience while 17.4% strongly agreed. More than a quarter (27.1%) were neutral, 30.8% disagreed while 8.1% strongly agreed. This implies that majority of the respondents disagreed that it comprised teacher work experience. In addition, most respondents (47.0%) agreed that that on-job experience constituted work experience while a few (2.0%) disagreed.

The researcher also correlated the teacher work experience items to find out how they related to each other. The results are shown in Table 23.

Table 23: Inter-Correlation of Teacher Work Experience items

	TE1	TE2	TE3	TE4	TE5
TE1	1				
TE2	.492**	1			
TE3	.034	.132*	1		
TE4	.230**	.327**	.270**	1	
TE5	.388**	.403**	-.009	.384**	1

n= 247 ** P< 0.01

Key: TE1: Number of years one has taught, TE2: Teaching experience after pre-service teacher training, TE3: Teaching experience before pre-service teacher training, TE4: Lessons learnt from those who taught us, TE5: On-job experience.

Table 23 shows that all the items were significant and positively related except for the relation between TE3 and TE1 which were positive but not significant ($r = 0.034$, $P<0.01$); and between TE5 and TE3 which was negatively related ($r = -0.009$, $p<0.01$). This implies that those who agreed that experience is gained on the job disagreed that it is gained before pre-service teacher training.

Table 24: Cross-tabulation of type of School and Work Experience

			Experience				
			0-5	6-10	11-15	16 or more	Total
Type of School	National	F	7	21	4	8	40
		% of Total	2.8%	8.5%	1.6%	3.2%	16.2%
	County	F	87	5	10	24	126
		% of Total	35.2%	2.0%	4.0%	9.7%	51.0%
	District	F	40	9	7	25	81
		% of Total	16.2%	3.6%	2.8%	10.1%	32.8%
Total		F	134	35	21	57	247
		% of Total	**54.3%**	**14.2%**	**8.5%**	**23.1%**	**100.0%**

Key: F- Frequency %- Percentage

Table 24 indicates that majority of the teachers have a working experience of between 0-5 years while less than a quarter have worked between 6 to 15 years. Slightly more than a quarter have 16 and more teaching experience.

Table 25: Teachers' experience Statistics

	Min	Max	Mean	Std. Deviation
An experienced teacher:				
Has highly developed problem-solving skills	1.00	5.00	3.8664	1.02527
Communicates effectively	1.00	5.00	3.9676	1.14363
Monitors students' behaviour and performance	1.00	5.00	3.5061	1.19915
Covers syllabus adequately	1.00	5.00	4.4089	1.03142
Frequently tests and gives feedback to students	1.00	5.00	4.2996	.85974
Monitors students' discipline	1.00	5.00	4.1538	1.15145

Table 25 shows that experienced teachers cover syllabus adequately (4.4089) and frequently test and give feedback to students (4.2996). This implies that teacher's experience leads to increased internal efficiency.

Table 26: Description of contribution of teachers' experience

	Percentage (%)				
	DU	U	N	T	ST
An experienced teacher:					
Has highly developed problem-solving skills	1.2	6.9	5.3	37.7	49.0
Communicates effectively	5.7	5.7	5.3	36.0	47.4
Monitors students' behaviour and performance	0.8	5.3	8.1	42.1	43.7
Covers syllabus adequately	1.2	10.5	13.4	37.2	37.7
Frequently tests and gives feedback to students	5.3	4.9	15.4	34.0	40.5
Monitors students' discipline	0.8	3.6	13.8	42.1	39.7

Table 26 shows that most respondents (49.0%) agreed that an experienced teacher has highly developed problem-solving skills and 37.7% agreed. About 5.3% were neutral, 6.9% disagreed while 1.2% strongly disagreed. In regard to communication, majority of the respondents (47.4%) perceived that an experienced teacher communicates effectively, 36.0% agreed while 5.3% were neutral. About 5.7% disagreed and the same percentage also strongly disagreed. About 43.7% of the respondents strongly agreed that an experienced teacher monitors students' behaviour and performance, 42.1% agreed while a few (0.8%) strongly disagreed. Consequently, an experienced teacher was seen to frequently tests and give feedback to students as indicated by 40.5% of those who strongly agreed. Students' discipline was perceived to be monitored by an experienced teacher as indicated by 42.1% of those who agreed and 39.7% of those who strongly agreed. Table 26 reveals that all items on teacher experience had a mean value of 3.5 and above which means that there is a positive relationship between teacher experience and students' performance.

Findings further reveal that teachers with long teaching experience cover syllabus adequately (4.4089), frequently test and give feedback to students (4.2996), communicate effectively (3.967) and monitor students' discipline (4.15), all of which are indicators of effective

teaching. These findings may suggest that teachers believe that the length of teaching experience determines a teacher's efficiency.

Findings from this study agree with previous findings (Omatayo, 2014; Agbatogun, 2010) which claim that teaching experience positively correlate with higher students' achievements; and that the length of teaching experience is a consistent predictor of higher test scores. Agbatogun (2010) further claim that non-experienced teachers had negative impact on students as reflected by high drop-out rates and lower academic achievements. However, while the aforementioned claims could be true, Omatayo (2014) and Agbatogun (2010) are quick to caution that the length of service put in by a teacher does not guarantee quality experience and delivery. They opine that a teacher's productivity is determined by how best he/she is able to apply and display the proficiency acquired from training. The two researchers further identify other teacher characteristics such as salary, contentment, passion for students and interest in the profession which are likely to make a teacher more productive.

Hypothesis testing

In order to establish the effect of work experience on internal efficiency, the following null hypothesis was advanced:

H_{o2}: There is no effect of work experience on internal efficiency.

To test the hypothesis the data was subjected to a bivariate correlation analysis using the Pearson product moment correlation co-efficient. Table 27 shows the results.

Table 27: Pearson Correlation of Teacher work experience and internal efficiency

		Teacher experience	Internal efficiency
Teacher experience	Pearson Correlation	1	.378**
	Sig. (2-tailed)		.000
Internal efficiency	Pearson Correlation	.378**	1
	Sig. (2-tailed)	.000	

n=247 **. Correlation is significant at the 0.01 level (2-tailed).

The results showed that there is significant and positive relationship between teacher experience and internal efficiency ($r= 0.378$, $p < 0.01$). The null hypothesis was therefore rejected. This implies that the more the work experience the higher the internal efficiency.

Further analysis

The researcher further used multiple regression analysis to establish the weight of each teacher experience item on internal efficiency. The results are presented in table 28.

Table 28: Beta coefficients of Teacher Experience

Model		Standardized Coefficients	
		Beta	Sig.
1	(Constant)	18.73	.000
	TE1	.071	.046
	TE2	.041	.018
	TE3	.006	.036
	TE4	.089	.038
	TE5	.175	.020

a. Dependent Variable: Internal Efficiency

Key: TE1: Number of years one has taught, TE2: Teaching experience after pre-service teacher training, TE3: Teaching experience before pre-service teacher training, TE4: Lessons learnt from those who taught us, TE5: On-job experience.

The findings in table 28 show that all the items were significant and positive at $p<0.05$. On-job experience had a higher predictive value of internal efficiency ($\beta = 0.175$, $p<0.05$) while teaching experience before pre-service teacher training had the least predictive value ($\beta = 0.006$, $p<0.05$).

The coefficient of determination ($\boldsymbol{R^2}$) is 0.130 meaning that 13% of the change in internal efficiency can be attributed to teacher experience. Table 29 shows the results of R^2.

Table 29: Adjusted R^2 for Teacher Experience

Model	R	Adjusted R Square	Std. Error of the Estimate
1	.140[a]	.130	.74881

a. Predictors: (Constant), TE1, TE2, TE3, TE4, TE5.

The resulting prediction equation from teacher work experience is given as:

$\hat{y}$= 18.73 + 0.071(TE1) + 0.041(TE2) +0.006 (TE3) + 0.089 (TE4) + 0.175 (TE5)

(R^2=0.190) $p < 0.05$

Findings from interviews

Interviewees were in agreement with findings from teachers in regard to the significance of teaching experience on internal efficiency of schools. All the interviewees were of the opinion that teaching experience affected internal efficiency of schools. The Principals, in particular, highlighted the benefits of having teachers with long teaching experience. They said that long serving teachers had mastery of content and were effective in content delivery; had deeper understanding of students' mannerism and behavior and therefore their needs especially learning styles. Further, they were conversant with examination trends and could thus identify areas to focus on. In addition, they could gauge themselves on the teaching pace which would facilitate timely completion of the syllabus. They also expressed the view that a teacher with long teaching experience was more confident and better understood the scope of content to be covered "experience gives a teacher certain level of self-esteem which impacts on how students receive the teacher's content" (Interviewee 1, 24/04/2015). They also understood challenges experienced by students within the topics and were therefore better placed to offer adequate help. One of Principals described the negative effects of having many teachers with few years of teaching experience as "…blows things out of proportion. Long experience makes one calm, level headed" (Interviewee 4, 08/05/2015). The same Principal however highlighted the need for progression in a teacher's professional trajectory "when a teacher reaches a certain stage, that teacher should go out of the classroom to administration" (Interviewee 4, 08/05/2015).

These findings agree with those of Safiya and Adegbemile (2014) who assert that teaching experience improves teachers' teaching skills and that students learned better when taught

continuously by the same teachers. In the same breath, Ayibatonye and Ikechukusu (2014) opine that students taught by teachers with many years of teaching experience were better than those taught by teachers few years of experience.

While the debate on the effect of teacher experience is not conclusive, most studies seem to agree that the length of teaching experience makes the teacher more efficient and subsequently more productive. Most occupations consider employees' years of experience a relevant factor in human resource policies such as compensation systems, benefits packages and promotion decisions. The reasoning behind such policies is based on the belief that experience gained over time enhances knowledge, skills and productivity of workers (Ayibatonye & Ikechukusu, 2014; Omotoso, 2007; Ezekweseli, 2006).

4.2.4 Effect of Teacher Work Load on Internal Efficiency

Description of Teacher Work Load

The respondent was presented with four items to find out their views of what constituted teacher work load. The results are summarized in Table 30.

Table 30: Teacher Work Load items Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness
TW1	247	4.00	1.00	5.00	3.8907	1.26884	-1.225
TW2	247	4.00	1.00	5.00	3.8704	1.07797	-1.133
TW3	247	4.00	1.00	5.00	3.4615	1.15714	-.699
TW4	247	4.00	1.00	5.00	2.7004	1.20943	-.009

Key: TW1: Average workload is 27 lessons per week, TW2: Increased lessons per week, TW3: Extra administrative duties, TW4: Co-curricular activities

Table 31 shows that most respondents agreed that the average lessons per week was 27 (mean =3.8907) and increase lessons per week constituted workload (mean=3.8704). All the items were negatively skewed meaning that the respondents highly rated them as constituting teacher workload.

Table 31: Description of Teacher Workload items

	Percentage (%)				
	DU	U	N	T	ST
Average workload is 27 lessons per week	10.9	4.5	7.3	39.3	38.1
Increased lessons per week	5.3	7.7	10.5	47.8	28.7
Extra administrative duties	8.9	11.7	19.4	44.1	15.8
Co-curricular activities	21.9	21.9	25.5	25.9	4.9

Table 31 shows that majority of the respondents (39.3%) agreed that average workload is 27 lessons per week while 10.9% strongly agreed. Consequently, about a half (47.8%) agreed that increased lessons per week constituted teacher workload. Extra administrative duties were perceived to be contributing to teacher workload as indicated by 44.1% of the respondents. However, co-curricular activities were not perceived to be highly contributing to teacher workload as shown by 21.9% of the respondents who strongly disagreed and the same percentage also disagreed.

So as to establish how these items related to each other, the researcher inter-correlated them and the results are presented in Table 32.

Table 32: Inter-Correlation of Teacher Work Load items

	TW1	TW2	TW3	TW4
TW1	1			
TW2	.632**	1		
TW3	.195**	.153**	1	
TW4	.122	.257**	.419**	1

n= 247 ** P< 0.01

Key: TW1: Average workload is 27 lessons per week, TW2: Increased lessons per week, TW3: Extra administrative duties, TW4: Co-curricular activities

Table 32 shows that all the items were significant and positively related except for the correlation between TW1 and TW4 which was not significant ($r=0.122$, $p<0.01$).

Table 33: Statistics on Teacher workload

	Min	Max	Mean	Std. Deviation
Increased teacher workload hampers efficiency	1	5	4.0486	.99881
Efficient class management is hampered by extra workload	1	5	3.8664	1.02527
Increased teacher workload affects teacher morale	1	5	3.9676	1.14363
Additional workload affects inter-personal relationships	1	5	3.5061	1.19915
A tired and demoralized teacher is ineffective	1	5	4.4089	1.03142
Extra teacher workload leads to poor lesson preparation	1	5	4.2996	.85974
Teacher-student contact time is reduced by increased workload	1	5	4.1538	1.15145
Increased teacher workload leads to delayed students' feedback	1	5	4.2308	.96239
High teacher workload leads to poor assessment of learner needs.	1	5	4.2429	.92267
Students taught by teachers with heavy workload do not perform as well as those whose teachers have moderate workload	1	5	3.6478	1.15180

Table 33 shows that, a high number of respondents agreed that a tired and demoralized teacher was ineffective (mean: 4.4089). It further indicates that poor lesson preparation and delayed students' feedback can be attributed to extra teacher workload as indicated by means of 4.2996 and 4.2308 respectively.

Table 34: Description of teacher workload and internal efficiency

	Percentage (%)				
	DU	U	N	T	ST
Increased teacher workload hampers efficiency	5.7	2.8	4.9	54.3	32.4
Efficient class management is hampered by extra workload	3.6	8.1	13.8	47.0	27.5
Increased teacher workload affects teacher morale	6.5	6.5	8.5	40.9	37.7
Additional workload affects inter-personal relationships	7.3	16.2	16.2	39.3	21.1
A tired and demoralized teacher is ineffective	6.1	0.8	2.0	28.3	62.8
Extra teacher workload leads to poor lesson preparation	1.2	4.0	6.9	39.3	48.6
Teacher-student contact time is reduced by increased workload	6.9	4.0	6.1	32.8	50.2
Increased teacher workload leads to delayed students' feedback	1.2	7.3	8.1	34.0	49.4
High teacher workload leads to poor assessment of learner needs.	1.6	5.7	6.5	39.3	47.0
Students taught by teachers with heavy workload do not perform as well as those whose teachers have moderate workload	4.5	15.8	15.8	38.5	25.5

Table 34 indicates that most of the respondents (54.3%) agreed that increased teacher workload hampers efficiency while a few (2.8%) disagreed. Efficient class management was perceived to be hampered by extra workload as indicated by 47.0% of the respondents who agreed. Majority of the respondents also agreed that a tired and demoralized teacher is ineffective as indicated by 62.8% of those who strongly agreed. Notably, student-teacher contact time was seen to be hampered due to increased workload as indicated by 50.2% of the respondents who strongly agreed and 32.8% who agreed. Findings in table 34 reveal the effect of teacher workload on internal efficiency of secondary schools in Kericho County. All items rated had a mean of 3.0 and above, the lowest was 3.5 while the highest was 4.4089. This may suggest that most teachers perceive workload as a strong determinant of productivity in class.

A high number of respondents were of the view increased teacher workload hampers efficiency (4.0486) and classroom management (3.8664), and that a tired and demoralized teacher was ineffective (mean 4.4089).

Findings further indicate that poor lesson preparation and delayed students' feedback could be attributed to extra teacher workload as indicated by means of 4.2996 and 4.2308 respectively. Generally, the views of teachers denote the negative effects of extra workload.

Findings in Table 34 may suggest that workload is one of the greatest challenges faced by teachers and a cause of teachers' un-productivity. Debates in education especially teacher education reveal that teachers are saddled with many responsibilities, others not directly related to their classroom work (Akinsolu, 2012). Adu, Titilola and Ifeoma (2013) are of the view that the demands of teaching can be quite demanding for teachers because the scope of their duties is not well defined. Most employing boards and commissions simply state the number of lessons per week and omit other crucial responsibilities.

Hypothesis testing

To find out the relationship between teacher workload and internal efficiency, the following null hypothesis was advanced;

H_{o3}: Teacher workload has no effect on internal efficiency.

Teacher workload was measured at ordinal level and therefore Chi-square, (χ^2), was used to test for the significance. The results are shown in table 35.

Table 35: Chi-square results for teacher workload and internal efficiency

Variable	Value	df	Asymp. Sig.
Chi-Square	320.935	39	.000

n=247

Table 35 shows that there is significant statistical association between teacher workload and internal efficiency (χ^2=320.935, df= 39, P=0.000). The null hypothesis is then rejected, implying that teacher workload affect internal efficiency.

Table 36: Cramer's V value for Internal Efficiency and Teacher Workload

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.106	.000
	Cramer's V	-.075	.000

n= 247

Table 36 shows a weak relationship (-0.075) between teacher workload and internal efficiency. This implies that although the two variables are related, the relationship is weak and negative meaning that an increase in teacher workload may reduce the school's internal efficiency, albeit to a small extent.

The Principals described workload as a combination of lessons taught, lesson preparation, evaluation and added responsibilities such as class teacher, head of department or deputy Principal. They were of the opinion that on average, a teacher should have a maximum of 18 lessons per week which translates, on average of 3.6 lessons per day. The number of lessons recommended by Kenya's MOE is 27 per week. Most teachers in Kenyan secondary schools have lessons which range from 23 to 27 per week.

Findings from the interviews reveal conflicting perspectives on the effect of teacher workload on internal efficiency of schools. Some of the Principals were of the view that additional responsibilities on a teacher's workload did not affect his/her performance negatively; and that on the contrary, most teachers with additional responsibilities performed better. One Principal gave an example of a colleague who was a national coach and yet managed to excel both in class and in administrative duties "there are Principals whose subjects do well. The Principal of Tumaini (pseudonym) is a national coach and he does well in class" (Interviewee 1, 24/04/2015).

On the other hand, the Principals who said extra workload/responsibilities affected students' performance argued that a teacher's extra workload affected preparation and minimized personalized attention needed by students "if a teacher is a head of department, workload will compromise preparation of work, time for one-on-one interaction with the students. Students closely monitored by teachers do better regardless of entry behavior" (Interviewee 3, 08/05/2015).

The views of the interviewees are consistent with the fact that heavy workloads in the workplace have attendant negative effects. Consistently heavy workloads can lead to higher levels of attrition. Burnout Reduced Productivity, Stress, Mistakes and Poor Work-Life Balance.

Heavy workloads are not uncommon in today's workplace. Downsizing, fear of job security and an uncertain economy often prompt workers to accept or take on increasingly greater work responsibilities and longer hours. This increased level of performance doesn't necessarily result in increased levels of productivity. In fact, it can lead to problems and circumstances that actually reduce earnings for a company.

An employee working longer hours isn't necessarily getting more work accomplished. A staffer who is tired, overworked or is attempting to juggle multiple responsibilities is more prone to mistakes. The overall quality of work product can be diminished due to a heavy workload, and mistakes can be costly.

Overworked employees often face higher degrees of stress, which can impact output and lead to physical and mental health problems. A stressed worker is not always focused or able to give complete attention to professional responsibilities. An employee tasked with an excessive workload may feel increasing pressure to perform Herculean tasks, resulting in emotional stressors including depression, as well as physical symptoms like increased blood pressure.

An employee can only take an excessively heavy workload for so long. Sooner or later, the staffer is bound to get burned out from the ongoing and unrelenting workload. An employee facing burnout is subject to higher degrees of absenteeism and sick days, and may choose to leave the company altogether. Hiring and retraining a replacement can be a costly burden for an employer.

Mistakes are more common from workers who simply have too many responsibilities on their plates. The worker who is fatigued or handling multiple tasks may overlook safety precautions or miss crucial deadlines. This could cost the business in many ways, including lost customers, decreased revenue and an increased chance for workplace accidents.

A heavy workload often impacts a healthy work-life balance for staffers. Employees who work excessive hours, have continually changing shift patterns or who are asked to bring

work home with them are likely to have poor morale and low job satisfaction. Staffers may grow resentful about the obligations the employer puts on them, leading to workplace apathy.

Findings from previous research studies reveal that minimal teacher - student ratio has negative effects on students' performance (Stunpnskyy, n.d.). The main workload problem identified was that of finding long-uninterrupted periods of time needed to complete professional duties outside the classroom (Ingarson, *et al*. 2005). The views of Ingarson, *et. al*. (2005) are in contrast with those of the Principals who did not see extra responsibilities as an impediment to effective classroom teaching. However, the views of teachers seem to agree with those of Ingarson and others (2005). A study by Cox Fuenzalida to examine the sudden changes in workload level was designed and carried out to make direct comparison between sudden increase and decrease in workload situations. Results indicated that performance was significantly impaired for both conditions.

Findings suggested that either a sudden decrease (High to Medium) or increase (Low to Medium) workload could result in impaired performance (Cox, 2004). Furthermore, the study suggested that a sudden decrease may result in greater detrimental effects.This agrees with the teachers surveyed in this study who expressed concern that more time spent on administration and curriculum development adversely affected the quality of their classroom teaching and lesson preparation as well as their physical health and emotional disposition. It can thus be concluded from the aforesaid that extra workload affects the teacher professionally and socially.

On the basis of available literature and previous researches we may say that workload has significant impact on the performance of teachers. For high performance, workload on teachers must be according to their abilities and potential to cope with the stress.

Extensive high workload and extremely low workload correlate to low performance. It is the responsibility of the TSC through the Principal to create a system in the school, where optimum workload-productivity correlation exists. An individual teacher, who has low workload in relation to his abilities, is not fully utilized and his workload must thus be increased to a suitable level. The adjustment will give satisfaction to the teacher and the institution stands to gain optimum production. Conversely if workload is high, it is expected that the school head will reduce this workload level.

Moreover, sudden increase or decrease in workload both lead to impaired performance. However, sudden increase in the workload shocks the institutional system. Teachers being employees are sensitive to such a drastic change, and so are likely to react negatively. This could hamper their performance in teaching. Workload should be periodically evaluated in terms of current institutional priorities and initiatives. It is more desirable that teachers are involved in this evaluation process and workload. Determination of workload should take into consideration the teachers' concerns and potential. However, institutional priorities and norms cannot be ignored while establishing this process. Teachers should be permitted to raise their workload concerns with their subject heads or Heads of Departments. Should these approaches fail to address the contention of the teachers, the matter could be directed to the Head of Institution for resolution. Other options can be considered to handle the challenge where staff workload negatively affects the institutional efficiency. This may include review of the teacher's responsibility, duties, key performance indicators and performance.

Such review measures should be carried out possibly by a suitably qualified Head of Department, identified and assigned by the School Principal. For smooth running of the system, key requirements and standard operating procedure may need to be defined by the institution. An audit of the skills and training required to undertake the identified tasks and actions may also be carried out at this stage. The resulting review will identify areas that account for any exceeded workload, or other factors that are infringing on effective time and work efficiency. Strategies should then be formulated to assist the teaching staff and their respective heads to resolve emerging issues related to workload management.

The strategies may include work re-assignment, retooling and capacity building of staff, review of duty description and workload adjustment etc. Periodic monitoring of the performance after change in workload is also required to evaluate the correlation between staff efficiency (productivity) and workload.

4.2.5 Effect of Teacher Turnover on Internal Efficiency

Description of Teacher Turnover

Five items were presented to the participant to establish their views on what constituted teacher turnover. The results are summarized in Table 37.

Table 37: Teacher Turnover Item Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness
TT1	247	4.00	1.00	5.00	3.8057	1.20073	-1.083
TT2	247	4.00	1.00	5.00	3.2065	1.05628	.058
TT3	247	4.00	1.00	5.00	3.5547	1.03400	-.559
TT4	247	4.00	1.00	5.00	4.0648	1.04174	-1.066
TT5	247	4.00	1.00	5.00	3.7247	.97380	-.782

Key: TT1: Poor Working conditions, TT2: Increased Workload; TT3: Lack of essential support,

TT4: Search for "greener pastures", TT5: Political pressure.

Table 37 shows that the search for 'greener pastures' was the most considered reason to have caused teacher turnover (mean= 4.0648). Increased workload was not highly rated to be causing turnover as indicated by the positive skewness (0.058).

Table 38: Description of Teacher Turnover Items

	Percentage (%)				
	DU	U	N	T	ST
Poor Working conditions	8.1	9.3	6.9	45.3	30.4
Increased Workload	3.2	25.1	32.0	27.1	12.6
Lack of essential support	2.4	18.2	16.2	47.8	15.4
Search for "greener pastures"	1.6	10.9	8.5	37.2	41.7
Political pressure	3.2	7.7	22.3	47.0	19.8

Table 38 indicates that almost a half of the respondents (45.3%) perceived that poor working conditions led to teacher turnover while30.4% strongly agreed. Concerning increased workload, 3.2% disagreed that it characterized teacher turnover, 25.1% disagreed, 32.0% were neutral, 27.1% agreed while 12.6% strongly agreed. This implies that majority of the respondents were neutral on increased workload being a contributor to teacher turnover. Majority of the respondents (41.7%) also strongly agreed that the "search for greener pastures" characterized teacher turnover and that political pressure led to teacher turnover as indicated by 47.0% of those who agreed.

To find out how the items related to each other, inter-item correlation was done and results are presented in Table 39.

Table 39: Inter-correlation of Teacher Turnover Items

	TT1	TT2	TT3	TT4	TT5
TT1	1				
TT2	.551**	1			
TT3	.444**	.509**	1		
TT4	.559**	.402**	.238**	1	
TT5	.145*	.182**	.249**	.090	1

n= 247 ** P< 0.01

Key: TT1: Poor Working conditions, TT2: Increased Workload; TT3: Lack of essential support, TT4: Search for "greener pastures", TT5: Political pressure.

All the items related positively and significantly except for the relationship between TT4 and TT5 which was not significant at 0.01 level of significance.

The researcher sought to find the respondents' view on the effect of teacher turnover on students' academic performance. They gave their view on a 5-point likert scale with (1-definitely untrue to 5- Strongly true). All the views were aggregated to find their mean score. The results are shown in table 40.

Table 40: Teacher turnover statistics

	Min	Max	Mean	Std. Deviation
Continuous stream new teachers negatively affect students' performance	1	5	4.0977	.88325
Continuous well trained staff lead to sustained students' achievement	1	5	4.2744	.72605
Frequent transfers hinder monitoring of students' performance	1	5	4.2326	.82703
Frequent transfers disrupt teacher-student relationships	1	5	4.2465	.84260
High teacher turnover breaks school culture	1	5	3.7163	1.06712
High turnover leads to loss of teacher-student contact time	1	5	3.7721	1.08480
Teacher turnover do not affect students' performance	1	5	2.2930	1.12852
Frequent transfers discourage capacity building initiatives by schools	1	5	3.9442	.96512

n= 247

Continuous well trained staff are seen to lead to sustained students' performance (mean of 4.2744) while disruption of teacher- student relationships and ineffective monitoring of students' performance had mean scores of 4.2465 and 4.2326 respectively. More than average respondents (3.9442) agreed that frequent transfers discourage capacity building initiatives by schools.

Table 41: Description of Teacher turnover

	Percentage (%)				
	DU	U	N	T	ST
Continuous stream of new teachers negatively affect students' performance	1.2	6.9	8.5	46.6	36.8
Continuous well trained staff lead to sustained students' achievement	0.8	0.8	8.9	47.8	41.7
Frequent transfers hinder monitoring of students' performance	1.2	5.3	4.9	46.6	42.1
Frequent transfers disrupt teacher-student relationships	1.2	2.8	8.9	40.5	46.6
High teacher turnover breaks school culture	1.6	16.6	11.7	44.1	25.9
High turnover leads to loss of teacher-student contact time	3.6	11.7	12.1	42.9	29.6
Teacher turnover do not affect students' performance	24.7	43.7	14.2	13.0	4.5
Frequent transfers discourage capacity building initiatives by schools	1.6	7.3	13.4	47.0	30.8

Table 41 shows that most of the respondents agreed that continuous stream of new teachers negatively affect students' performance as indicated by 46.6% of those who agreed and 36.8% of those who strongly agreed. Continuous well trained staff was perceived to have contributed to sustained students' achievement as indicated by 47.8% of those who agreed. A negligible percentage (0.8%) of the respondents was of the contrary opinion. In regard to monitoring of students' performance, majority of the respondents (46.6%) agreed that frequent transfer of teachers hinders this monitoring. This frequent transfer was also perceived to be discouraging capacity building initiatives by schools as indicated by 47.0% of those who agreed and 30.8% of those who disagreed.

Findings in Table 41 reveal the effect of teacher turnover on the internal efficiency of secondary schools in Kericho County. Findings reveal that teacher transfers affect internal efficiency negatively. Negative effects occasioned by teacher transfers include disruption of teacher - student relations (4.2465), hindrance to monitoring of students' performance (4.23) and loss of teacher – student contact time (3.7721). Similarly, teacher transfers interrupted professional growth of teachers (3.944) and school culture (3.716) negatively. Findings also reveal that there are benefits when students were taught continuously by the same teachers (4.2744). Generally, responses from teachers reveal that teacher transfers affected both students and teachers negatively.

Hypothesis testing

In line with objective five of the study, the following null hypothesis was advanced;

H_{o4}: Teacher turnover have no influence on internal efficiency of public secondary schools.

Since teacher turnover was measured at ordinal scale, the researcher Chi- square (χ^2) test to find out the level of significance. The results are shown in table 42.

Table 42: Chi-Square results for teacher turnover and internal efficiency

Variable	Value	df	Asymp. Sig.
Chi-Square	252.482	35	0.000

Table 42 shows that there is a significant statistical association between teacher turnover and internal efficiency (χ^2=252.482, df= 35, P=0.000). The null hypothesis is therefore rejected.

The researcher further wanted to establish the strength of the association and therefore Cramer's V was used. The results are shown in table 43.

Table 43: Cramer's V value for Internal Efficiency and Teacher Turnover

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.194	.000
	Cramer's V	-.137	.000

n= 215

Cramer's V = -0.137, indicating a weak relationship between teacher turnover and internal efficiency. This implies that the more the teacher turnover, the less the internal efficiency.

Findings from the interviewees reveal that teacher transfers affect internal efficiency of secondary schools positively as well as negatively. However, from the findings, negative effects seem to outweigh positive effects. The reasons given by the Principals to explain the negative effects are:

a) Teacher transfer create a shortfall of teachers especially when immediate replacement is not done; thus leading to increased teacher workload and imbalances in the departments

b) Students taught by many teachers before KCSE examinations do not perform as good as those taught continuously by the same teachers. They argued that a student who has been with students for a long time understands the students well and can therefore address their needs adequately " when a teacher continues with same students, the teacher gets to understand students well in terms of strengths and weaknesses" (Interviewee 2, 28/04/2015)

c) Bonding between teachers and students, which is forged after a long stay together, enables students to understand the teaching approach of the teacher: "….students have to feel the teacher before they take in what he or she is teaching" (Interviewee 4, 08/05/2015). This, they argued, minimizes complaints from students and enables them to develop a certain level of confidence in the teacher. "Students tend to develop confidence in a teacher, especially a good one, when they stay for a longer time with them" (Interviewee 1, 24/04/2015). Emotional attachment between the teacher and the students is also broken during transfer and students become emotionally affected, a

situation they said, affects students' academic performance. The remarks of one Principal highlight the gravity of the effect: "….this is what affected our performance in Biology last year. Some girls literally cried. They said 'we are finished. We will fail'. And that feeling was reflected in their results" (Interviewee 3, 08/05/2015)

d) Transfers contribute to loss of institutional memory and breaks already established teams

Most Principals were of the view that the success of a school depends on the stability of teachers and if a teacher has to transfer, he or she should do so without coercion. The majority were of the opinion that turn-over without acrimony is positive but disastrous when done in an unkind and unprofessional manner. One Principal was of the view that teacher turnover could be bridged through team teaching and counseling of students prior to a teacher's transfers: "…you must remove from the minds of students the view that if a teacher leaves, they are dead" (Interviewee 3, 08/05/2015). Findings further reveal that transfers had positive effects when it was a result of a promotion. The Principals argued that such positive transfers motivated the remaining teachers to work harder so that they too could be recognized and promoted.

Based on the findings of the study, the following observations were made: Teacher turnover has negative administrative effects on institutions; in addition, teacher turnover has negative financial effects on the school; and teacher turnover negatively affects the social set up of the school. The School Boards of Management should liaise with the Teachers Service Commission to hasten the replacement of those staff that leaves the institution to reduce the negative effects brought about by their departure. Interviewed Principals suggest that the employer improves the terms and conditions of service to improve on the staff retention rate so as to avoid liabilities caused by staff turnover.

Duze and Rosemary (2013) advise that it is always important to understand why teachers transfer. They are of the opinion that most teachers leave because of lack of job satisfaction, poor working conditions, increased workloads, poor motivation, limited opportunities to participate in key decisions affecting the school and general lack of support.

This study did not seek to find out reasons for teacher - turnover leave but instead whether and how teacher - turnover affect students' performance. It would be advisable to explore the aforementioned tangent as well.

Duze and Rosemary (2013) are of the view that reducing the frequency with which children are taught by successive stream of novice teachers may be one step of improving educational quality. Their observation could explain why schools in the inefficient category lacked adequate teachers and had to rely on college students and form four leavers who could not be expected to stay for more than six months in the school. Akinseli (2010) concurs with the aforementioned by arguing that unqualified teachers affect quality of learning delivery.

4.3 Correlation of Teacher Characteristics

This section presents findings on the relationship between each of the four teacher characteristics. The resultant correlation matrix is presented in Table 44.

Table 44: Correlation matrix of Teacher characteristics

	TQ	**TE**	**TW**	**TT**
TQ	1			
TE	.711**	1		
TW	.587**	.567**	1	
TT	.552**	.572**	.610**	1
n=247		**. P< 0.01		

Key: TQ- Teacher Qualification TE- Teacher Experience TW- Teacher Workload TT- Teacher Turnover

Findings in Table 44 reveal that all teacher characteristics were positively and significantly correlated with the overall teacher characteristic. The highest correlation ($r=0.711$, $P<0.01$) was between teacher qualification and teacher experience while the least correlation ($r= 0.567$, $p< 0.01$) was between teacher workload and teacher experience.

The study also sought to identify the greatest predictor of internal efficiency among the four variables of the study. Multiple regression analysis was therefore conducted and the findings presented in Table 45.

Table 45: Beta coefficients of Teacher Characteristics

Model		Standardized Coefficients	
		Beta	Sig.
1	(Constant)	11.33	.006
	Teacher Qualification (TQ)	.167	.003
	Teacher Experience (TE)	.163	.028
	Teacher Workload (TW)	-.119	.013
	Teacher Turnover (TT)	-.026	.026

a. Dependent variable: Internal efficiency

The coefficient for teacher qualification (β= 0.167) and teacher experience (β= 0.163) are significantly different (p< 0.05). However, the beta coefficients for teacher workload (β= -0.119) and teacher turnover (β= -0.026) are negative and statistically significant (p< 0.05).

This may imply that TQ and TE positively predict internal efficiency while TW and TT have a negative predictive effect.

Table 46: Adjusted R^2 of teachers characteristics on internal efficiency

Model	R	Adjusted R Square	Std. Error of the Estimate
1	.51	.24	.74238

The adjusted R^2 value (Table 46) which is the multiple coefficient of determination was 0.24 and this implied that 24 percent of the internal efficiency was attributed to teacher characteristics.

Considering the four variables therefore, the following equation was established;

$\hat{y}$= 16.14 + 0.167 (TQ) + 0.163 (TE) + -0.119 (TW) + - 0.026 (TT). (R^2=0.24) $p < 0.05$

This equation indicates that teacher qualification has the highest positive significant predictive value on internal efficiency (β= 0.167, $p < 0.05$) while teacher workload has the highest negative significant predictive value on internal efficiency (β= -0.119, $p < 0.05$).

Many studies conducted to establish the relationship between teacher characteristics and productivity reveal two categories of teacher characteristics: those which affect productivity positively and those which affect it negatively (Ayibatonye & Ikechukusu, 2014; Bii & Nzevu, 2013; Alimi *et.al*, 2012; Adeyemi & Adu, 2012). Teacher characteristics which affect productivity positively include teacher quality, length of teaching experience, salaries, promotions, personal traits and values. Those which affect negatively include transfers, workload, work environment and lack or limited opportunities for professional growth, among others. There is need therefore for schools and educational systems to harness on teacher characteristics which enhance productivity and subsequently internal efficiency and to minimize those which affect it negatively. Similarly, while it is evident that teacher characteristics affect internal efficiency of secondary, we should not turn a blind eye on other significant predictors of internal efficiency such as physical resources, quality of teaching/learning processes, continuous monitoring and evaluation of educational processes and benchmarking for best practices in teaching and learning (Robbins, 2013).

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of the key findings of the study. It is divided into the following sections: summary of key findings, conclusion and recommendations.

5.1 Nature of Internal Efficiency of Schools in Kericho County

Findings reveal the state of internal efficiency of secondary schools in Kericho County as well as reasons for efficiency or inefficiency. The study has found three categories of schools in the county based on their nature of efficiency. These are: efficient schools (23.5%), moderately efficient (47.1%) and inefficient (29.4%).

Findings further reveal distinct reasons for each school category. Schools ranked efficient were either national or county schools. They had committed stakeholders, had predictive school culture fashioned against the values of teamwork and strong work ethics, effective implementation of the curriculum, comprehensive induction and mentorship programs as well as proper management of financial resources. Such schools also used well developed infrastructure and attracted students with high entry grades.

Schools rated as moderately efficient were also national and county schools. They had inadequate resources (human, financial and physical), weak parental support and average entry behavior of students. The schools also had policies which encouraged students' efforts towards good performance, including remedial classes for weak learners. Some schools in this category had registered improvement because of stable, focused and committed leadership. In some cases, a change of status from Mixed to either Boys or Girls only had boosted performance.

Schools in the third category of inefficient schools were all District and Day schools. They had students with low entry behavior, had poor curriculum implementation, weak administrative structures, inadequate teaching staff, rampant absenteeism of students and lack of support from the immediate community.

Certain operational policies such as readmission of mature students militated against performance. Equally, challenges of drug abuse, early pregnancies and unstable family backgrounds all contributed to the inefficiency.

5.2 Effect of Teacher Qualification (TQ) on Internal Efficiency (IE)

In this sub-section, a summary of the meaning of Teacher Qualification, the effect of Teacher Qualification on Internal efficiency of secondary schools and the reasons for the effects are discussed.

The study reveals that Teacher Qualification is understood as subject and content mastery, higher academic qualification, extensive research in teaching subject and better performance. The study also reveals that Teacher Qualification has a significant effect on student's academic performance and subsequently on internal Efficiency of schools in Kericho County. This inference is arrived at by testing the null hypothesis using Spearman's rho correlation coefficient (Table 12). Similarly, findings reveal descriptors of Teacher Qualification which had the highest and the lowest significant effect on internal Efficiency of Secondary schools. Likert scale was used to measure the level of significance and any item that had a mean of 3.0 and above was deemed significant. In this respect, subject mastery (4.2744) and professional development of teachers (4.079) was revealed to have the greatest positive effect on students' performance. On the other hand, a teacher's academic qualification (2.78) had the least significance.

Findings further reveal the reasons behind the positive effect of Teacher Qualification on Internal efficiency in secondary schools in Kericho County. A teacher with higher qualification is deemed to have a sense of self esteem and confidence which impacts positively on content delivery. Such a teacher has a broader insight into academic issues, is a source of motivation to the students and earns more respect from the students as well as peers. It is noteworthy that a teacher's subject mastery was the most important aspect of Teacher Qualification.

5.3 Effect of Teacher Work Experience (TE) on Internal Efficiency (IE)

Findings reveal that Teacher Work Experience has a significant effect on the Internal Efficiency of public secondary schools in Kericho County. Pearson correlation coefficient was used to test the level of effect of Teacher Work Experience on Internal Efficiency.

Findings reveal that the longer the teacher's experience, the higher the level of the school's Internal Efficiency (Table 12).

Findings further reveal the reasons behind the effect of Teacher Work Experience on Internal Efficiency of public secondary schools in Kericho County. Effects were expressed in terms of benefits. Long serving teachers were described as having content mastery and therefore effective in content delivery. Such teachers were also thought to have deeper understanding of students' mannerisms and behavior and therefore able to address learning needs and styles of students. They were also confident, able to predict appropriate pace of syllabus coverage and understood the challenges faced by students in each topic.

5.4 Effect of Teacher Workload (TW) on the Internal Efficiency (IE) of Public Secondary Schools in Kericho County

Findings from the Study reveal what constitutes a teacher's extra workload as well as the effect of Teacher Workload on the Internal Efficiency of public secondary schools. Findings show that Teacher Workload was conceived as a combination of lessons taught, lesson preparation, evaluation of students' learning and additional responsibilities such as Class Teacher, Head of Department or Deputy Principal. Findings also indicated that teachers found 18 teaching lessons more tenable than the 27 recommended by TSC.

The Study further revealed that extra teacher workload had both positive and negative effects on a teacher's performance and subsequently on the Internal Efficiency of public secondary schools. However, the negative effects outweighed the positive effects. Negative effects of extra workload include poor lesson preparation, delayed students feedback, minimized personalized attention to students, as well as demoralized and fatigued teachers.

The afore-going all point towards inefficiency. On the other hand, teacher with additional responsibilities such as HODs and Coaches were found to be better performers in their subject areas as well as in their additional responsibilities.

5.5 Effect of Teacher Transfers (TT) on Internal Efficiency (IE) of Public Secondary Schools in Kericho County

Findings from the study reveal the effect of teacher transfers on internal efficiency of secondary schools in Kericho County and the reasons for teacher transfers.

Findings reveal that teacher transfers affect students' performance positively as well as negatively. Negative effects of transfers include teacher shortfall, departmental imbalances, loss of institutional memory, breaking already established bonds between students and teachers, instability in schools, emotional deprivation on the students; as well as loss of confidence on the side of students and a cause for students' complaints. Positive transfers were those occasioned by promotions which could also motivate the remaining teachers to work harder so that they too could be promoted. Generally, negative effects of teacher transfers outweighed the positive effects. This may suggest that teacher transfers affect internal efficiency of secondary schools negatively.

5.6 Summative Statement on the Effect of the Teacher Characteristics on Internal Efficiency of Public Secondary Schools in Kericho County

Findings reveal that TQ and TE positively predict internal efficiency while TT and TW have a negative predictive effect. This may imply that TQ and TE affect internal efficiency of secondary schools positively while TW and TT affect internal efficiency of schools negatively.

From the findings, the following equation was established to summarize the effect of teacher characteristics on internal efficiency:

$\hat{y}$= 16.14 + 0.167 (TQ) + 0.163 (TE) + -0.119 (TW) + - 0.026 (TT). (R^2=0.24) $p < 0.05$

From the equation, Teacher Qualification has the highest positive significant predictive value on internal efficiency while Teacher Workload has the highest negative significant predictive value on internal efficiency. Further, the R-square value implies that 24% of internal efficiency can be attributed to the teacher characteristics investigated.

5.7 Conclusions

This Study sought to determine the nature of Internal Efficiency of public secondary schools in Kericho County and how it was affected by selected teacher characteristics. Significant facts were unearthed in relation to the objectives. First, only 23.5% of the sampled schools were found to be efficient, while the rest were either moderately efficient (47.1%) or inefficient (29.4%). This revelation raises a number of questions on the inputs, processes and outputs of our education system. Earlier, this study posed the question as to whether the Government and other stakeholders investing in education were getting value for their money. The response from the findings is clearly in the negative.

The study has also revealed a strong link between school categorization (national, county, and district/day) and the level of internal efficiency. This is certainly due to different levels of resource allocation to the schools on the basis of category. Therefore, for schools to produce quality graduates, adequate resources must be provided. The Ministry of Education might have to reconsider its funding strategy with a view to investing more on those variables that impact more positively on school performance.

The effect of selected teacher characteristics on schools' internal efficiency was measured. It emerged that some characteristics had positive effects while others had negative effects on the internal efficiency. Teacher qualification and length of teaching experience had positive predictive effect on the internal efficiency of public secondary schools in Kericho County. It is therefore important that those joining the teaching profession meet minimum qualification in their teaching subjects and be encouraged to pursue further studies in it as well as professional development courses in order to acquire the requisite pedagogical content knowledge for competence. Likewise, frequent transfers of teachers should be discouraged seeing that teacher turnover negatively impacts on internal efficiency.

This Study agrees with other researches which have shown that teacher quality—whether measured by content knowledge, experience, training and credentials, or general intellectual skills—is strongly related to student achievement. Simply stated, skilled teachers produce better student results. It follows that assigning experienced, qualified teachers to low-performing schools and students is likely to pay off in better performance and narrowing gaps between efficient and inefficient schools.

5.8 Recommendations

This study explored the nature of internal efficiency of public secondary schools in Kericho County and how it is affected by selected teacher characteristics. Findings reveal that Teacher Qualification and Teacher Experience positively predict internal efficiency while Teacher Turnover and Teacher Workload have a negative predictive effect. From these findings, the researcher recommends the following:

1. The Ministry of Education to look into the quality of training programs for teachers given that it has significant co-relation with student performance.

2. The Teachers Service Commission should ensure that teachers are provided with opportunities for professional development. The quality of pre service education and training should be improved. In-service education could be provided to teachers for improving the effectiveness of teaching.

3. Practicing teachers should be encouraged to pursue further studies in their areas of specialization

4. Terms of Service for teachers be improved to ensure qualified teachers are retained for long in the profession seeing that the more experienced teachers contribute positively to the internal efficiency

5. Teacher transfers should only be done when it is absolutely necessary

5.9 Suggestions for Further Research

Findings from the Study reveal the need to explore other variables related to internal efficiency in order to have a more comprehensive understanding of the status of the internal efficiency of the schools. Suggestion is therefore made for further research in the following areas:

1. The effect of school type on the internal efficiency of public secondary schools.
2. The influence of other variables other than teacher characteristics (such as home or school factors) on internal efficiency.
3. A purely quantitative study could be done with a larger sample to replicate this study, to determine the actual state of internal efficiency of public secondary schools.
4. A comparative study of the internal efficiency of private and public schools to offer insight on areas to benchmark on from either side.
5. Further studies could be conducted on school environment, student self-concept, teacher job satisfaction, and their effects on student learning outcomes.

REFERENCES

Aaronson, D., Lisa, B., & William, S.(2007). Teachers and student achievement in the Chicago public high schools. Journal of Labor Economics 25: 95–135.

Abagi, O. & Odipo, G. (1997). Efficiency of primary education in Kenya: Situational analysis and implications for educational reform. *Discussion Paper No. 2, 97*. Nairobi: Institute of Policy Analysis and Research.

Adamson, G., O'kane, D., & Shevlin, M. (2005). Students' Ratings of teaching effectiveness: A laughing matter? *Psychological Reports, 96*, 225-226.

Adeyemi B.A. (2008). Effect of Cooperative Learning and Problem-Solving Strategies on Junior Secondary School Students' Achievement in Social Studies. *Electronic Journal of Research in Educational Psychology, University of Almeria(Spain)*

Adeyemi, T. O. & Adu, E.T. (2012). Teachers' quality and internal efficiency in primary schools in Ekiti State, Nigeria. *International Journal of Academic Research in Progressive Education and Development, 1 (1),* 188 – 222.

Adeyemi, K. & Akpotu, N. E. (2009). Cost analysis of teacher absenteeism in Nigerian Secondary schools. *Kamla-Raj, J.soc 21 (2),* 137 – 144.

Adeyemi, T. O. (2012). School variables and internal efficiency of secondary schools in Ondo State, Nigeria. *Journal of Educational and Social research, 2 (3)* 205-214.

Adu, E. O., Titilola, O. & Ifeoma, E. R. (2013). Teacher's workload and gender as determinant of teacher productivity in public secondary schools in Oyo state, Nigeria. *European Journal of Educational Sciences, 1 (1),* 14-25.

Ahmed, Saifuddin (2009). *Methods in Sample Surveys* (PDF). The Johns Hopkins University

Akinsolu. A. O. (2012). Resource utilization and international efficiency in Nigerian Secondary Schools: Implications for social problems of education. *International Journal of Sociology of Education, 4 (1),* 23 – 30.

Akinsolu, A.O. (2010). Teachers and students' academic performance in Nigerian schools: Implications for planning. *Florida Journal of Educational Administration and Planning, 3 (2).*

Akintayo, M.O (1998). Returns to investments in education: A critical review. *African Journal of Labour Studies, 4 (1),* 13 – 23.

Alimi, O. S., Elinola, G. B. & Alabi, F. O. (2012). School types, facilities and academic Performance of students in secondary schools in Ondo State, Nigeria. *International Education Studies 5(3),* 44 – 48.

Anderson, G. M., Shughart, W. F., & Tollison, R. D. (1991). Educational achievement and the cost of bureaucracy. *Journal of Economic Behavior & Organization*, *15*(1), 29-45.

Ayibatonye, J. E & Ikechukusu, S. (2014). Teacher qualification, teaching and school location:Are they determinants of students achievement in basic science in junior secondary schools? *The International Journal of Science & Technolodge, 2 (9),* 136-140.

Ayot, H. O. & Patel, M. M. (1987). *Instructional methods: General methods*. Nairobi: Kenyatta University, faculty of education.

Babalola, O. T (2003). An Investigation into the Internal Efficiency of Ekiti State Secondary Schools. Unpublished M.Ed Thesis University of Ado Ekiti, Nigeria. 52-56

Babbie, E. (1986). *The Practice of Social Research.* Belmont: Wadsworth Publishing Company.

Barineka, N.J. (2012). Analysis of poor performance in senior secondary schools students in Chemistry in Nigeria. *African Research Review Vol. 6 (4), 27.*

Bauer, S. C. (2004) .Should Achievement Tests be Used to Judge School quality? University New Orleans.

Beach, S. and Lindsey, L. (2000). *Sociology: Social Life and Issues.* New Jersey: Prentice Hall.

Belliveau, G., Liu, X., & Murphy, E. (2002). *Teacher workload on Prince Edward Island*. PEI: Teachers' Federation.

Betts, J. R., Andrew, C. Z.,& Lorien, A. R. (2003).Determinants of student achievement: New Evidence from San Diego. San Diego: Public Policy Institute of California.

Biddle, B. & Berliner, D. (2002). A research synthesis: Small class size and its effects. *Educational Leadership, 59 (5),* 12-23.

Bii, N. & Nzevu, J. (2013). Internal efficiency and performance: An assessment of Secondary schools in Bureti District – Kenya. *Journal of African Studies in Educational Management and Leadership, 3 (1),* 4 – 17.

Blatchford, P., Russell, A., Bassett, P., Brown, P., & Martin, C. (2007). The effect of class size on the teaching of pupils aged 7–11 years. *School Effectiveness and School Improvement*, *18*(2), 147-172.

Brewer, J. D. & Goldhaber, D. D. (1997). *Evaluating the effect of teacher degree level on educational performance*. Retrieved from nces.ed.gov/pubs97/97535/pdf.

Canadian Teachers' Federation. (2003, August). A national survey of teacher workload and worklife. *In Economic and Member Services Bulletin*

Carroll, G. R. & Harrison, R. (1998). "Organizational Demography and Culture: Insights from a Formal Model and Simulation". *Administrative Science Quarterly, 43*, 637–67.

Champion, J. (1975). *The Sociology of Organizations.* New York: McGraw-Hill Book Company.

Chapman, D.W. & Mählck, L.O. (1997). Changing what happens in schools: Central Level initiatives to improve school practice. Paris: International Institute for Educational Planning -UNESCO.

Clotfelter, C. T., Helen, F. L., & Jacob, L. V.(2007a). How and Why Do Teacher Credentials Matter for Student Achievement? Working Paper #2. Washington, DC: CALDER.

Cohen, A. J.; Harcourt, G. C. (2003). "Retrospectives: Whatever Happened to the Cambridge Capital Theory Controversies?". Journal of Economic Perspectives. 17 (1): 199–214.

Cohen, L., Manion, L. & Morrison, K. (2007). Research methods in education (6th ed.). London: Routledge Taylor & Francis Group.

Colby, J. (2000). *Learning outcomes in international context*. Paper presented at the Annual Meeting of the Comparative and International Education Society, San Antonio, Texas.

Cotton, K. (1996). School size, school climate, and student performance.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods Approaches.* (2nd ed.). Thousand Oaks: Sage Publications.

Daly, H (1997). "Forum on Georgescu-Roegen versus Solow/Stiglitz". Ecological Economics. 22 (3): 261–306.

Davy Koech Report. Retrieved from www.africog.org/reports/commissionofinquirypaper.pdf

Darling-Hammond, L. (2002). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives, 8 (1),* 1-44.

Dee,T. S. (2004). Teachers, race and student achievement in a randomized experiment. Review of Economics and Statistics, 86(1):195-210.

Dess, G. G. & Shaw, J.D. (2001). Voluntary turnover, social capital and organizational performance. *Academy of Management Review, 26,* 446-456.

Drummond, K. V., & Stipek, D. (2004). Low-income parents' beliefs about their role in children's academic learning. *The Elementary School Journal*, 197-213.

Duze, C.O. & Ogbah, R. (2013). Retaining and developing quality teachers: Critical issues For administrators in Nigerian secondary schools. *Journal of Sociological Research, 4 (1).*

Ezekwesili, O. (2008). *Human capital: A strategic asset for national development*. A lecture delivered at the convocation of Federal University of Technology, Owerri, Nigeria

Farrel, J. P. & Oliveira, J. B. (1993). *Teachers in developing countries : Improving effectiveness and managing costs*. Washington: World Bank.

Ferguson, R.F. (1991). Paying for public education : New evidence on how and why money matters. *Harvard Journal on Legislation, 28 (2),* 465-498.

Fertig, M. (2000). Old wine in new bottles? Researching effective schools in developing countries. *School Effectiveness and School Improvement, 11 (3)* 385-403.

Fraser, B. J., & Walberg, H. J. (2005). Research on teacher-student relationship and learning environments: Context, retrospect, and prospect. *International Journal of Educational Research, 43,* 103-109.

Fullan, M. (2007). The new meaning of educational change (4th ed.). New York: Teachers College Press.

Gachungi, J. M. (2011). *Factors contributing to educational wastage in public and private secondary schools in Municipality Division, Nyeri District, Central Province, Kenya* (Doctoral dissertation).

Gay, L. R. , Mills, G. E. & Airasian, P. (2006). *Educational research: Competencies for analysis and applications*. (8th ed.). New Jersey: Pearson, Merril Prentice Hall.

George, N. R., Bundi, T. K, , Justus, N, R. & Zachariah, K. M., (2012). Factors contributing to poor performance on Kenya Certificate of Primary Education in public day primary schools in Mwimbi Division, Maara District, Kenya: *International Journal of Humanities and Social Science, 2 (5).*

Glebbeeck, Arie and Erik Bax (2004) Is High Employee Turnover Really Harmful? An Empirical Test Using Company Records. Academy of Management Journal , 47(2): 277-286.

Godden, W. (2004). Sample size formulas, Retrieved 25, October 2013 from http://williamgodden.com/samplesizeformula.pdf

Goh, S. C & Fraser, B.J. (1998). Teacher interpersonal behavior, classroom environment and outcomes in primary mathematics in Singapore. *Learn Environ Res, 1, 199-229.*

Goldhaber, D. E. (2004). *Indicators of teacher quality*. ERIC Clearinghouse on Urban Education New York. Retrieved on October 15, 2012, from http://www.ericdigests.org/20121/quality.htm

Goldhaber, M. & Brewer, D. (1999). Does teacher certification matter? High school certification status and student achievement. *Unpublished Manuscript*. Retrieved from file://c.users/guest/downloads/392-703-1.pdf

Guerrien B. and O. Gun (2015) "Putting an end to the aggregate function of production forever" R*eal World Economic Review*

Guthrie, J. P. (2001). High-involvement work practices, turnover, and productivity: evidence from New Zealand. *Academy of Management Journal*, *44, (1), 180-190*.

Hammerseley, M.(1992). What's wrong with ethnography?
London: Rontledge

Hanushek, E. A. (1989). The impact of differential expenditures on school performance. *Educational Study, 18*(4), 45-65.

Hanushek, E.A.(1999). Some findings from an independent investigation of the Tennessee STAR experiment and from other investigation of class size effects. *Educational Evaluation and Policy Analysis*, 19, 143-163.

Hanushek, E. A., & Kimko, D. D. (2000). Schooling, labour-force quality, and the growth of nations. *American economic review*, 1184-1208.

Henry, G. T. (1990). Practical sampling: An introductory text that covers the basics. Thousand Oaks, CA: Sage Publications

Hunt, N. & Tyrrell, S. (2001). Stratified Sampling. Webpage at Coventry University (Accessed 12 July 2012).

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, *38*, 635-672.

Ingrarson, L., Kleinhenz, E., Beavis, A., Barwick, H., Carthy, H. & Wilkinson, J. (2005). Secondary teacher workload study report. *A Report by Project Support Services, ACER, New Zealand*

Jackson, W. (2003). *Methods: Doing Social Research.* Toronto: Pearson Education, Inc.

Kamau, W. F. (2011). *Analysis of wastage in secondary schools in Kenya: the case of Murang'a East district* (Doctoral dissertation).

Kane, T. J., Jonah, E. R., & Douglas, O. S. (2006). What does certification tell us about teacher effectiveness? Evidence from New York City." Working Paper #12155. Cambridge, MA:National Bureau of Economic Research.

Kombo, D. K. & Tromp, D. L. A. (2006). *Proposal and thesis writing: An introduction*. Nairobi: Paulines Publications Africa.

Kondalkar, V. G. (2009). *Organizational behavior*. New Delhi: New Age International (P) Limited, Publishers.

Koros, P.K.A, Sang, A.K.A. & Bosire, J.N. (2013). Repetition rates in public secondary schools in Kericho District in relation to selected school characteristics: A situational analysis. *Journal of Education and Practice, 4 (11).*

KSSHA (2015). The Kericho County Secondary Schools Heads Association. *Kericho KSSHA Journal, 5.*

Lacey A (2010) The research process. In Gerrish K, Lacey A (Eds).The Research Process In Nursing. Sixth edition. Wiley-Blackwell, Chichester.

Levine, A and Gelles, J. R. (1999). *Sociology: An Introduction.* Boston: McGraw Hill.

Lucas, Adrienne and Isaac Mbiti (2011): "Elite Secondary Schools and Student Achievement: Regression Discontinuity Evidence from Kenya ", *SMU Working Paper*

Lydia, L.M. & Nsaongo, J.W. (2009. Role of the lead teacher in academic achievement in secondary schools in Vihiga District, Kenya. *Journal of Social Sciences, 1 (3)* 84-92.

Mayer, D. P., Mullens, J. E. & Moore, M.T. (2002). *Monitoring school quality: An indicators report*. Washington D C: National Centre for Educational Statistics.

Mills, G. E. (2007). *Action research: A guide for the teacher study*. (3rd ed.). New Jersey: Pearson.

Mishra, S. K. (2007). "A Brief History of Production Functions". Working Paper.

Mji, A. & Makgato, M. (2006). Factors associated with high school learners' poor performance: a spotlight on mathematics and physical science. *South African Journal of Education Vol 26 (2) 253-266*

Mohammad, N., Musarrat, S., Abdul, H., Khansa, N. & Akhtar, A. (2011). Teacher's Competencies and Factors Affecting the Performance of Female Teachers in Bahawalpur (Southern Punjab). *Pakistan international Journal of Business and Social Science, 2,(19)* [Special Issue].

Mugenda, O. E. & Mugenda, A. G. (2003). *Research methods: Quantitative & qualitative Approaches*. Nairobi: Acts Press.

Naidu, B., Neeraja, K., Ramani, E., Shivakumar, J., & Viswanatha, V. (1992). Researching heterogeneity: An account of teacher-initiated research into large classes. *ELT Journal*, *46*(3), 252-263.

Nath, S. R. (n.d). Internal efficiency of secondary educational institutions: results from a reconstructed cohort analysis. *Bangladesh Education Journal*, 27-38.

Nayak, P., & Karmakar, M. (2007). *Educational development and wastage in Tripura* (No. id: 909).

Nye, B; Spyros, K.,& Larry, V. H.(2004). How large are teacher effects? Educational Evaluation and Policy Analysis 26(3):237-257.

Ogula, P. (2005). Research Methods. Nairobi: CUEA Publications.

Okuom, H. A., Simatwa, E. M., Maureen, O. A., & Wichenje, K. M. (2012). Assessment of factors that contribute to repetition and dropout of pupils in primary schools in flood prone areas of Nyando District, Kenya: An analytical study. *Educafional Research, 3*(2), 190-201.

Olubor, R.O (2004): "A Comparative Analysis of the Internal Efficiency of Public Junior Secondary Education of Two Selected States in Nigeria." *Journal of Educational Founda-tions and Managements (JEFAM),* University of Ado Ekiti, Nigeria 4 (1) 194-196.

Omotayo, B.K. (2014). Teachers' characteristics and students' performance level in senior secondary school financial accounting. *Journal of Empirical Studies, 1(2),* 48-53

Omotoso, F. (2007, February 4). Educationist shows wayforward for public schools. *The Punch Newspaper,* pp. 31-33.

Onocha, O. & Okpala P.N. (1995). The effects of systematic assessment procedures on students achievement in Mathematics and science subjects. *Journal of African Studies,10,* 55 - 66.

Orodho, J. (2003). *Essentials of Educational and social science research methods: Qualitative and quantitative approaches.* Nairobi: Acts Press.

Oppenheim, A N. (1992) *Questionnaire design, interviewing and attitude measurement.* London & New York: Pinter Publishers, 70 -72.

Page, C. & Mayer, D. (2000). *Applied research design for business and management*. Sydney: McGraw-Hill.

Parahoo K (2006). Nursing Research: Principles, Process and Issues. Second edition. Palgrave Macmillan, Basingstoke.

Pennycuick, D. (1993). *School effectiveness in developing countries: A summary of the research evidence.* DFID.

Pitan, O. S. (2012). Analysis of internal efficiency in the civilization of human resources selected secondary schools of Oyo state, Nigeria. *Journal of Emerging Trends in Educational Research and policy Studies (JETERAPS), 3 (5)* 748-752.

Polit, D.F., Beck ,C. T. (2004). Nursing Research: Principles and Methods. Seventh edition. Lippincott Williams and Wilkins, Philadelphia PA.

Prieto, L.R., & Altmaier, E.M. (1994). The relationship of prior training and previous teaching experience to self-efficacy among graduate teaching assistants. *Research in Higher Education, 35* (4), 481-497.

Psacharopoulos, G., & Patrinos, H. A. (2004). Returns to investment in education: A further update. *Education economics*, *12*(2), 111-134.

Psacharopoulos, G., & Woodhall, M. (1993). *Education for development*. Oxford University Press.

Rhodes, C. & Beneicke, S. (2003). Professional development support for poorly performing teachers: Challenges and opportunities for school managers in addressing teacher needs. *Journal of In-service Education, 29 91)* 123-138.

Robbins, S. (2013). Educational leadership programmes in the UK Who cares about the school leader?. *Management in Education*, *27*(2), 50-55. Robbins(2013)

Robson, C. (2002). *Real world research* (2nd ed.). Malden MA: Blackwell Publishing.

Safer, A. M., Farmer, L. S. J., Segalla, A., & Elhoubi, A. F. (2005). Does the distance from the teacher influence student evaluations? *Educational Research Quarterly, 28 (3*), 28-35.

Safiya, S. & Adegbemile, O. (2014). Teacher quality as a correlate of internal efficiency of Secondary schools in Kaduna State, Nigeria. *Academic Research International, 5 (5).*

Saha, L. J. (1983) "Soc:ial structure and Teacher Effects on Academic Achievement: A comparative analysis". *Comparative Education Review, 27(1).*

Salerno, C. S. (2003). *What we know about the efficiency of higher education institutions: The best evidence* (pp. 1-65). CHEPS, Universiteit Twente.

Savenye, W.C., & Robinson, R.S. (2004). Qualitative research issues and methods: An introduction for educational technologists.

Schneider, M. (2003). Do School Facilities Affect Academic Outcomes? *International Journal of Humanities and Social Science, 2 (5).*

Scherere, M. (2002). Why think small? *Educational Leadership, 59 (5).*

Shamim, F. (2008). Trends, issues and challenges in English language education in Pakistan. *Asia Pacific Journal of Education, 28*(3), 235-249.

Shamoo, A.E., Resnik, B.R. (2003). Responsible Conduct of Research. Oxford University Press.

Shepard, R.J. (2002). Ethics in exercise science research. Sports Med, 32 (3): 169-183.

Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *In Educational Study, 15 (2),* 4-14.

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: The role of perceived control in children's engagements and school achievement. *Journal of Educational Psychology, 82,* 616-622.

Sifuna, S. (2005). *The illusion of universal free primary education in Kenya*. Retrieved from http://africa.peacelink.org/wajibu/articles/art_6901.

Sllvernail, D. L., & Stump, B. K. (2012). Learning Communities Building the Foundation of intellectual Work.

Soy, S.K. (1997). The Case Study as a Research Method. Unpublished paper (Accessed at http://www.gslis.utexas.edu/~ssoy/usesusers/1391d1b.htm.

Stiefel, L., Hadj Amor, H. B. & Schwartz, A. E. (2004). Best schools, worst schools and school efficiency: A reconciliation and assessment of alternative classification systems. *Developments in School Finance*.

Stoll, L. & Fink, D. (2003). *Changing our schools: Linking school and school improvement.* Maidenhead: Open University Press.

The Efficiency of public Education in Uganda (2008). The planning Department, MoES, Uganda.

UNESCO (2005). Challenges *of implementing free primary education in Kenya: Assessment report.* Nairobi: UNESCO office.

UNESCO (2006). *Practical tips for teaching large classes: A teacher's guide*.

UNESCO Asia and Pacific Regional Bureau for Education: Bangkok.

USAID (2007). *Large class sizes in developing world: What do we know and what can we do?*EQUIP.

Valérien, J. (1991). *Innovations for Large Classes: A Guide for Teachers and Administrators. Educational Studies and Documents, No. 56*. UNESCO Press, Sales Division, 7 place de Fontenoy, 75700 Paris, France..

Wabuke, J. M., Barmao, C. C., & Jepkorir, M. (2013). Overcoming teacher-related challenges to performance in Biology subject among secondary school students in Eldoret Municipality, Kenya. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS) 4 (1),* 79-87.

Wanzare, Z.O.(2013). Skills and attributes of instructional supervisors: Experience from Kenya. *Educational Research and Reviews, 8 (24),* 2270-2280.

Weckowicz, T. E. (n.d). Ludwig Von Bertalanffy (1901-1972). *CRR Working Paper, 89, (2)*. Retrieved from www.richardjung.cz/berta.pdf.

Wenglinsky, H. (2002). The link between teacher classroom practices and student academic performance. *Education Policy Analysis Archives, 10 (12*). Retrieved on August 20, 2012 from http://epaa.asu.edu/epaa/v10n12/.

Whitcomb, J., Borko, H. Listen, D. (2007). Stranger than fiction: Arthur Levine's educating School teachers – the basis of a proposal. *Journal of Teacher Education, 58 (195),* 195 – 201.

Woolfolk-Hoy, A., & Spero, R. B. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education, 21*, 343-356.

Yamane, T. (1973). *Statistics, an Introductory Analysis* (3rd ed.). New York: Harper and Row.

APPENDIX A: LETTER OF INTRODUCTION

Dear Sir/Madam,

RE: CONSENT TO CONDUCT RESEARCH

I am a postgraduate student at Kabarak University carrying out a research titled '**Teachers' Perception of the Effect of Teacher Characteristics on the Internal Efficiency of Public Secondary Schools in Kericho County, Kenya.'**

The purpose of approaching you is to seek your input in this research**.** This exercise is purely for academic purposes and the information you will provide is not transferable to other purposes. Please answer all questions as freely as possible.

I thank you.

DANIEL KIPYEGON CHELULE

APPENDIX B

INTERVIEW SCHEDULE FOR DIRECTORS OF EDUCATION (CDE/SCDE)

1. Kindly describe yourself in terms of academic qualification, professional experience, personal philosophy, professional goals etc How long have you been in the County/District?

2. Briefly describe the nature of education in the County/District for the last five years in terms of:

a). Number of students registered for KCSE examinations

b). Performance – County/District mean score and mean grade; number of quality and poor grades

c). Cohort transition for the last five years especially the sampled districts.

d). Teacher staffing.

3. In terms of the performance and transition trends, is the County/District efficient in its provision of education? Explain your reasons.

4. In your opinion, how do the following factors affect efficiency of education in secondary schools in the County/District: teacher's academic qualification, teaching experience, workload and transfers?

5. Are there any other factors which relate to the teacher which are likely to affect students' academic performance? Explain.

6. What government policies are being implemented at National and County levels to improve students' performance? Are they effective? Explain.

APPENDIX C

INTERVIEW SCHEDULE FOR SCHOOL PRINCIPALS

1. Please tell me about yourself – name, age, qualification, teaching experience, leadership experience, type of school you head (national, County, district, day) and length of stay in school.

2. Please give a brief description of the school's performance for the last five years (2010-2014) as per the following: number of students who enrolled and sat the KCSE exam, mean score and mean grade, number of C- and above, number of D+ and below; and transition rate to institutions of higher learning.

3. What is your opinion regarding the performance trend(s) of the school? Are there any reasons for this kind of trend? Explain.

5. In your view, do the following teacher characteristics affect the students' academic performance and the realization of school vision and national goals of education: teachers' qualification, experience, workload and turn-over? Explain your reasons.

6. Are there any other teacher characteristics which affect students' performance? Please identify them and give reasons for your answers.

APPENDIX D

DOCUMENT ANALYSIS GUIDE

S/N	DOCUMENT	SOURCE	INFORMATION SOUGHT
1	County KCSE analysis report for 2010-2014 County data sheet for sec schools	CDE office DEOs offices	No. of schools/types in the County No. of candidates who sat KCSE from 2010 to 2014 Performance analysis in KCSE at County and school level Transition rates to institutions of higher learning
2	Staffing register – data on teachers	CDE, DEO, TOYA panel	Staffing, teacher characteristics, posting, transfers, promotions, performance etc
3.	School KCSE analysis results sheet	School Principals	School performance over a period of five years (2010-2014), performance analysis, transition rates to institutions of higher learning; teacher characteristics- qualification, experience, transfers, promotion etc

APPENDIX E:

QUESTIONNAIRE FOR TEACHERS

The purpose of this questionnaire is to explore your views on teacher characteristics which may affect internal efficiency of public secondary schools in Kericho County.

Section A is on your personal details while Section B is on the teacher characteristics under study. Using the scale provided, circle the responses that most closely represent your belief and practice.

Response Scale: 1=Definitely Untrue (DU); 2=Untrue (U); 3=Neutral (N); 4=True

(T); 5=Definitely True (DT).

SECTION A: PERSONAL DETAILS

Please tick the response which applies to you.

GENDER

Male ☐ Female ☐

AGE

AGE (Years)	20 -30	31 – 40	41-50	Over 50
TICK				

QUALIFICATION

LEVEL OF EDUCATION	Diploma	Degree	Masters	Doctorate	Others - indicate
TICK					

EXPERIENCE

EXPERIENCE (YRS)	0 -5	6-11	11-15	≥ -16
TICK				

REPONSIBILITIES

RESPONSIBILITY	HOD	HOS	Class teacher	More than one responsibility
TICK				

SECTION B: TEACHER CHARACTERISTICS

a) Teacher Qualification

S/N	What characterizes teacher qualification?	DU	U	N	T	DT
1	Entry behavior to teaching profession (academic qualification)					
2	Grade in teaching subject					
3	Professional qualification (diploma, degree, masters & others)					
4	Content mastery in teaching subject					
5	Pedagogical content knowledge					
6	Continuous professional development of teachers					
	Does teacher qualification affect students' performance?					
7	A teacher with higher academic qualification teaches better					
8	Students perform better when taught by teachers with subject mastery in subjects they teach					
9	Effective teacher is one with high grade/s in teaching subject					
10	Quality of the teacher determines quality of students' outcomes					
11	Students learn more from teachers with strong academic skills					
12	Students perform better when taught by teachers who regularly attend professional development programs					
	Do unqualified teachers affect students' performance					
13	Teachers' inadequate knowledge of subject matter leads to low achievements					
14	Unqualified teachers affect learning/teaching delivery					

b)Teacher Experience

S/N	What constitutes teacher experience?	DU	U	N	T	DT
1	The number of years of teaching experience					
2	Teaching experience after pre-service teacher training					
3	Teaching experience before pre-service training					
4	Lessons learnt from our teachers					
6	Experience acquired in the classroom					
7	Has highly developed problem –solving skills					
	Attributes of experienced teachers					
8	Communicates effectively					
9	Monitors students' behavior and performance effectively					
10	Covers syllabus adequately					
11	Frequently tests and gives feedback to students					
12	Monitors students' discipline					

c) Teacher Turnover

S/N	What causes teacher transfers?	DU	U	N	T	DT
1	Poor working conditions and lack of essential professional support					
2	Increased teacher workload					
3	Inadequate support from school Principal					
4	Personal reasons					
	Do frequent transfers affect students' academic performance?					
5	Continuous stream of novice teachers affect students' outcomes					
6	Well trained staff who teach students continuously lead to sustained students' achievements					
7	Frequent transfers makes it difficult to monitor students' performance and intervene appropriately					
8	Teacher transfers do not affect students' performance					
9	Frequent teacher transfers discourage capacity building initiatives by schools					

d) Teacher Workload

S/N	What constitutes teacher workload?	DU	U	N	T	DT
1	Average teacher workload is 27 lessons per week and anything above is overload					
2	Increased teacher workload is caused by increased number of lessons per week					
3	Increased teacher workload is caused by extra administrative duties					
4	Co-curricular activities lead to increased teacher workload					
	Effects of increased teacher workload on students' performance					
5	Increased teacher workload hampers teacher efficiency in teaching/learning and class management					
6	Increased teacher workload affects teacher morale and inter personal relationships					
7	A tired and demoralized teacher is ineffective					
8	Poor or lack of lesson preparation is caused by increased teacher workload					
9	Increased teacher workload leads to delayed students' feedback					
10	Students taught by teachers with heavy workload perform lower than those whose teachers have moderate workload					

APPENDIX F:

PUBLICATIONS AND CONFERENCE PAPERS

(Overleaf)

Publications

1. Teacher Qualification and Internal Efficiency of Public Secondary Schools in Kericho County, Kenya

2. Effect of Teacher Experience on Internal Efficiency of Public Secondary Schools in Kericho County, Kenya

Papers

1. Empowering Women through Economic Initiatives: Assessing the Impact on Rural Households.

2. Negotiating the Challenges of Large Classes in Public Primary Schools.

APPENDIX G

Education statistics: Kenya

Kenya

Population (1,000)	**Total**	**Male**	**Female**
Preschool age, 2006	3408	1715	1693
Primary school age, 2006	5763	2897	2866
Secondary school age, 2006	5140	2581	2559
Total population, all ages, 2007	37538	18711	18827
Official school age (years)	**Entrance age**	**Graduation age**	**Duration**
Preschool, 2005	3	5	3
Primary school, 2005	6	11	6
Secondary school, 2005	12	17	6
Compulsory education, 2005	6	13	8
Net enrolment ratio (%)	**Total**	**Male**	**Female**
Preschool NER, 2005	27.5	27.2	27.8
Primary school NER, 2005	75.8	75.5	76.1
Secondary school NER, 2005	41.5	41.3	41.8
Gross enrolment ratio (%)	**Total**	**Male**	**Female**
Preschool GER, 2005	49.9	50.2	49.7
Primary school GER, 2005	108.2	110.4	106.0
Secondary school GER, 2005	48.2	49.4	47.1
Entrance and transition (%)	**Total**	**Male**	**Female**
Primary net intake rate, 2003	40.4	39.5	41.4
Primary gross intake rate, 2005	109.7	111.9	107.5
Primary entrants with ECCE			
Transition rate primary-secondary			
Repetition and completion	**Total**	**Male**	**Female**
Primary repetition rate (%), 2005	5.8	6.0	5.6
Secondary repetition rate (%)			
Survival rate to grade 5 (%), 2004	82.9	80.9	85.1
Survival rate to last primary grade (%), 2004	83.6	74.0	71.4
Primary completion rate (%), 2005	92.6	93.7	91.6
School life expectancy (years), 2005	9.6	9.9	9.4

Teaching staff	Pupil/teacher ratio	% trained teachers	% female teachers
Preschool, 2005	22.8	70.6	87.5
Primary school, 2005	39.5	98.8	44.8
Secondary school, 2005	31.6		38.4
Public expenditure per student as % of GDP per capita			
Primary school, 2004	24.2		
Secondary school, 2004	24.1		
Total public expenditure on education			
As % of GDP, 2004 6.9			
As % of total government expenditure, 2004 29.2			

Data sources:

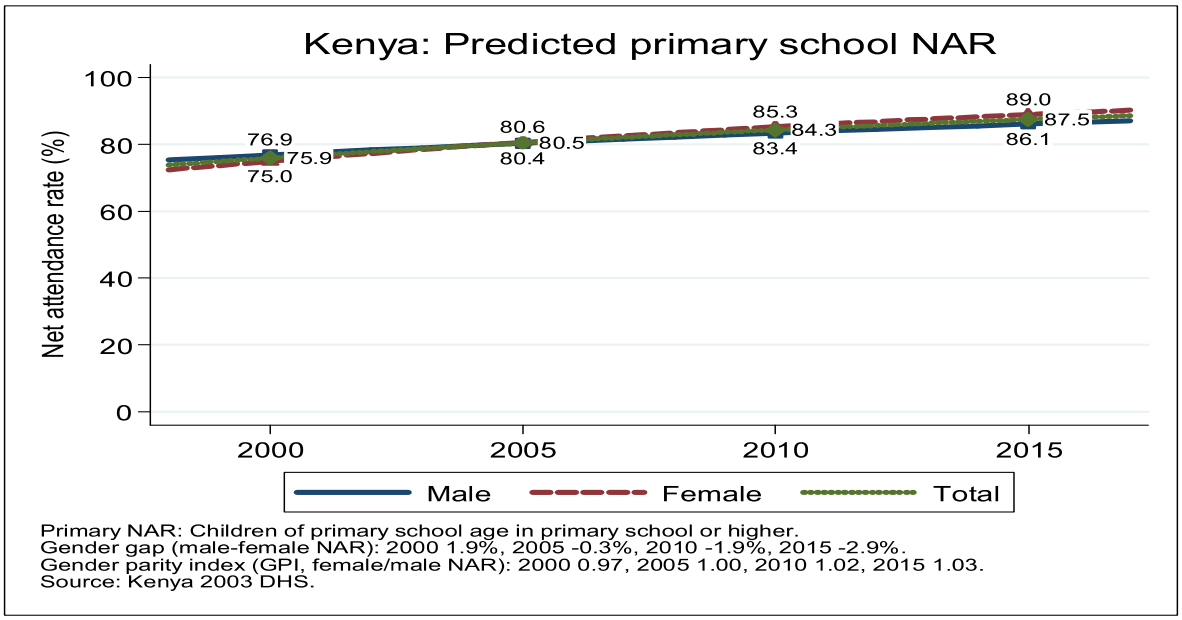
Population: United Nations Population Division, *World Population Prospects: The 2006 Revision*, March 2007.

Education: UNESCO Institute for Statistics, Data Centre,

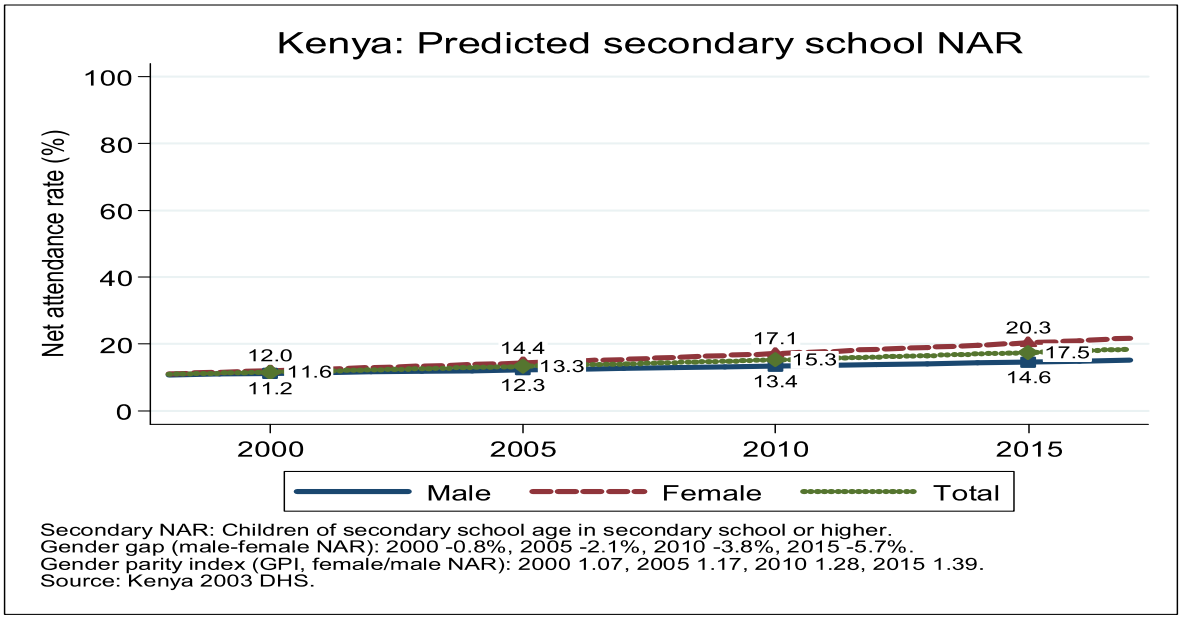
http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx, January 2008

APPENDIX H

Projections to 2015



Primary NAR: Children of primary school age in primary school or higher.
Gender gap (male-female NAR): 2000 1.9%, 2005 -0.3%, 2010 -1.9%, 2015 -2.9%.
Gender parity index (GPI, female/male NAR): 2000 0.97, 2005 1.00, 2010 1.02, 2015 1.03.
Source: Kenya 2003 DHS.



Secondary NAR: Children of secondary school age in secondary school or higher.
Gender gap (male-female NAR): 2000 -0.8%, 2005 -2.1%, 2010 -3.8%, 2015 -5.7%.
Gender parity index (GPI, female/male NAR): 2000 1.07, 2005 1.17, 2010 1.28, 2015 1.39.
Source: Kenya 2003 DHS.

APPENDIX I

MAP OF KERICHO COUNTY (Un-shaded area)

APPENDIX J: RESEARCH AUTHORIZATION I

INSTITUTE OF POST GRADUATE STUDIES AND RESEARCH

Private Bag - 20157
KABARAK, KENYA
E-mail: directorpostgraduate@kabarak.ac.ke

Tel: 0773265999
Fax: 254-51-343012
www.kabarak.ac.ke

27th January, 2015

Ministry of Education, Science and Technology,
National Commission for Science, Technology and Innovation,
9th Floor, Utalii House,
P.O. Box 30623 – 00100,
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH BY GDE/1236/09/11– DANIEL CHELULE

The above named is a Doctoral student at Kabarak University in the School of Education, Theology and Arts. He is carrying out research entitled "Teacher Characteristics and their Effects on Internal Efficiency of Public Secondary Schools in Kericho County, Kenya"

The information obtained in the course of this research will be used for academic purposes only and will be treated with utmost confidentiality.

Please provide the necessary assistance.

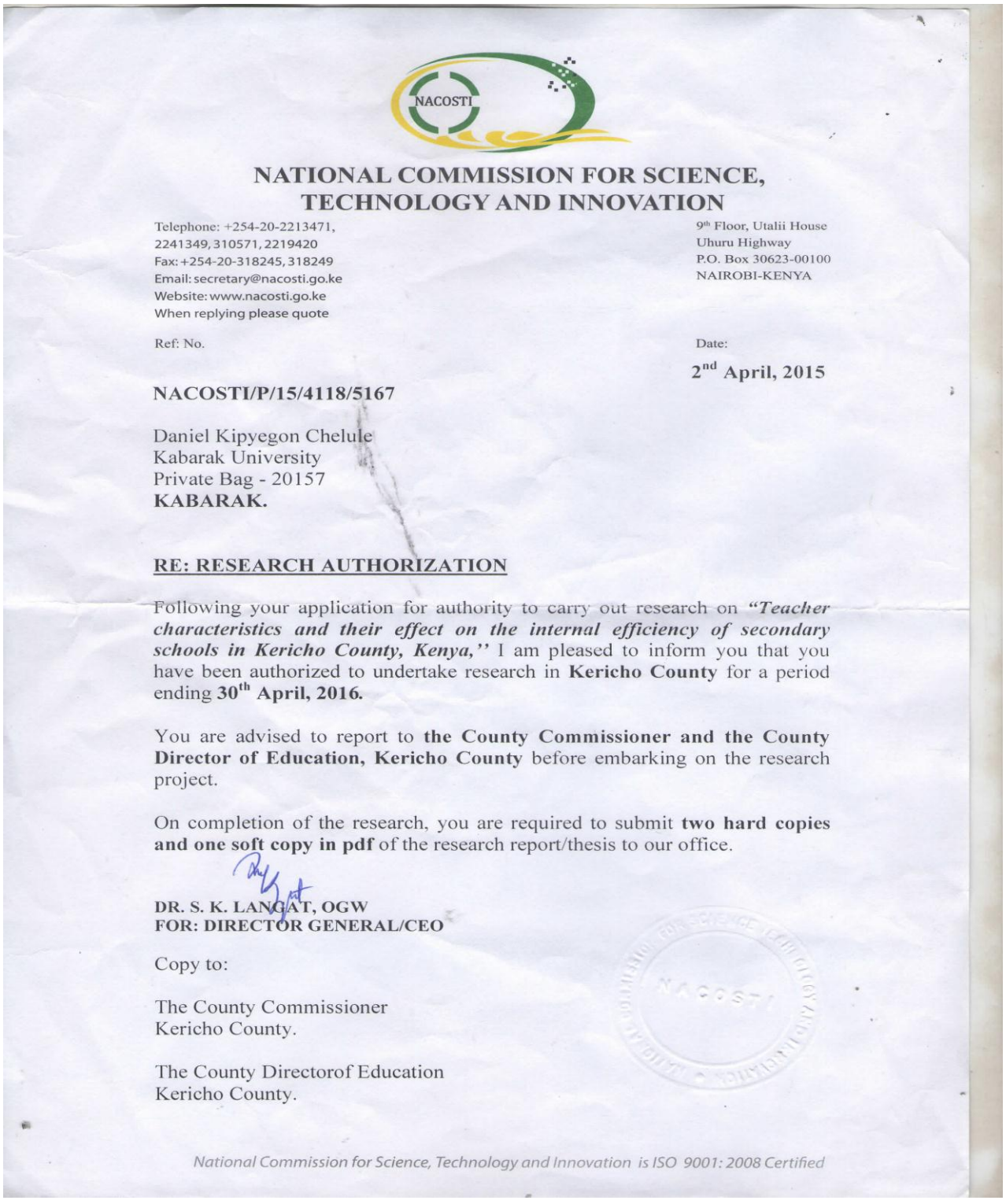
Thank you.

Yours faithfully,

KABARAK UNIVERSITY
POSTGRADUATE STUDIES & RESEARCH DEPT
27 JAN 2015
PRIVATE BAG - 20157, KABARAK

Dr. Betty Tikoko
DIRECTOR POST GRADUATE STUDIES & RESEARCH

APPENDIX J: RESEARCH AUTHORIZATION II



NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

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

Ref: No.

Date:

2nd April, 2015

NACOSTI/P/15/4118/5167

Daniel Kipyegon Chelule
Kabarak University
Private Bag - 20157
KABARAK.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Teacher characteristics and their effect on the internal efficiency of secondary schools in Kericho County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kericho County** for a period ending **30th April, 2016.**

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

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

DR. S. K. LANGAT, OGW
FOR: DIRECTOR GENERAL/CEO

Copy to:

The County Commissioner
Kericho County.

The County Directorof Education
Kericho County.

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

APPENDIX K: RESEARCH AUTHORIZATION III

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

STATE DEPARTMENT OF EDUCATION

FAX NO.05221361
When Replying Please Quote:

County Education Office
P.O BOX 149
KERICHO

REF: KER/C/ED/GC/2/VOL. 1/230

4th June, 2015.

TO WHOM IT MAY CONCERN.

RE: RESEARCH AUTHORIZATION – DANIEL KIPYEGON CHELULE.

The above named has been authorized by National Council for Science, Technology and Innovation to undertake research on ***"Teacher Characteristics and their effect on the internal efficiency of Secondary Schools in Kericho County, Kenya"*** for a period ending 30th April, 2016.

Accord him the necessary assistance.

M.I.S ABOKA
COUNTY DIRECTOR OF EDUCATION
KERICHO COUNTY.