

**ADVANCED CERTIFICATION AND TEACHER ATTITUDE ON LEARNING  
OUTCOMES AT PRIMARY SCHOOL LEVEL IN KENYA: A  
SITUATIONAL ANALYSIS**

**BY**

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## DECLARATION

### Declaration by the Candidate

This thesis is my original work and has not been presented for a degree or diploma in any other university. No part of this thesis may be reproduced without prior authority from the Author and/or Moi University.

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## **DEDICATION**

This thesis is dedicated to my children Bill Kosgey and Joy Stacy Cheruto- embrace education, it is the great equalizer, always aim high. I also dedicate it to my father, Moses Musani who has been a source of encouragement to me, for, even when I felt like giving up, he reminded me of the need and importance of completing my work. I will be forever grateful to him.

## ABSTRACT

Recent research has identified teacher quality as the most important variable in increasing student achievement. This has led to teachers in primary schools in Kenya seeking advanced certification. However studies indicate that the levels of numeracy and literacy skills are still wanting despite having many teachers attaining advanced certification. The study was carried out in Elgeyo-Marakwet County. The purpose of the study was to determine the effect of advanced certification and teacher attitude on learning outcomes at primary school level in Kenya. The specific objectives of the study were: To determine the number of primary school teachers who have attained advanced certification, to establish the effect of advanced certification on learning outcomes, to determine the effect of teacher attitude on learning outcomes, and to advance strategies of mitigating the negative effect of teachers attitude. The study was underpinned by the planned behavior, and education production function theories. Advanced certification and teacher attitude were taken as the independent variables, while learning outcomes was the dependent variable. The study adopted pragmatism philosophy which is a world view which arises out of actions, situations and consequences rather than antecedent conditions. The study used mixed methods approach in which data was collected by questionnaires and structured interviews. The target population was 365 headteachers, 3,300 teachers, and 7 TSC directors in Elgeyo-Marakwet. Stratified random sampling and then simple random sampling was used to obtain the respondents for this study. The three strata used were headteachers, teachers, and TSC directors. Data was analyzed using both inferential and descriptive statistics. Sample size of 443 was used. A response rate of 55% was obtained. Findings indicated that 13.3% of respondents had certificate level education, 42.5% had diplomas, 30.8% had bachelors, and 13.3% had masters. Hence 85.8% of the teachers had advanced certification. Results indicated a negative significant correlation between advanced certification and learning outcomes ( $r = -0.717$ ). There was a positive significant correlation between teacher's attitude and learning outcomes ( $r = .888$ ). Regression method was used to test the hypotheses. The results of the regression analysis suggested that advanced certification had a negative significant effect on learning outcomes ( $\beta = -.187$ ) while teacher attitude had a positive significant effect on learning outcomes ( $\beta = .830$ ). It was therefore concluded that advanced certification made the teachers develop a negative attitude towards their teaching responsibilities and this impacted negatively on learning outcomes. The study therefore recommends that teachers seeking advanced certification should be guided on the relevant courses to undertake that will add value to their classroom delivery.

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**To God be the Glory**

**ACRONYMNS AND ABBREVIATIONS**

ALA	– Annual Assessment.
ECDE	– Early Childhood Development Education
EFA	– Education for All
EMIS	– Education Management Information System
GOK	– Government of Kenya
KCPE	– Kenya Certificate of Primary Education
MDGs	– Millenium Development Goals
MOE	– Ministry of Education
NAC	– National Assessment Centre
NAEP	- National Assessment of Educational Progress.
NASMLA	- National Assessment system for monitoring learner achievement
NCLB	- No child left behind
P1	– Primary Teacher One
PTE	- Primary Teacher Education
SACMEQ	- The South African Consortium for the measurement of Education quality
TPB	– Theory of Planned Behaviour
TSC	– Teachers Service Commission

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Overview**

This chapter covers the background of the study, statement of the problem, purpose of the study, specific objectives, and the hypotheses, significance of the study, justification of the study, the scope of the study, limitations of the study, theoretical framework, conceptual framework, and definition of operational terms.

#### **1.1 Background of the Study**

Teacher Education in primary schools is provided for at certificate level in Teacher Training Colleges. Primary Teacher Training courses focus on pedagogy, and where appropriate subject knowledge content in all subjects. Secondary Teacher training courses concentrate on subject knowledge in two subject areas and the pedagogy on the teaching thereof (MOE, 2012). This is the initial training a teacher receives before he becomes a trained teacher. In early 1990's, very few primary school teachers had attained degrees and diplomas after their P1 courses and these teachers had specialized in Special fields like special Needs Education, Music and Physical Education; mostly after training they were deployed to the special institutions, colleges and secondary schools to address the shortage of personnel in those areas. Over the last decade a good number of teachers in primary schools have or are advancing in their studies, in fact school holidays have become official time for teachers to attend their studies. Unlike in the past where they could be deployed to teach in secondary schools, colleges or special institutions on completion of the advanced certification course, the teachers are now retained in primary schools because universities are training enough teachers for secondary schools hence

there is no shortage of personnel any more, or if there was a shortage then both primary and post primary institutions will have a shortage hence it will be illogical to continue understaffing the primary schools at the expense of post primary institutions. It is important to note that during those days there were very few degree holder graduates unlike these days when we have so many graduate unemployed.

In comparison to Korea, primary school teachers in Kenya join college at certificate level while in South Korea primary school teachers are exclusively trained at twelve national universities across the country. Teaching is a highly respected profession in South Korea and among the most popular career choices for young Koreans. This is largely due to competitive pay, job stability and conducive working conditions. Teachers are paid well in Korea, and it is a high status well paying job (Unesco, 2004). Trudell (2012) noted that highly qualified students who wished to become teachers in Korea applied to train as elementary school teachers rather than secondary school teachers, resulting in quite a strong elementary teaching force- they were recruited from top 5% of the high school academic cohort. It should be noted that emphasis is put on elementary education because this is the foundation of learning and knowledge and very important. In Kenya, a P1 course takes two years, the Korean elementary school teachers undertake training for four years in coursework that is made up of both specific subject area content and pedagogical theory. The Kenya P1 teacher carries all the primary school curricular (subjects) and a Korean teacher is required to have a subject major which is listed on their teaching certificate. (Unesco, 2004), further points out that the South Korean government manages professional development programmes for teachers. These include training for



qualifications, as well as in service training and special training (Schollar, 2008). The Professional development in the Kenyan situation is not regulated; a teacher goes for what he feels like which most of the time is not related to the primary curriculum. Of importance is the fact that while Korea picks the top performers and train them at University level, in Kenya the teaching profession is open to anyone and mostly average performers and offered at certificate level for two years, for primary school teachers.

Sanders (1999) agree that human resources are the most important resource an organization has, because it is the capacity of the teaching force which is most crucial in the delivery of school aims and quality of Educational outcomes. In the current period, there is sudden and frenzied emphasis on performance in schools. One of the most visible features of the performance is the ranking of schools in the basis of good and poor performers. Teachers have been judged to be successful if the pupils they teach perform well and pass national examinations. Teachers who have advanced certifications are also perceived by the community to be good performers and schools where such teachers teach are expected to perform well in examinations like KCPE. Recent developments in policies in the Teachers Service Commission have resulted in broad recognition of advanced certification and hence after completion of advanced courses, teachers are awarded incremental credits, this should therefore be commensurate with the effect such a certificate will have on the learning outcomes. From the number of requests sent to TSC, apart from incremental credits, most teachers with advanced certification would wish to teach in post primary institutions. After completion of these studies, teachers are unwilling to continue teaching in primary schools. (TSC Annual Report, 2014)

Recent research has identified teacher quality as the most important variable in increasing student achievement. Rivkin, Hanushek & Kain (2000), in a growing body of research showed that student achievement was more heavily influenced by teacher quality than by students race, class, prior academic record, or school a student attended. Research indicates that the achievement gap widened each year between students with most effective teachers and those with least effective teachers. This suggested that the most significant gains in student achievement were likely to be realized when students received instructions from good teachers over consecutive years. Llyod, Mensch and Clark (2000) in their study found that teacher characteristics, in particular attitudes had an important impact in attainment, especially in girls. Earlier works in China had shown that attitudes of teachers could be significantly linked to students' attachment to the schooling process (Hanushek, 2005). Taylor *et al.*, (2013) also sought to investigate how teachers' attitudes were affected by school and individual factors. Kikechi (2012) in his study also found out that the majority of stakeholders respondents believed that secondary school teachers tended to be better motivated than primary school teachers. This meant that post primary teachers had a more positive attitude than their counterparts in primary schools.

Most of us believe that good teaching matters. What is more, most of us think we know good when we see it. However, while many studies attest that some teachers contribute more to their student's academic growth than others, research has not been successful at identifying the specific teacher qualifications, characteristics, and classroom practices that are most likely to improve student learning( Darling-Hammond,2000). Goe, (2007) cited that teachers knowledge of mathematics matters for student learning in mathematics

at all school levels, but particularly at secondary school level. The effects associated with a teacher's possession of an advanced degree are strikingly counterintuitive, especially given the salary incentives offered to encourage teachers to pursue graduate degrees; not only do recent empirical studies not find a substantial benefit for students of teachers with advanced degrees, but majority of such studies also indicate that teachers with masters degrees and beyond may negatively influence their students' achievements (Clofelter, Ladd & Vidgor, 2006; Monk, 1994; Rowan, Correnti, & Miller, 2002). Betts (2003) found marginal benefits for middle school mathematics achievement when teachers hold masters degrees, but this effect is not practically significant. While teacher test scores are often used as an indicator of teacher quality, the results of three recent empirical investigations are somewhat mixed on the subject. Hanushek et al. (2005) found no relationship between elementary and middle school teachers recertification examination scores and their students mathematics achievement, while Cavalluzo (2004) found that National Board certified teachers with higher licensure test scores have a marginal positive impact on middle school mathematics achievement. Recertification and licensure tests, on the other hand, tend to have very high pass rates, which may not allow enough sensitivity to detect meaningful differences in teacher quality because states select their own cut scores, the passing score a teacher must have. However, teacher certification tests cover a subject broadly, rather than focusing only on items that measure teachers' specific knowledge, of, say, algebra (Cavalluzo, 2004).

Teacher certification as a signal of teacher quality has been investigated at various levels, including full standard certification, emergency certification and subject area certification. While recent studies find that full certification is either unrelated or positively related to student achievement (Carr, 2006; Darling-Hammond, 2000, Heilig, 2005), other research shows that emergency certification is generally either unrelated or negatively related to student achievement.

In particular, one study, (Betts et.al.2003) suggests that teachers with emergency certification negatively influence middle and high school student achievement. Another study, (Goldhaber & Brewer, 2000) found no significant differences between the mathematics and science achievement of high school students of teachers with emergency or full certification. Teachers subject-area certification or authorization is one of the teacher qualifications most consistently and strongly associated with improved student achievement, especially in middle and high school mathematics (Betts et.al.2003; Cavalluzo, 2004; Goldhaber& Brewer, 2003). Carr, (2006) also indicated that highly qualified teachers, or those who had both full certifications and demonstrated subject-matter competency, are associated with increased elementary and middle school achievement in reading, science and social studies.

Several studies indicated that certain types of professional development contributed to teacher quality and student achievement. Specifically, professional development that is sustained, aligned with the curriculum and focused on instruction is shown to positively influence school-level achievement in mathematics and science at both the elementary and high school levels ( Kannapel & Clements,2005; Wellingsky, 2002). In addition to experience, the other commonly measured aspect of teacher training is the attainment of graduate degrees. Nearly all of the recent panel-data and random-assignment studies include a measure of post-baccalaureate degree attainment, typically whether a teacher holds a masters degree. Except for the correlations between possession of a masters degree and elementary math achievement found by Betts et.al. (2003), research studies have indicated that it was either insignificant or even in some cases there was negative association between possession of graduate degrees by a teacher and their students' achievement in either mathematics or reading.

Fishbone (2011) in their study found out that government teachers in most countries, most notably in South Asia, were largely blamed for failing educational standards and the wholesale failure of public primary education. The overall status of government teachers had fallen as a consequence and there had been a mass exodus of both above average as well as poorer children to private schools, teachers were devoting less and less time to extracurricular activities, teaching preparation and marking. Unesco (2004) cited a survey that showed large variations across and within countries to the extent of professional development; not only to the quantity but also to the nature of that activity which was critical. Often the professional development of teachers was disjointed in one – off courses, while teachers reported that the most effective development was through longer programmes that upgraded their qualifications or involved collaborative research into improving teaching effectiveness. Ironically most primary school teachers sought for professional development courses that were not relevant to their current assignments.

Hagger and Mc Intyre, (2006) in their study found out that learning to conduct oneself as teachers was linked with professional identity, intellectual and emotional aspects. It included attitudes (commitment, confidence, trustworthiness, respect), expectations (initiative, drive for improvement, information seeking) and leadership (flexibility, accountability, passion for learning). It had to do with self – efficacy, self awareness and mediation between ideals, aims and school realities (Gituathi., 2012). It was also found out that fundamental attitudes, which linked skills and intentions, guiding teachers to courses of action, included teachers' dispositions towards democratic values, collaboration with colleagues for shared educational aims and towards maximizing the

learning potential of every student (through individualized teaching) (Fazio 2009). According to OECD, (2009) Continuing Professional Development (CPD) was considered a professional duty for teachers in twenty four (24) European Countries or regions. Good practice viewed teachers as lifelong learners. In this context, it made sense to apply to teachers the same principles of individualized learning as they employed to learners. Member states thus needed systematic programmes to assess teachers learning needs and provide relevant individualized training. To be effective teachers therefore, professional learning should be based upon an assessment of their specific learning needs and feedback about their teaching. It is important to note therefore that if the same method was adopted in Kenya, training will be recommended according to the teachers specific needs instead of a teacher pursuing training in unrelated areas. Performance gaps should thus be identified and the necessary professional development be recommended.

In Kenya, at the end of the year 2014, approximately 80% of the teachers in primary schools had attained or were pursuing advanced certifications in different areas of studies, ranging from Special Needs, Early childhood, Primary and Secondary options. (Form A, TSC Report, 2014). In Elgeyo Marakwet County a survey was carried out which showed that there was no significant improvement in pupils performance in the schools surveyed since the annual mean score for the year 2012 largely followed a similar trend with the previous year (2011) in most subjects (Unesco 2014). This meant that even though a number of teachers had acquired advanced certificates, the KCPE performance in the schools they taught was still wanting and hence there was no correlation between their advancing in studies and learning outcomes.

## 1.2 Statement of the Problem

In Kenya, records held at the Teachers Service Commission in 2014 indicated that 80% of teachers in primary schools have or were undertaking advanced studies. This reflected an increase of 70% from the previous records, where in the year 2001 only 10% of the teachers studied as compared to 80% in the year 2012. A review of applications of teachers returning from studies indicated that 60% of them wanted to join post primary institutions because they had trained in those curriculum areas and yet there were teachers already trained for those institutions. They were therefore inevitably instructed to remain in primary schools since the existing staffing policies do not allow such teachers to be deployed at post primary school institutions. This constituted a cohort of teachers who were demotivated because they had not been deployed to where they thought they should have been (TSC Annual Report, 2014). If this trend was allowed to continue then the quality of Education in primary school level will be affected and the SDGs and EFA goals and the vision 2030 may not be realized Stallmeister, (2002),

Studies in the area of teacher functions included quality ( Leithwood, 2004, Wakort 2014, Roza, 2009); teacher advanced certification ( Guyton 2011; Garmston, 2009; Katz, 2009; and Bryman, 2004). While Bregman and Stallmeister, (2002), The South African Consortium for the Measurement of Education Quality ( SACMEQ) and National Assessment for Monitoring Learner Achievement ( NASMLA) of 2007 have carried out studies on learning outcomes. These studies suggested that teacher quality was the most important variable in increasing student achievement. From these it can be realized that scanty literature existed on the effect of advanced certification and teacher attitude on

learning outcomes at primary school level; no study had tied advanced certification and teacher attitude. The study sought to explore the effect of teacher advanced certification and teacher attitude on learning outcomes.

### **1.3 The Purpose of the Study**

The purpose of the study was to determine the effect of advanced certificate and teacher attitude on learning outcomes at primary level in Elgeyo-Marakwet County, Kenya. The study sought to determine how the two variables of advanced certification and teacher attitude impacts on learning outcomes.

### **1.4 Specific Objectives**

The study was guided by the following specific objectives:

- 1) To determine the number of primary school teachers who have attained advanced certification.
- 2) To establish the effect of advanced certification on learning outcomes
- 3) To determine the effect of teacher attitude on learning outcomes
- 4) To advance strategies of mitigating negative effect on teachers attitude.

### **1.5 Hypotheses of the Study**

The study tested the following hypotheses:

**H<sub>01</sub>:** Advanced certification has no significant effect on learning outcomes

**H<sub>02</sub>:** Teacher attitude does not have any significant effect, on learning outcomes.



## **1.6 Significance of the Study**

There has been a growing focus by the teachers in primary schools to advance in their studies. According to the records held at the Teachers Service Commission, 60% of teachers requested to teach in post primary institutions after their studies, (TSC Annual Report, 2014). The findings will enable the policy makers to realign policies in addressing this dilemma; the TSC could use the findings of this study to create special positions for teachers with advanced certification. It was also envisaged that the knowledge gained from this study would stimulate further research in the related field of study.

The study sought to explore the effect of teacher advanced certification and teacher attitude on learning outcomes at primary level so that the policy makers can use it to review the professional development courses necessary for teachers to enable them impact positively on learning outcomes. The investigations into this study would enable the policy makers at the university to design courses offered at the university for primary school teachers so that they could advance along primary school curriculum. It could also help the Teachers Service Commission come up with better ways of promoting effective deployment of such teachers.

## **1.7 Justification of the Study**

A large number of teachers in primary schools have advanced certification. In the year 2014, 60% of these teachers made transfer requests to the Teachers Service Commission to be deployed to Post primary institutions (TSC Annual Report, 2014). This was an indication that these teachers were not keen on teaching in primary schools. The consequence was that a cohort of teachers who were probably demotivated and

disillusioned was being built. This situation would stifle the advancement towards the achievement of SDGs, EFA goals and vision 2030 considering that their aspirations had been thwarted. (GOK, 2010). Hence, because of the large number of teachers seeking advanced certification, this study sought to determine the effect of advanced certification and teacher attitude after attainment of advanced certification on learning outcomes.

### **1.8 Scope of the Study**

The content scope of the study focused on the effect of advanced certification and teacher attitude on learning outcomes at primary level was conducted in Elgeyo/Marakwet County. The geographical study of the study covered Elgeyo/Marakwet. The County is found in the Northern part of the former Rift valley province. It Borders Uasin Gishu, Trans Nzoia, West Pokot, Turkana, Baringo, and Samburu Counties. The study was carried out between May 2015 and September 2015.

### **1.9 Limitations of the Study**

There are aspects that could easily influence the results negatively, over which the researcher has no control. This study was conducted in ElgeyoMarakwet County, which may not be used to generalize other counties, except for counties with similar characteristics. The study relied on self-report from Headteachers, Teachers and TSC Directors and it was not possible to check the validity of their declarations against other measurements in their respective institutions. Reliance on self-report can be problematic and may be a threat to the validity of the findings. It is possible that some participants were biased in their replies and in replying honestly to certain questions. Triangulation of

the research/methods instruments addressed the limitations. It was however hoped that the results were to benefit all the education stakeholders.

The study on the advanced certification and teacher attitude on learning outcomes at primary level in Kenya had limitations that the researcher acknowledged would be unavoidable but attempted to address.

The first limitation concerns external validity or generalizability of the findings of this study to other primary school teachers with advanced certifications that will not participate in this study. Given the sample size of 379 respondents, the intended study is faced with a limitation as to whether the findings of this study may be generalized to other teachers on the basis of this study alone. Given the nature of the sample it is arguable that the results of this study should not be generalized beyond what is reasonable. However, in order to make “a wider claim” of the results, random sampling technique will be used in the intended research to select teachers in primary schools and TSC officers to participate in the study. The researcher anticipated that the participation of three hundred and seventy nine (379) participants made the results as representative as possible. Random sampling technique gave every primary school an equal chance to participate in the study. Hence, the sample was as representative as possible and therefore the results were not unique to the particular group that responded to the questionnaires.

Secondly, whereas the study has attempted to capture some variables used to measure advanced certification and teacher attitude on learning outcomes at primary level, the study reckoned that to achieve a complete and accurate reflection of those constructs was

hardly fully achievable. However, the researcher used variables that had been largely gleaned from available literature on the phenomenon and validated instruments to measure the constructs in the study.

The third limitation has to do with the difficulty in gauging the honesty and non biased participation of the respondents. The study relied on self reports by the various respondents and it would not be possible to check the veracity of their declarations against other measures in their respective institutions. Reliance on self report can be problematic and may threaten the validity of the findings due to dishonesty and bias. This study accepted that it was rather dangerous to readily assume that an individual's response was a reliable and a valid indicator of a construct. However, Triangulation of the research methods / instruments helped overcome this limitation.

The fourth limitation was that the intended study relied largely on quantitative methodology of data collection which made it more restrictive. The researcher overcame this limitation through the use of an interview schedule which applied qualitative approach so as to complement the quantitative approach.

### **1.10 Theoretical Framework**

A theory is a generalization by which researchers attempt to explain phenomena. It provides a framework for conducting research, and it can be used for synthesizing and explaining relationships between variables and research results (Wiersma, 2000). This study was based on Ajzen's Theory of Planned Behaviour (TPB) and Education Production Function Theory

### **1.10.1 Theory of Planned Behaviour (TPB)**

The study utilized the Theory of Planned Behaviour (TPB) in as far as the teachers' attitude was concerned. Ajzen, (1985) developed this theory recognizing that the extent to which some intentions to act can be carried out depends partially on the levels of control individuals have over behaviors. Consistent with Ballou's (1997) work on self efficacy (i.e. "the conviction that one could successfully execute (a) behaviour" (Ballou, 1997, P 193), the TPB therefore added Perceived Behavioural Control (PBC) (i.e. the belief as to how easy or difficult performance of the behaviour was likely to be) as a predictor of intention to act and behaviour. Perceived behavioural control was assumed to reflect the opportunities and resources needed to engage in behaviour. Thus, the path between perceived behavioural control and intention to act reflected individuals perceived control over the behaviour whereas the path between perceived behavioural control and behaviour reflected actual control over the behaviour (Ajzen, 1985).

In the context of this study the TPB suggested that an attitude developed once a teacher completed advanced studies and that is why an average of 10,000 applications for transfers to post primary institutions were received annually at the Teachers Service Commission (TSC Annual Report, 2014). Tests on the TPB conducted with populations other than teachers supported its ability to predict intention to act and behaviour. For example a review of 19 data sets (Ajzen, 1985) provided a mean multiple correlation of .70 (range 43 – 94) for the prediction of intention to act from attitude towards the behaviour, subjective norm, and perceived behavioural control for a mean multiple correlation of .50 (range 23 – 84) for the prediction of behaviour from intention to act and perceived behavioural control.

### **1.10.2 Education Production Function Theory**

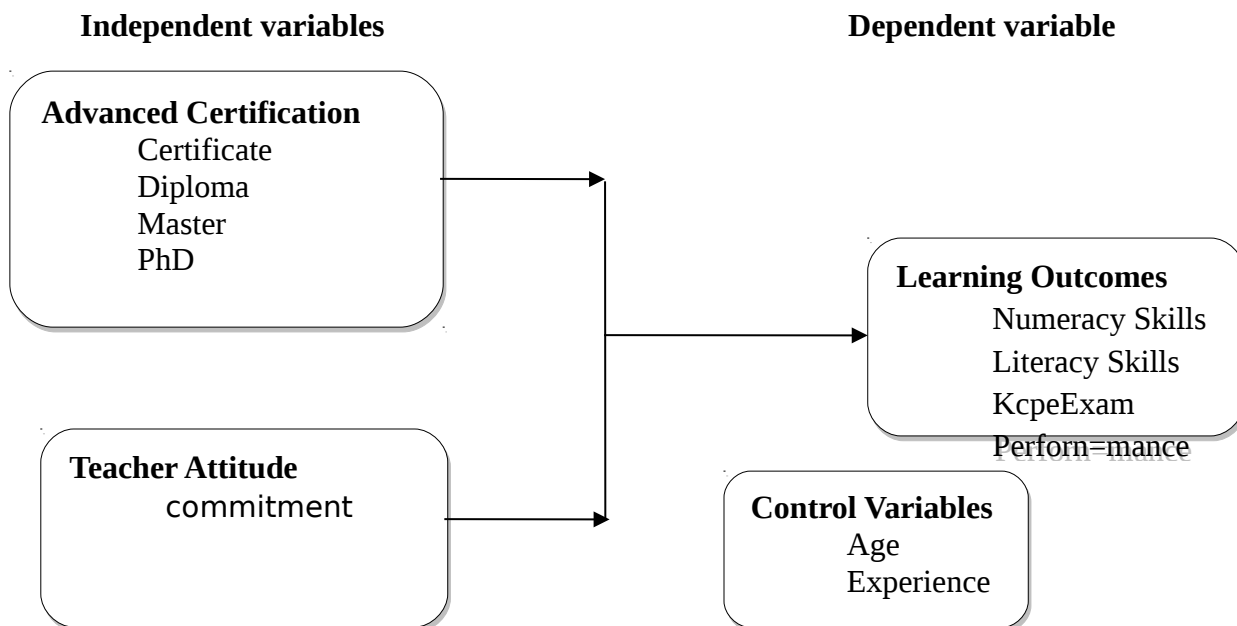
This study was also based on education production function theory to estimate determinants of learning outcomes as a result of advanced certification. A production function specified the output of a firm and industry or an entire economy for all combination of inputs (Hanushek, 2007). Although schools are not profit-making firms, the framework treated them as production units on the supply side. Production function studies have been used extensively to identify factors that produced good learning outcomes.

This framework specified a level of achievement, usually measured by students test scores as the typical output and characteristics of the teaching and learning environment as typical inputs (Taylor, 2013). Formal education increased individuals well being primarily through the acquisition of skills both cognitive (e.g. literacy and numeracy) and non cognitive (e.g. social and organizational skills). Thus an understanding of the process by which formal education produced those skills was crucial for crafting effective education policies. Most importantly, this framework provided crucial guidance on how to use education data to estimate the impact of education policies (and other causal factors) on students' acquisition of skills (Glenwe *et al.*, 2011). Analysis of the role of school resources in determining achievement begun with the "Coleman Report", the U.S Governments monumental study on educational opportunity released in 1966 (Gitomer, 2007). That study's greatest contribution was directing attention to the distribution of student performance – the outputs as opposed to the inputs. Extensive research since the Coleman report had made it clear that teachers do indeed matter when assessed in terms of student performance instead of the more typical input measures based on

characteristics of the teacher and school. Using fixed effect estimators that compared student gains across teachers, dramatic difference in teacher quality were seen (Rivkin, Hanushek and Kain 2002). Moreover teacher credentials and teacher training do make a consistent difference when assessed against student achievement gains (Boyd et-al (2005). The researcher presented on advanced certification and teacher attitude on learning outcomes at primary level; this was as a result of so many teachers undertaking advanced studies. It was expected that with more training, student achievements also increased. This theory was relevant for this proposed study because as much as teachers advanced it was not reflected in the student's achievement. In this study the stakeholders perceived teachers with advanced certifications as better teachers in terms of the student outcomes / output, yet this may not be the case given that advanced certification per se may not impact positively on student achievement gains.

### **1.10 Conceptual Framework**

A conceptual framework is a scheme of variables which the researcher will operationalize in order to achieve set objectives. It is a schematic presentation where research variables and the relationship between them are translated into a visual picture in order to illustrate the interconnections between the independent and dependent variables (Oso and Onen, 2009). The Conceptual framework for the intended study is shown in figure 1.1



**Figure 1.1: Conceptual Framework (Researcher's Own Conceptualization)**

Given the fact that teacher quality is very critical in determining learning outcomes, the Teachers Service Commission /Government has to find out what can be done so that teacher advanced certification can impact positively on learning outcomes. In this study the researcher is looking at the effect of advanced certification and teacher attitude on learning outcomes. Advanced certification and teacher attitude was considered as the independent variable, which was likely to affect the learning outcomes (dependent variable) like reading skills, KCPE performance, learning competencies. It is only through good learning outcomes that the County will achieve the objectives of Sessional paper No.14, 2012, vision 2030, SDGs and finally EFA goals.

The conceptual model encompasses the major variables and their patterns of influence on each other and eventually on learning outcomes. There is a widespread belief that when teachers acquire advanced certifications they substantially improve in their performance.



The theoretical underpinning of the study was that there was need to address areas that primary school teachers should undertake in professional development for this will enable them go for areas that will improve their skills as primary school teachers and hence will lead to improved learning outcomes.

### 1.12 Definitions of Operational Terms

For the purpose of this study, the following terms are defined as follows:-

**Attitude:**Psychologists define attitude as a learned tendency to evaluate things in a certain way. It's a predisposition of an individual to evaluate some symbol or object or aspect of his world in a favourable or unfavourable manner. An attitude is formed by an excitation of a need in an individual which may arise within the individual or be triggered by a relevant cue in the environment (Goe et al., 2008). In this study, it is the feeling teachers develop towards their work after attaining advanced certification.

**Advanced Certification:**Is a certificate attached to a regular base certificate recognizing that the holder has additional knowledge and skills beyond the base certificate. It also authorizes the holder to teach an additional student population grade subject not authorized by the base certificate (Haris &Sass, 2007). In this study it is a diploma, a degree or a postgraduate qualification.

**Learning Outcomes:**Are focused on what the learner will be able to do by the end of a defined period of time, it is also how that knowledge or skill will be demonstrated. Learning outcomes are multiple and span a range of levels of learning as described by Blooms' taxonomy.

Good learning outcomes are focused on what the learner will be able to do by the end of a defined period of time and indicate how the knowledge or skill will be demonstrated. Uwezo Kenya (2010), looked at literacy levels

in public schools as compared to private schools. Learning outcomes may also include attitudes, behaviour, values and ethics, (Klecker, 2008). In the context of this study, the learning outcomes are literacy and numeracy skills.

**Commitment:** Commitment is a term that teachers frequently use in describing themselves and each other (Nyamu, 2015). It is a word they use to distinguish those who are ‘caring’, ‘dedicated’ and who take the job ‘seriously’ from those who put their interests first’. Some teachers see their commitment as part of their professional identity, it defines them and their work and they get a lot of enjoyment from this (Etsey, 2005).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Overview**

The purpose of the chapter was to review literature related to the problem content. The independent variables here were advanced certification and teacher attitude and the dependent was learning outcomes. The themes under which the following literature was reviewed are: advanced certification and teacher attitude on learning outcomes in primary schools in Kenya.

#### **2.2 Advanced Certification**

Advanced certification is a certificate attached to a regular base certificate recognizing that the holder has additional knowledge and skills beyond the base certificate. It also authorizes the holder to teach an additional student population, grade or subject not authorized by the base certificate, (Harris & Sass, 2007).

##### **2.2.1 Teachers' Advanced Certification**

Goldhaber & Brewer (1997), found out in their study that a teacher's advanced degree was not generally associated with increased student learning from the eighth to tenth grade, but having an advanced degree in mathematics and science for Mathematics and Science teachers appeared to influence student's achievements. The same results were not found to be true for teachers of English or History. In the same way, Goldhaber & Brewer (1997) suggested that the findings of other studies about the impact on student achievement on teacher's advanced degrees were inconclusive because they considered

only the level of the degree and not the quality of the subject of the degree which may affect student achievement in different ways than the degree level. Nevertheless results from all the studies seemed to imply that there was not a positive correlation between teachers having advanced degrees in subjects other than those they taught and student achievement. One way of looking at it was a teacher who was trained in Primary Teacher Education (PTE) P1 course, advances their studies and opted for secondary option which enabled him specialize in two subjects only and secondary school curriculum. This degree may not have a positive impact on a student's achievement because there was no relationship between secondary and primary curriculum. It could only be of benefit to a secondary school student yet this teacher was expected to improve in the quality of their teaching since they had advanced certification.

Realizing the importance of the teacher quality in improving the quality of Education, countries like Taiwan have prioritized teacher education in their education reform (Figilio, 2002). In considering what constitutes teacher quality. Figilio (2002) stated that teacher training should develop content knowledge, pedagogical skills, the ability to reflect and empathize managerial competency, commitment, moral conduct, the ability to adjust and improvise the ability to collaborate with other teachers, the ability to advance the profession of teaching and contribute to society at large. In addition, they suggested that the quality of a teacher should intimately be evaluated in terms of their impact on the quality of their students. This body of research implies that the quality of education is normally measured by the pupil performance in their tests and pupil performance is related to teacher competence and teacher performance in class. The community tended

to perceive teachers with advanced certificates as role models who could be relied upon to produce good results but the reality was that these teachers could have taken courses in areas not relevant to primary curriculum like the secondary option curriculum. On the contrary, they did not meet the expectations of the community of good performance for their performance was as always of no significant improvement.

A teacher's performance depended on the teachers' knowledge; this comprised subject matter and general pedagogy which was directly linked to the teacher's competencies, characteristics and attitudes. Subject matter was vital for good teaching and teacher performance, a qualitative research suggested that teacher's knowledge of the content they taught affected both what teachers taught and how they taught it, Goe (2008). Consequently, for improved teacher performance in primary education, it was essential that such aspects as subject matter or professional knowledge and general pedagogy be considered for inclusion in the teacher training programme, universities should come up with tailor made programmes bearing in mind value addition in as far as the student/pupil was concerned. Clark (1992) emphasized the importance of the performance of pupils, of the quality of a teacher who had well developed subject knowledge, pedagogical context and curriculum knowledge. In the Mozambican context the nature of the learning outcomes depended on the teacher training curriculum. The attitude of the teacher too affected the teacher's performance. From this large body of knowledge it was evident that a lot of emphasis was put on content /subject matter without which a teacher could not be able to deliver. As one advanced, knowledge should be added on the already

existing training so that it is relevant, anything outside may not be of benefit to the pupils/students.

Sanders & Rivers (1996) argued that the single most important factor affecting student achievement were both additive and cumulative. Further, they contended that lower achieving students were the most likely to benefit from increases in teacher effectiveness. Taken together, these multiple sources of evidence, however different in nature, all concluded that quality teachers were critical determinant of student achievement. A particular teacher attribute (e.g. a subject speciality with masters degree) may be an important predictor of teacher effectiveness in some context, (preferably high school mathematics) but may not matter at all or may even have negative effect in other context, (suffice it to say first grade reading) It is therefore notable here that advanced certification increases teacher effectiveness which can in turn increase student achievement especially for the low achieving students. On the other hand, an advanced certification in secondary option for a primary school teacher may not be beneficial to a primary school pupil because that is a different curriculum altogether.

### **2.2.2 Teacher Quality and Advanced Certification**

National Education Association,(2003) defines teacher's quality variables as: the highest academic degree; type of teaching certificate; major/minor in a subject; and number of years a teacher taught a subject. Klecker (2008) conducted a study using a secondary analysis of the 2007 National Assessment of Educational Progress (NAEP). Results were reported in terms of statistical significance. This study found out that an eighth-grade mathematics teacher was more effective with either a major or a minor in a subject, a

professional degree, a regular or standard teaching certificate and with either a major or a minor in a subject, a professional degree, a regular or standard teaching certificate and with twenty and above years of experience in teaching a subject. The teacher quality variables had an impact on the average scale scores of the student academic performance. The exploration of evidence on distinctions between effects of courses in education and the impact of content knowledge on teacher performance was a persistent theme in the literature on teacher quality. Some studies indicated that course work in pedagogy was positively related to the student achievement in mathematics and science, but researchers noted some ambiguity in the literature in this area because earlier studies did not make enough distinctions between teacher coursework in education that linked to an academic subject, (for example mathematics education) and courses in that subject. There was reason to believe that course work in pedagogy had a stronger effect on teacher performance when the courses were combined with courses in the content areas (Rosenholtz, 2003, Wayne & Young 2003).

Makewa (2012) agree that education schools sought to gain respect in the world of higher education, they focused on academic research instead of classroom practice. As a result, prospective teachers were not given the tools needed to succeed in an environment where student achievements were the fundamental goal. Although the study's assertions have been controversial and are not universally accepted there was a wide spread concern over flaws in teacher preparation programmes accountable for subsequent classroom performance of their graduates. One potential strategy for improving teacher preparation programmes was to increase research on the connection between these programmes and



student achievement with the goal of identifying types of training that can be linked to achievement gains. A study carried out in Gasalo District, Kigali city in Rwanda, found out that teacher quality involved the level of qualification and research on the value of teachers advanced degree was mixed: some studies showed that while additional teacher education had a positive correlation to student achievement (Fullan, 2008) ; Goldhaber & Brewer (1997) found out that a teachers advanced degree was not generally associated with increased student learning from the eighth to the tenth grade.

In their review of literature on teacher characteristics and student achievement gains, Wayne and Young (2003) concluded that the effect of teachers' degrees and course work on student achievement varied by subject area. They reported a positive relationship between course work in mathematics and student achievement, the more course work a teacher had the better the students performed. They also reported positive effects of certification but again these were limited to mathematics. This meant that a teacher who took advanced studies on other areas other than subject area may not add value to the students' achievements in terms of performance.

Weiss (2002) used multi-level structural equation modeling (MSEM) to measure the effectiveness of the factors – a teacher's classroom practices and professional development received were in support of those practices and characteristics of the teacher that were external to the classroom; for instance educational attainment. He found out that the teacher's academic major was “modestly associated with student achievement” and the teacher's level of education and years of experience were unrelated to student achievement. These findings suggested that teachers who had undergone

extensive preparation in their content areas were also more likely to have higher rates of student achievement. However, it should be noted that these effects were evident only in the areas of Science and Mathematics.

Researchers have investigated the role of teacher pre-service course work as a foundation of high quality instruction, placing a particular emphasis on the impact of the courses teachers have on the achievement of the students. Synthesis of the literature on this topic posits that course work in the specific academic content areas a teacher was assigned to teach could promote teacher quality and student achievement in some subjects and grade levels. Beyond the general conclusion though, key research questions have centered on efforts to point to the academic subjects where course work made a clear difference to understand the influence of the grade level taught and to examine how the effects of course work in pedagogy differed from those courses in an academic content area (Fullan, 2008).

Wayne and Young (2003) suggested that additional investigation of the substance of programmes was needed in order to gain a better understanding of the impact of particular training on prospective teachers, these authors pointed to the dim light offered by the literature on teacher preparation programmes noting that they reviewed few studies seeking to tie such programmes to student achievement or providing adequate details on programme feature needed to get a clearer picture of which aspects of training made a difference while noting the complexity of conducting research that will adequately capture the characteristics of teacher programmes that influenced student achievement.

They suggested that research using random assignment of students to qualified teachers from different preparation programmes, more effective use of qualitative data and well designed case studies may offer information that could be used to document the relationship between particular aspects of teacher training and student learning. From this it can be noted that advanced certification alone cannot increase student achievement.

Evidence showed that a number of primary school teachers had or were pursuing advanced certification in ElgeyoMarakwet county as shown in the table below;-

**Table 2.1:**

***Teachers with Advanced Certificates at Primary School Level in Elgeyo- Marakwet County***

Rank	Teachers on duty	ECDE Dip.	ECDE B.ED	B.ED option	Secondary	Masters	Othe r	Mean
1	622	101	67	30		18	17	280
2	902	125	198	25		12	13	271
3	723	155	243	40		15	21	269
4	1113	204	231	44		21	27	274
<b>Tot.</b>	<b>3481</b>	<b>585</b>	<b>739</b>	<b>139</b>		<b>66</b>	<b>78</b>	<b>274</b>

Source: TSC Form A (EMIS) at TSC County office (2014).

**Table 2.2:**

***Teachers Pursuing Advanced Certification at Primary School Level in Elgeyo-Marakwet County***

Rank	Teachers on duty	ECDE Dip.	ECDE B.ED	B.ED Sec.	Masters	Other	Mean
1	622	20	22	20	5	9	280
2	902	46	32	27	15	18	271
3	723	50	40	35	30	22	269
4	1113	50	48	35	25	20	274
<b>Tot.</b>	<b>3481</b>	<b>166</b>	<b>142</b>	<b>117</b>	<b>75</b>	<b>69</b>	<b>274</b>

Source: TSC Form A (EMIS) at TSC County office

Based on this information, the total number of teachers who had and those still pursuing advanced studies formed 63% of the total number of teachers in ElgeyoMarakwet

County. This informed the perception the community had on performance in the county for it was expected that with such a large number of teachers advancing, the KCPE results should have been better than what was posted in schools.

**Table 2.3:**  
***Teachers with/Pursuing Advanced Certification at Primary School Level in Sampled Primary Schools in Elgeyo Marakwet County***

Rank	Teachers	Dip ECDE	BED ECDE	BED Sec. Option	Masters	Open	School mean
<b>1</b>	19	7	3	5	0	0	234.37
<b>2</b>	26	6	10	4	1	0	260.06
<b>3</b>	18	2	5	0	1	0	264.98
<b>4</b>	18	4	7	3	0	0	278.01
<b>5</b>	14	5	3	2	0	0	237.63
<b>6</b>	14	8	4	3	0	0	248.94
<b>7</b>	9	0	0	0	0	0	199.62
<b>8</b>	11	8	0	3	0	0	257.51
<b>9</b>	14	7	2	0	0	0	305.06
<b>10</b>	10	4	4	0	0	0	296.15
<b>ToT</b>	<b>153</b>	<b>51</b>	<b>38</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>X=258.00</b>

Source: TSC Form A (EMIS) at TSC County office and County KCPE analysis 2013.

Out of the 153 teachers on duty in the ten schools 33% had diploma in ECDE, 25% Bachelor's degree in ECDE, 13% Bachelors of Education in secondary option and 1% Masters. This translated to 59% of the teachers in the ten schools having advanced certification. This left 41% of the teachers without advanced certificates. The average mean score of the ten schools in KCPE 2014 was 258.00. In one school which had fourteen (14) teachers on duty and ten (10) out of the fourteen (14) teachers had diplomas and degrees. The school posted a mean score of 237.63 in the 2014 KCPE. This was below average.

Recent research has identified teacher quality as the most important variable in increasing student achievement. Rivkin, Hanushek & Kain (2000) in a growing body of research showed that student achievement was more heavily influenced by teacher quality than by students' race, class, prior academic record, or school a student attended. Research indicated that the achievement gap widened each year between students with most effective teachers and those with least effective teachers. This suggested that the most significant gains in student achievement would likely be realized when students received instructions from good teachers over consecutive years. Research findings pointed to four key dimensions of teacher quality; - content knowledge, teaching experience, professional certification and overall academic ability. From these it was important to note that there were individual teachers who were highly effective although they lacked one or more of these qualities just as there were ineffective teachers who had all of them, but on average the presence rather than the absence of these qualities were more likely to produce effective teaching.

Ayodele (2007) argued that one key overriding factor for the success of students' academic achievement was the teacher. In the same vein; Ibe (2001) believed that teachers' qualifications and exposure could go a long way to bring about pupils' high academic achievement. It was probably for this reason that Ingersoll (2001) asserted that no education system could rise above the quality of its teachers. Considering the assertions of Ayodele (2007) and Ingersoll (2001), it implied that teachers' role in preparation of students to succeed in examinations could not be undermined.

Useem (2003) argued that the shortage of qualified teachers was responsible for the poor academic achievement observable among the students while Adediwura (2007) argued that students taught by more qualified and experienced teachers in terms of knowledge of the subject matter performed better than those taught by less qualified but experienced teachers.

Teacher professional development in Australia during the mid-1980's particularly in the teaching of literacy was characterized by intense activity. Major impetus for this came from 1984 commonwealth schools commission funded programme; Basic learning in primary schools (BLIPs) which was to operate between 1985 and 1987. This was to raise the achievement levels of primary school children in basic subjects. Particular emphasis was to be placed upon improving students' performance in reading, writing, speaking and listening. A notable exception was the study by Schollar (2008) whose findings indicated that changes in teachers classroom practices due to professional development were a direct function of teachers professional self-perceptions (in particular personal teaching efficacy). The estimation of changes to teachers' professional self-perceptions and practices is crucial to the provision of evaluative criteria for determining the effects of in-service teacher training on student achievement outcomes (Torress, 2006).

The Australian government reports on in service teacher evaluation during the 1980's emphasized the importance of a functional link between teacher professional development and the quality of education outcomes for students. While there was an

expanding local and international literature espousing the efficacy of in service, professional development of teachers at the time (Eagly and Chaiken, 1998), there was little evidence for direct effects of teacher professional development on student achievement. One exception includes the study by Torress (2006) which found using multilevel analysis that teachers' recent participation in professional development was an important contributor to Science achievement for Israeli Primary school students drawn from ethnic minority groups. Most studies done, here indicated little or no effect of professional development on learning outcomes.

Torress (2006) focused on the San Diego unified school District for their Research, which united student and teacher data in elementary through high school. They used teachers' paper qualifications as teacher quality variables including level of education, credentials and subject matter knowledge. They found out that the correlations among these qualifications and student achievement varied substantially across grades and subjects. Teachers with master's degrees contributed marginally more to increased mathematics scores than teachers with only bachelor of Education degrees. Taken together, these results suggest that the contributions of various paper qualifications varied widely among subject areas and between grade levels, what mattered in mathematics (subject knowledge) may not matter in reading and what mattered in the secondary grades (teacher credentials) may not matter in primary grades. Clotfelter, Ladd and Vigdor (2005) found a negative effect on student achievement for teachers with a master degree with a regression coefficient of -0.023 and a standard error of 0.012. Although the authors confirmed the contributions of a number of studies of this type; Results were

different depending on the subject matter. Moreover, this results in improved performance for students. These findings call into question the policy of many states of increasing the salaries of teachers who have or obtained advanced degrees.

Harris and Sass (2007) found out that advanced degrees did not contribute to teachers' effectiveness in high school mathematics and middle school reading. One particularly interesting finding from this study related to the impact of professional development participation which was greatest three years after the professional development took place, meaning that it may take several years for the effects of such teaching – learning experience to have an impact on teaching. The authors found out that content oriented professional development had the strongest effect on student achievement.

Researchers and policy makers have regarded improving teacher quality as a successful way to improve student achievement (Darling Hammond, 2002); Teacher education level and teacher experience two main attributes of teacher quality gained attention and have been the focus of many investigations. However results existing of meta – analytic reviews examining the relationship between student achievement and teacher education level were in conflict, with some suggesting a positive relationship and others suggesting no relationship (Goldhaber, and Brewer, 1997).

According to Sinyolo's (2007) findings where a teachers' advanced degree was not shown to influence student achievement, a possible explanation that had been offered to account for lack of relationship between science achievement and higher education levels



as found in previous research was that science teachers with advanced degrees were not able to effectively teach at a level that would of greatest benefit to students, especially those in the middle school years who were at a lower level in terms of their understanding and appreciation of science. In other words, as science teachers pursued advanced degrees in the university setting, they were trained in terms of their knowledge in science at the advanced level and may have difficulties making the transition to teaching middle – level school students the same concepts that they learned at a much higher level. As a result, students felt frustrated, lost interest in learning and then demonstrated poorer performance on knowledge assessments.

A study by Olembo, Wanga and Karangu (2002) on the role of teachers in school performance in Nyanza province pointed out that students performance depended on the role of the teacher in curriculum planning, classroom management, instructional programme and general curriculum implementation that may enhance students' performance. The same views were echoed by Nanyonjo (2007) in his study on analysis of factors influencing learning achievement in Uganda which found out that teachers characteristics that may improve students' performance were teacher qualifications, in service training of teachers age, teachers experience, teaching strategies and evaluation systems in schools. These findings concurred with Sinyolo (2006) study in student performance that found out that students performance was correlated to academic qualifications and competence of the teacher in the teaching process. It is worth noting that a good teaching strategy led to high academic achievements in schools.

High quality teachers regardless of gender positively affect students' performance and enrolment. Teachers are a major consideration when examining quality issues in education. Sinyolo (2006) found out that school and teacher quality effect account for variation on students test scores in developing countries. Research also indicates that a teacher's level of training matters. High quality teachers are most often linked to better performance on standardized tests (Rivkin, Hanushek & Kain 2005). High performing teachers may not necessarily be those with advanced certifications.

According to Wilson (2003), the single most influential factor for student's results is the teacher qualification and the teachers are a school's most valuable resource. This therefore emphasises on the need for the teachers to get right qualifications in order for them to be able to impact positively on learning outcomes. Aslam and Kingdon, (2007) argue that teacher quality research takes two major approaches. The first is to link teacher characteristics to pupil achievement and studies linked to this approach conclude that certification training and experience do affect student achievement. Teacher's especially high quality teachers appear to affect student's performance and enrolment. In the case of female teachers, however those effects can be magnified especially for girl students (Warwick, 1994; Aslam & Kingdon 2007).

In Hongkong, women comprise two thirds of the teaching force. In a study of the effects of gender on student performance, students (regardless of gender) performed better on an international reading assessment when taught by women and they had better attitudes towards reading. The authors found that men and women teach reading differently –

male tend to use large group direct teaching followed by comprehension questions. Females used a variety of teaching strategies and were more versatile (Aslam & Kingdon 2007). On the same note, In Botswana researchers found a positive relationship between the proportion of female teachers and girls achievement levels in school. In India a study found that the test scores for girls were higher in subjects taught by female teachers and dropped when the same student was instructed by a male teacher (Aslam & Kingdon 2007).

Teachers are often forced to take on outside employment (such as moonlighting as teachers at other schools, tutors or starting small businesses) to supplement their income. These extra hours leaves little time for planning which affects quality (Sinyolo, 2007). Moonlighting also leaves limited time for regular school duties and leads to absenteeism as teachers leave their assigned schools to pursue additional work elsewhere leaving classes unattended and little time to devote to activities outside teaching (such as meeting with students or leading extra – curricular activities). Teachers with advanced certification in primary schools engage in moonlighting activities at the expense of teaching and other related activities. This works against good learning outcomes. Research has also shown that when educators teach subjects for which they are not qualified student performance suffers (Mulkeen, 2015). Socially secondary teaching is considered more prestigious and so many teachers aspire to work in or move to upper levels (Mulkeen 2010). This is what happens when teachers advance in their studies, they feel they should teach in secondary schools that is when over thousands of (10,000)

applications are received in the Teachers Service Commission (TSC) annually being requests from teachers with advanced certifications to teach in post primary institutions.

A number of international researchers however provide evidence that teachers' content knowledge has an effect on both the content and the processes of instruction, thus influencing both what and how they teach (Haimes 1996, Shulman, 1987; Treagust, 2002). Quality teaching is the backbone of any educational system for developing scientifically literate Citizens. Aslam & Kingdon (2007) also asserts, "What students learn is greatly influenced by how they are taught." Students cannot therefore achieve high levels of performance in the absence of skilled talented and dedicated professional teachers. The right content is thus very critical for teachers when advancing in their studies. It may not be of significant value for a teacher to advance along a different line from what he is doing for it will not impact positively on learning outcomes.

Other research into roles of quality teachers in classroom activities and processes Schwarz and Bohner (2001) further indicate that quality teachers demonstrate commitment, have subject specific content knowledge and know their craft, love children; set an example of moral conduct ; manage group effectively, master multiple models of teaching and students learning ; know their students as individuals, exchange ideas with other teachers; reflect on their practice, collaborate with other teachers in advancing the profession of teaching; and they also contribute to society at large. This cannot happen if a teacher has a divided mind. Increasingly the teacher's role involves being a member or guide one who extends student's deep understanding and also one

who facilitates the acquisition of student's higher order thinking and creative problem solving skills (Armitage and Conner, 2001).

Literature in Science education in developed countries of Australia and the United States of America indicate that teacher quality is the most important factor inhibiting science learning in schools that needs to be addressed (Podgursk et al., 2004)). In the United States, Darling Hammond (1997) in "doing what matters most: investing in quality teaching" reveals that without a sustained commitment to teachers learning and school redesign, achieving quality achievement will remain unfulfilled. Improving the quality of teaching and student's achievements in science , depends on the quality of initial teacher education, mentoring and induction programmes provide for beginning teachers, opportunities for ongoing professional development provided for teachers, teaching resources in school and community support among other factors. Literature in science education has continued to claim that teacher quality is the most important factor that inhibits the quality of science education(Darling – Hammond 1997). Traman and Raggl, (2008) notes that effective science teachers have the knowledge of the learner, subject matter content and teaching pedagogy.

Unlike in Kenya where teacher development courses are unregulated, in Nigeria the federal government through the Ministry of Education and its parastatals including the National Universities Commissions (NUC), is charged with the responsibilities of ensuring the orderly development of University education including certification of teachers, to maintain standards and ensure adequate funding (Ogunwuyi, 2000). The

National Commission for Colleges of Education (NCCE) established in 1989 is charged with coordination of all aspects of teacher education programmes falling outside the universities and polytechnics,. The National teacher Institute (NTI) established in 1978 is also charged with providing courses of instruction leading to the development upgrading and certification of teachers as specified in the relevant syllabus and using distance learning techniques. Shann (2001) argues that teacher education programmes should comprise knowledge of subject matter (content knowledge) knowledge of teaching the subject (pedagogical knowledge) and knowledge of the subject matter and its teachability (content – Pedagogical knowledge).

The progress in achieving the goals of education for all programmes and sustainable development goals (SDGs) is being slow because of lack of adequate supply of teachers and a failed training system to equip them with the required skills and lack of sufficient management and career structure that would rest in well performing teachers, Segun *et. al* (2011). A high quality teacher is one who understands and demonstrates ability to address the content, character, challenges and complications of being a teacher. Research evidence has shown that the quality of teaching in our classrooms is the most important school related factor in ensuring student's achievement ( Greenwalls 1996). This is why policy makers at all levels are focusing on teacher quality with emphasis on the issues of teacher recruitment, preparation, licensing and certification standards, as well as professional development. Teachers assert that poor teaching conditions and decreasing level of motivation affect their performance in the classroom and reduce the ability of students to achieve satisfactory learning outcomes thus reducing their capability to

deliver quality education. This hinders achieving the internationally accepted goals of EFA and SDGs and vision 2030. This situation has been teachers in some rural schools spend large proportion of their working hours in other income generating activities. Apart from the discipline problems created by these unwholesome practices in schools where children remain unsupervised and disorderly, it also undermines the value of the learning process (Segun, 2011).

While literature has sufficiently emphasized the importance of teacher's motivation and pedagogical practices, their classroom management remains a relevant and common indicator of student achievement especially in developing countries. Although research evidence has successfully proved that the quantity and quality of teachers provide the opportunity to reach international goals on education, it is however found that only effectiveness in actual management of teaching and learning process can deliver the EFA goals and by 2015 (Segun, 2011). Quality education produces good learning outcomes and the initial training and preparation of teachers contribute to this. Teacher quality encompasses a range of skills, competencies and motivation, specific training is required in order to expect quality services from a teacher or any other skilled professional. There must be opportunities for teachers to upgrade their skills through pre-service training programmes. These programmes should be relevant to the current assignment undertaken by a teacher. The purpose of teacher development and preparation should be to build student teacher's general education and personal culture (Segun, 2011).

Qualified and more experienced teachers are concentrated in urban schools which tend to be overstaffed. By contrast, schools in rural areas face major problems in attracting and retaining adequate qualified and experienced teachers (Segun, 2011). This is mainly because of advanced certifications that make teachers feel that they can access better opportunities in urban areas. The extent to which teachers are motivated is a significant factor in influencing the delivery of quality education. Classroom management and discipline in remote areas present additional difficulties for school administrators and managers. One concern is the teacher absenteeism which may be very high in rural areas, could perhaps create serious constraints on effective classroom management and discipline, Mulkeen (2015) also reports that some teachers in small rural schools in Uganda commit fewer hours to classroom teaching in favour of their private work, possibly as a means of complementing their inadequate salaries.

Teaching in many African Countries is one of the most undervalued professions. Government's attention and reaction to teacher's demands are very rigid. Teachers are not particularly well paid and it has become a job that you only do if you could not get another job. The poor salary of teachers when compared to their counterparts who are engaged in other professions with comparable level of education and experience is one of the challenges teachers have to cope with across countries (Mulkeen 2010). This could be the reason why many of them are advancing in their studies to enable them get a better job or teach in a higher level.



According to Mumasi (2013) findings, teacher's formal qualifications in Mathematics and Science did not make a significant difference to schools membership of the result categories. It also found out that the inability of most heads of department (HOD's) to solve a higher order Mathematical problem or illustrate how they would explain the solution of a specified problem to their learners had appeared to be unrelated to school's mathematics performance. International research shows that teachers are the main drivers of the variation in learner achievement in schools (Mourshed & Barber, 2007). Teacher quality is the most important component in the pursuit of improved learner performance.

Crouch and Manatt and Daneils (1990) conducted a research in South Africa and found out that teacher qualifications as a measure of teacher quality were strongly associated with an increase in learner pass rates in the school leaving examination. Hanushek & Rivkin (2006) found no strong evidence that has emerged in developing countries that higher teacher qualifications produce higher learner achievement. The SACMEQ III study provide an opportunity to test subject knowledge of grade 6 mathematics teachers in South Africa. When Spaul and Venkatakrisnan (2014) analyzed SACMEQ 2007 data, they found that the content knowledge of 79 per cent of the mathematics teachers of grade 6 learners was below the level required for learners to pass grade 6. The recent National School Effectiveness Study (NSES) revealed a similar low level of mathematics teacher's knowledge (Taylor et al., 2013).

In a smaller and recent study Bansilal et.al (2014) investigated mathematics teachers studying towards an Advanced Certificate in Education (ACE) at the university of Kwazulu - Natal (UKZN). When these grade 12 teachers were tested on a shortened version of a Grade 12 mathematics paper, they found that on average teachers obtained 29 percent on questions that were at the problem solving level. This raises the question about how the practicing teachers could mediate tasks set at high cognitive levels for their grade 12 learner. The NEEDU report concludes that while both play a role, teacher's lack of content knowledge, pedagogical skills and language proficiency may play a greater role than teacher's lack of motivation, discipline and accountability. These points again to the poor quality of teacher education and training that most teachers have obtained and explained why their qualifications and capacity to teach effectively do not match NEEDU (2013). While the 1996 – 1997 research (Crouch and Mabaogane (2001) in South Africa did show a positive impact from higher teacher qualifications, no strong evidence has emerged in developing countries that this produces higher learner achievement. The same is found in this study that higher qualifications do not yield student achievements.

Both initial and in- service teacher education need rethinking and redesigning in order to turn around current practices in Mathematics teaching in South African Schools. The same should be replicated all over, Kenya included. In developed countries, every proposal reform or transformation in schools highlights teacher professional development as critical in effecting improved education quality and student outcomes (Nakabugo, Bisaso & Masembe, 2011). This is because the success of any education reforms for student improvement hinges on teacher professional development (Villegers – Remers,

2003), yet reforms of professional development remains as diverse as they are context dependent (Kirunda, 2004). Broadly, the concept of professional development refers to the growth of teachers in their profession which Villegers – Remers (2003) defines as “a long- term process that includes regular opportunities and experience planned systematically to promote growth and development in the profession.

Initial teacher education should make up for weak subject knowledge. Prospective teachers should ideally enter teacher education programmes knowing enough about the subjects they are going to teach. In some countries however, teachers often enter the profession lacking core subject knowledge because their own education has been poor (UNESCO, 2014). In Kano state, Northern Nigeria, for example, 78 % of 1200 basic education teachers were found to have limited knowledge of English when tested on their reading comprehension and ability to correct a sentence written by a 10 year old. Teacher education programmes need to support teachers in being able to teach early reading skills in more than one language. In Mali, a study of pupils skills using an early grade reading assessment and teach observation found that few teachers were able to teach their pupils how to read. Teacher capacity is central to the entire endeavour of early grade literacy learning. When they are well trained, mentored and supported teachers can help make the difference between the children’s failure and success in early grade literacy acquisition (Piper, 2010) and **Obala**(2013) noted that teacher effect on effective teaching and learning plays a major role in achievement of literacy among pupils. Aspects of the teacher’s qualifications, knowledge of the subject content, methods of content delivery (Pedagogy) beliefs and attitudes are the themes emerging from literature review. In terms

of impact evaluation; teacher quality has been examined either through measurable teacher characteristics or through a fixed teacher effect. The literature seems to be mixed in terms of whether it has impact on student achievement, though the dominant view seems to be that measurable teacher characteristics such as academic achievement, professional achievement and training do not seem to have any effect on student achievement.

An alarming trend concerns the low levels of student achievement. Though there is little existing research that directly correlates students' achievement outcomes with teachers' training, qualification and contract variations, the fact that teachers are the main staff responsible for supporting pupils' learning makes a correlation between these two factors highly likely. The Education for All Global Monitoring Report (EFA GMR) finds that , 'what skills ....one of the most important requirements for sustained progress towards better quality in education is an improved learning environment, encompassing the physical school infrastructure, the learning process and the interaction between children and teachers (UNESCO, 2014). Teacher training alone or in combination with other strategies is the most common approach to improve teacher quality in the developing world (Cole, 1991). However an ongoing policy challenge is the lack of data on the impact and effectiveness of different training and development models. Based on research included within the review, in order for initial teacher training and ongoing continuing professional development to be effective it must be relevant, timely and context specific. There is need therefore to relook into the courses offered in the universities to be relevant to the existing curriculum.

A study by Aslam & Kingdon, (2008) showed that the standard characteristics of teachers such as qualifications, experience and training do not significantly matter to pupil achievement, however, teachers are paid higher remuneration if they have these characteristics. Findings also show that teaching 'process' variables are the ones that improve student achievement significantly. The fact that when teachers have advanced in their studies they get a better remuneration regardless of the area of study is not enough; it should match the student achievements. School administrators, parents and students themselves widely support the notion that teacher quality is vital to student achievement, despite inconsistent evidence linking achievement to observable teacher characteristics. This has led many observers to conclude that, while teacher quality may be important variation in teacher quality is driven by characteristic that are difficult or impossible to measure. There was consensus in the literature on how these inputs and actions can enhance classroom practices and, eventually, influence students' progress or achievement (Sanders and Horn, 1998). However, the level of teachers' academic qualifications and professional training that best support the development of quality teachers and how this specifically influences student achievement is difficult to pinpoint. Relatively few studies correlate these factors, especially across the diverse teaching force (Roza and Miller, 2009)

Teacher training alone or in combination with other strategies, is the most common approach for improving classroom practice and teacher quality in developing countries (Cole, 1991). In order to be effective, both initial training and ongoing professional development need to be relevant, timely and context specific. Research shows that current pre-and in-service training are both outdated and in need of reform (Kane et al.,

2006). Exactly what this reform should consist of however, must be urgently debated, given the lack of in-depth information on the current teaching force or programme that can effectively train and support such a wide array of teacher profiles. In the face of this lack of evidence, many countries continue to truncate training as a cost-saving measure.

## **2.3 Attitude**

Psychologists define attitude as a learned tendency to evaluate things in a certain way. This could include evaluations of people, issues, objects or events. Such evaluations of people are positive or negative, but they could also be uncertain at times. Researchers also suggest that there are several different components that make up attitudes. An emotional component which involved how the object, person, issue or event made you feel; a cognitive component, involved your thoughts and beliefs about the subject and a behavioural component that involved how the attitude influenced your behavior. Attitudes formed directly as a result of experience. They may emerge due to direct personal experience or they may result from observation. While attitudes could have a powerful effect on behaviour, they were not set on stone. The same influences that led to attitude formation could also create attitude change (Heyneman and Loxley, 1983). Attitude as a factor could be viewed as the totality of an individual's inclination towards object, institution or idea. Krosnick and Schuman (1988) stressed that it was an organized predisposition to think, feel, perceive and behave toward a referent or cognitive object.

### **2.3.1 Attitude of Teachers**

In the opinion of Ballou and Podgursky (1997) an attitude was the relatively stable over behaviour of a person which affected his status, the attitude was the status-fixing

behaviour. The attitude was therefore the dynamic element in human behaviour, the motive for activity. Llyod et al.(2000) found that teacher characteristics, in particular attitudes had an important impact on attainment, especially for girls. Earlier works in China had shown that attributes of teachers could be significantly linked to students' attachment to the schooling process, (Haines, 1996). Schneider (2003) also sought to investigate how teacher attitudes were affected by school and individual factors. (Kane et al., 2006). in his study also found out that the majority of stakeholders respondents believed that secondary school teachers tended to be better motivated than primary school teachers. Living conditions was a key factor. Teachers in secondary schools usually had much better housing with utilities such as running water and electricity. Goe et al. (2012). supported this when he noted that the distribution of primary school teachers by gender and qualifications was greatly influenced by the availability of suitable teachers houses. Lugbusi et al., (2007) in their study found out that teacher perceptions of their jobs were strongly related to their perception of their students. This confirmed that working with secondary students was preferred whereas working with primary students was viewed negatively. Betts et al. (2003), found out in his study that the status and pay of primary school teachers compared to secondary school teachers was generally much lower in low income developing countries than in the North. Thus in the absence of alternative employment opportunities, becoming a secondary school teacher was the main avenue for social and economic advancement for the most able primary school teachers. This had important implications for development of a critical mass of competent and experienced teachers in primary education. The very high turnover of teachers in the hard to staff schools also affected the community standing of teachers as a whole. Teachers often came

and went too quickly to be able to develop strong relationships with parents and the wider community. This was because most teachers preferred to work in urban areas; no one was willing to work in remote areas.

The learner acquired, from the teachers disposition to form attitude towards learning which could positively or negatively affect his performance, (Bagozzi, and Kimmel, 1995). Teachers were role models to the students because they acted, so do the students, demonstrated and perfect such act or behaviour. A close examination of the submissions of Abagi and Odipo (1997) revealed that academic achievement may be dependent upon positive attitude from the teachers and the students in the teaching/learning process.

Literature has also indicated that teachers' attitude and students' attitude have exerted some influence on the academic achievement of students. For instance, Yara (2009) reported that teachers' attitude towards science had a strong relationship with students science achievement as well as the students attitude towards science. Ogunmade (2005) showed that teachers' attitude towards science was a potent predictor of students' academic achievement in science and attitude towards learning science, but Ingersoll and Msalam (1997). reported that the effect of students' attitude on achievement in mathematics was not as strong as the effect of teachers' attitude on students' achievement in mathematics. In a similar study Ono and Ferreira (2016) revealed that teachers attitude towards integrated science teaching influenced students attitude toward learning integrated science and achievement in the subject. Also, Ogunwuyi, (2000) reported a significant relationship between teachers attitude and student achievement in integrated



science. However, Johnson and Christensen (2010) argued that no apparent relationship existed between attitude and academic achievement. Ingersoll and Msalam (1997) argued that teacher beliefs and attitudes significantly contributed to enhancing educational effectiveness and achievement. A strong positive belief caused higher achievement among students. Rockoff and Speroni (2010) observed that a positive teacher attitude contributed to the formation of pupils' positive attitudes. Carnoy et al. (2012) showed that classroom strategies used to teach a subject were influenced by teacher attitudes, which in turn influenced pupil's attitudes. This implied that teacher attitudes towards the subject actually produced the same attitude on the learner.

A recent review of the literature by Udenhunle (2001) examined 18 analyses from seven studies. They reported that the proportion of the variance in student achievement gains due to teacher effects ranged from about 0.07 to 0.21 and out of the seven teacher attitude measures tested, only one teacher expectations, a principal component composed of four observed variables was associated with reading achievement gains. Reading achievement gains were lower on average, in classrooms led by teachers who held negative expectations such as student misbehavior and paper link interfering with teaching, academic standards being too low and children being incapable of learning. One teacher attitude, teacher efficacy (effect size = -0.03  $P < .10$ ), which is a principal component measuring whether teachers felt they made a difference and were satisfied with their career, was also associated with math achievement gains.

Other scholars have argued that “teaching not teachers was the critical factor” (Rockoff, 2004). That is, the practices that teachers employ in the classroom are more important than their education credentials, experience, test scores and other background variables. Two aspects of teaching have been examined in the research literature, teacher attitudes about their ability to teach and about students ability to learn – sometimes referred to as teacher efficacy (Sprinthall et al., 1996) and teaching practices or processes compared to teacher background characteristics, teaching attitudes and practices have received less attention in the research literature in part because they tend to be more difficult to measure or quantify. But studies that have examined direct measures of teaching practices have found substantial effects on student learning (Schollar, 2008).

Teachers attitude to Mathematics achievement are a cause of concern. CDE’s research and the other studies highlight the problem of teacher complacency and indicate that teachers have an unrealistic assessment of their competence (Sprinthall et al., 1996). This extends to heads of department and principals in poorly performing primary and secondary schools. In the recent TIMSS 2011, 89 percent of South African Grade 9 teachers felt very confident in teaching Mathematics. This was in stark contrast to teachers in the best performing countries, Finland (69 percent very confident) Singapore (59 percent very confident) and Japan (36 percent very confident) (Mullis, Martin, Piewe Foy and Arora, 2012) such levels of teacher confidence are particularly at odds with Grade 9 student performance in South Africa, where 32 percent of learners performed worse than random guessing on the Multiple choice questions.

The attitudes of teachers and principals impact on their willingness to see the need for improvement in their Mathematics and Science teaching (Sprinthall et al., 1996) and this has significant implication for professional development programmes. Spaul (2013) points out that educator complacency is likely to mean teacher resistance to attempts to reform mathematics teaching. Why should teachers want to improve and undertake training for example if they believe they are already doing a good job? A large study of grade 6 Mathematics teachers at some 60 schools in the North West Province found that the schools were incredibly inefficient, at least in ENSURING academic learning and that on average teachers and administrators accepted low performance levels of students and their levels of knowledge and low expectations as the norm (Croninger et al., 2007).

### **2.3.2 Commitment**

Teaching is a complex and demanding profession. To sustain their energy and enthusiasm for the work, teachers need to maintain their personal commitment to the job (Dogan, 2012). This concept of 'commitment' as investment of personal resources, has long been associated with the professional characteristics of a teacher. It was widely recognized that the role of the teacher has intensified and teachers are needing to adapt to 'bureaucratically driven escalation of pressures, expectations and controls concerning what teachers do and how much they should be doing within the teaching day' (Haynes et al., 1997). At a time when education was in constant flux, teachers were expected to incorporate reforms on a number of levels into their daily practice. The reform agenda has created an environment where those who wish to survive and thrive must become involved in an increased rate of personal adaptation and professional development (Dogan, 2012). Professional commitment appears to be highly influential for not only a

teacher's success during times of change but also for systems in seeking to bring about change.

The expectation on teachers to respond to current reform initiatives influences their professional lives in a number of ways. At the same time, Dinham (1997) reported that this increase in workload, for many teachers, has spilled over into their personal lives. To make the required personal investments to adapt to these increased expectations, teachers needed to divert scarce personal resources away from areas of life, such as family, to professional priorities. Dinham (1997) reported that around 40% of teachers partners felt that teaching –related issues impacted on the personal lives of their families. These issues included the general overwork, the unrealistic demands of school and disruptions to personal lives by work expectations. It is apparent, therefore, that many teachers are currently walking a fine line in the way that they are attempting to manage the balance between personal commitments at home and their commitment to teaching.

### **2.3.2.1 Teacher Commitment**

There is a growing body of literature that suggests that there is crucial link between emotional attachment (attitude) to the work of teaching and a teachers personal levels commitment (Dinham (1997)). This literature challenges the view that teacher commitment is focused exclusively on external dimension and explores the relationship between teacher passions, values and beliefs, and teacher commitment as a highly personal way of viewing the self and its relationship to education. A study was done in Australia to investigate how teachers characterize teacher commitment and the following were identified.

Teacher commitment as a 'passion'. This conception saw teacher commitment as a passion or positive emotional attachment (attitude) to the work involved in teaching generally, or a specific aspect of teaching. Teacher commitment as an investment of time outside of contact hours with students. This conception identified teacher commitment as an investment of 'extra' time outside of expected contact hours with students.

Teacher commitment as a focus on the individual needs of the students. This conception considered teacher commitment to be a sharp focus on the needs of the student. Teacher commitment as a responsibility to impart knowledge, attitudes, values and beliefs. This conception considered teacher commitment as taking responsibility for imparting a body of knowledge and /or certain attitudes, values and beliefs. Teachers who hold this conception place great value on the role that they play in preparing students for the future and take responsibility for passing on a core set of skills, understanding and values.

Teacher commitment as 'maintaining professional knowledge '. This conception viewed teacher commitment as the maintenance of professional knowledge and on-going professional learning. Committed teachers are proactive in their professional development and in many cases are willing to share with and learn from the colleagues.

Teacher commitment as engagement with school community. This conception considered teacher commitment to be the willingness to engage with the school and the schools community. Teachers have a professional responsibility that reaches out beyond the four walls of the classroom and perhaps even extends beyond the boundary of the school.

The findings from this study support the growing body of literature that challenges the current literature in a highly significant way. This study challenged the view that teacher

commitment was focused exclusively on external dimensions and explored the relationship between teacher beliefs and teacher commitment in a way that characterized teacher commitment as a highly personal way of viewing the self and its relationships to education. The findings supported the growing view that, while teachers did articulate a commitment to external factors (such as students), they also made significant links to personal passions which had clear articulations with ideology, values and beliefs (Dinham, 1997).

Teaching is a complex and demanding work and there was a daily need for teachers to fully engage in that work with not only their heads, but also their (Etsey, 2005). It appeared to be a professional necessity for teachers to be emotionally committed to their work, for without these emotional connection teachers faced the constant danger of burn-out in an increasingly intensified work environment (Nyamu, 2015) stated, a passion for teaching cannot be considered to be a 'luxury, a frill, or a quality possessed by just a few teachers, instead he argued, a sense of passion was 'essential to all good teaching'. Therefore, passion, uncomfortable as the word may sound, was at the heart of what teaching was or should be about (Etsey, 2005).

Based on longitudinal qualitative study of fifty new teachers in Massachusetts, Johnson Christensen (2010) reported that new teachers' sense of efficacy-the feeling that they were teaching students well strongly affected their decisions to change schools or to exit the profession all together. Etsey (2005) noted that teachers commonly engaged in supplementary income generating activities. They measured official school time and were

inadequately prepared for teaching assignment and the commitment to school tasks. Donors to African Education as cited by Chemisto (2007) went further and noted that many teachers were discouraged about low pay and status and high numbers were leaving the teaching force. As a result of all these, direct instructions in schools suffered and inadequate time was given for preparations and marking of pupils work.

Ingersoll and Masalam (1997) used data from the schools and staffing survey about teachers that reported sense of commitment to teaching. They conducted multiple regression using hierarchical linear modeling and found that teachers with advanced degrees reported slightly less commitment than those without advanced degrees. Kane et al., (2011) used longitudinal data obtained from the Texas education Agency to study cohorts of teachers in Texas who entered teaching from 1976 to 1999. They found that teachers with advanced degrees were more likely to leave teaching than those with only a Bachelors' degree. If a teachers' sense of efficacy were the only factor influencing retention, one might deduce on the basis of the studies that an additional degree made a teacher less effective. However, since we know that retention was also influenced by other factors such as pay and working conditions, it seemed more likely that having an advanced degree increased teachers' career options and thus led the teacher to another line of work.

In a discussion of interpersonal competencies that are critical to productivity in the workplace, Afe (2001) stressed the importance of interdependence among members of work teams and identified interrogative negotiation as a key indicator of effective

interdependence. In other words, team interdependence will likely produce positive results. Roseholtz (1989) observed in 'Leading for Results' that correlation occurred in daily interactions among teachers in which they assisted one another in improving lessons, deepening understanding of the content they taught, analyzing student work, examining various types of data on student performance and solving the myriad of problems they faced each day.

## **2.5 Learning Outcomes**

Performance in Mathematics has remained a global concern. Studies conducted by American Institute for Research (AIR) to investigate Mathematics performance in USA students, fourth and eighth grades as compared with other pupils around the world and another by National Assessment of Education Progress (NAEP) assessed the progress in Mathematics of students in grades four, eight and twelve. The results showed that grade four pupils performed below average mark consistently from 1996 – 2007. The survey also revealed that teachers were the major cause of poor mathematics performance in the US (Roseholtz, 1989). In another study, Rockoff (2004) found out that teachers in USA followed text books which were too wide because publishers produced elementary mathematics text books that covered a variety of topics so that they could sell in different states. As a result, teachers did not develop in their pupils a deep conception understanding of mathematics topics and their application Oloyede (1992).

According to Nye et al. (2014) the public in Uganda continues to decry the poor performance of pupils in national mathematics examination. In his study at Makerere University, Nye et al. (2014) investigated factors that hindered pupils' opportunities to



learn mathematics in primary schools. The findings revealed that 83% of the factors that hindered mathematics learning were teacher related which included;- poor teaching methods lack of teaching experience, teachers weak academic ability, background , poor teacher attitudes towards mathematics and lack of continuous professional development. According to Prof. Kiptoon, former Permanent Secretary in the Ministry of Education, the poor performance in primary mathematics was largely caused by teachers (Rockoff, 2004). He claimed that most teachers teaching the subject were unskilled, incompetent and lacked expertise. This was the reason why the government in 2001 through the Ministry of Education, introduced a distance learning course called School Based Teacher Development (SBTD) to improve primary school teachers. The aim of the course was to help teachers understand how pupils learn mathematics and to equip teachers on how to provide support for their pupils learning of (Oloyede, 1992).

Ngirachu (2010) in an article entitled “Children troop to school, but still illiterate” featured in the Daily Nation of Friday, April , 23, 2010 reported a study that was conducted by a team of researchers from Kenyatta University and non-governmental organization called Uwezo, which covered Seventy (70) districts. This study interviewed 40,386 pupils and revealed that one out of ten standard eight pupils could not solve a class two mathematical problem, 30% of class five failed the same and 20% of class two were able to solve it. From the research literature there was some evidence for the effects of teacher behaviour on student behaviour (Oloyede, 1992) and mounting evidence that teachers self perception and related effective factors (Ngugi , 2007.) interact with and impact on their professional practices. A major proposition at the outset

of the present study was that teachers' professional self perceptions are crucial input components of any attempt to evaluate the benefits of in-service programmes or to monitor educational outcomes since both the identification and evaluation outputs at the student level are necessarily mediated by the relative saliency of teacher effects.

The standard newspaper on Thursday, 26<sup>th</sup> August 2010, in an article entitled "Some teachers are weaker than their pupils", reported a study that was conducted by African Population and Health Research Centre (APHRC, 2010). The report pointed out that teachers could be the source of poor performance in Mathematics. The organization tested mathematics skills in a study covering 72 primary schools, 2,437 pupils and 211 teachers. The results indicated that the average score was 60% for teachers and 46% for pupils with some teachers scoring as low as 17%. Education quality has recently received a lot of attention in Kenya. The government main document in this effort the Kenya Education Sector Support Programme for 2005 – 2010, established the National Assessment Centre (NAC) to monitor learning achievement. In 2010, the NAC released the results of its first assessment. In 2009, in collaboration with NAC, Uwezo Kenya conducted an assessment of the basic literacy and numeracy skills of children ages six to sixteen (6 – 16) the annual assessment (ALA) reached villages in seventy out of one fifty eight (70 out of 158) districts in Kenya and assessed nearly seventy thousand (70,000) children in their homes. The ALA was set at standard two level which is the level where pupils are supposed to achieve basic competency in reading English and Kiswahili and complete arithmetic problems.

The table below shows the percentage of children who could not read a standard two level paragraph or solve a standard two level subtraction problems.

**Table 2.4:**

***Percentage of Children Unable to Read a Standard Two Level Paragraph or Solve Standard Two Level Subtraction Problems.***

Class	Cannot read English paragraph	Cannot read Kiswahili paragraph	Cannot do subtraction
Standard 2	85%	85%	79%
Standard 5	27%	23%	30%
Standard 8	4%	4%	10%

**Source:Uwezo Kenya 2009**

Among the key findings about education in Kenya based on the results of the Uwezo 2009 assessment was that Literacy levels were lower in public schools than private schools. It was generally agreed that the most important manifestation of schooling quality (however defined) were literacy, greater cognitive abilities and better student performance in examinations (UNESCO, 2014). Private schools performed better because of the level of commitment of teachers as compared to their colleagues in public primary schools.

A study conducted by Ball (2005) considered factors affecting pupil performance, investigating the variables of teachers, students, parents and community and concluded that the teacher was the key factor in student achievement. Training played an important role in improving the quality of education in schools. The professional quality of the trained teacher depended on the quality of the curriculum to which the teacher was exposed to and the ways in which it was implemented. In Kenya, poor performance in mathematics at Kenya Certificate of Primary Education (KCPE) had been and still was a

subject of much debate among politicians, teachers, parents, educational experts and other stakeholders. In the year 2005, a total of 671,417 pupils sat for KCPE examination in Kenya and the Mathematics raw mean was 46.9%. In the year 2006, 660,531 pupils sat for the examination and the Mathematics raw mean was 53.94% while in the year 2007, a total of 698,364 pupils did the examination and obtained a percentage raw mean of 49.24% (Ministry of State for Planning National Development and Vision 2030) ElgeyoMarakwet County registered 11244 candidates for KCPE in the year 2013 and the mean score was 272.85. In 2012, 11235 candidates sat for the KCPE examinations and they attained a mean of 274.37 and 2011, 11142 candidates sat for the examination and obtained a mean of 269.25. (UNESCO, 2014) based on this, the performance was still not so good.

In international and regional assessments for the Eastern and Southern Africa region, average test scores for literacy and numeracy are generally low, with a considerable percentage of students failing to have acquired basic skills in reading and mathematics. In Lesotho, for example, by Grade 6, only 48 per cent of students have achieved basic reading skills. In Zambia and Malawi, only 27 per cent of students achieved this level. In mathematics, the proportion of primary students with basic skills is considerably lower, with fewer than 50 per cent of students in Grade 6 achieving the minimum level in two-thirds of countries (UNESCO, 2014). In most sub-Saharan African countries, average test scores in international. Regional assessments of student learning are low. Primary school students in low-income, sub-Saharan African countries have, on average, learned less than half of what is expected of them (Maiyo and Ashioya, 2009). Lam, et al.

(2010) noted that teacher absence is common in schools in low and middle income countries. During a visit 11-27% of primary school teachers were absent and only 3% were absent due to sanctioned reasons. Marphatia et.al. (2010), noted that absence is high in government schools.

The report of the Government of Sierra Leone (2008) into the relatively poor performance of Sierra Leonean students at Basic Education Certificate Examinations (BECE) and the West African Senior Secondary School Examinations (WASSCE) laid strong emphasis on the importance of teachers in ensuring quality education and made a range of recommendation to improve the quality of teaching and learning contained in the white paper of Education 2010). The report further made observations in the sense that it stated that the greatest responsibility for poor pupils performance was pointed at the school, in particular teachers, their behaviour and general negative attitude to work including specified unethical and unprofessional conduct. Teachers were found to have displayed poor pedagogy evidenced by abstract teaching, inadequate instructional time, poor teaching methods, mainly teacher centred and over dependence on teacher's handouts which were plagiarized and unprofessionally presented and sold to pupils at exorbitant price.

The focus on teachers as the main drivers of effective student learning is not new. The teacher assumes a heavy responsibility for student's performance. Students are known to reap enormous benefits over time from teachers that are well trained, dedicated and resourceful and who make it a point to reflect on their practice and improve it. Teacher quality explains the difference in the gap between poor and high performing students.

How teachers are trained right from the start has been found to determine how they will perform in the classroom. Experience shows that teachers tend to teach in the manner in which they were taught in pre-service teacher training programmes. The burden of quality performance is typically laid at the teachers door step. Teaching in Nigerian schools has been criticized because of the poor performance of Nigerian students in Science subjects relative to their counterparts in other countries. This is evident from the second international Science study in which Nigerian students came last in primary science and second last in secondary science among the participating countries of the world (Government of Nigeria, 2008).

A number of factors have been identified to be responsible for these poor performances in science from the various studies conducted in Nigeria. These include the lack of motivation for most teacher's attitude of students to learning. Lack of teaching skills and competence by science teachers and lack of opportunities for professional development for science teachers (Hanushek et al., 2004). A good number of countries in Sub Saharan Africa remain far from achieving EFA goals. Therefore improving the quality of Education and what children are learning in school remain an enormous challenge. Infact results from SACMEQ II indicate that fewer than 25% of grade six children reached the "desirable" level of reading literacy in Botswana, Kenya South Africa and Swaziland and fewer than 10% in Lesotho, Malawi Mozambique, Namibia, Uganda and Zambia. It is common cause that the quality of the South African Schooling system as a whole is poor and that levels of Literacy and numeracy are dismally low. Learner achievement in Mathematics and Science while slowly improving is still an unacceptably low level.

In fact in practice, however the most basic counting processes dominate in primary schools classes (Hanushek et al., 2004). This prevents learners from acquiring the specialized mathematics knowledge that is needed to move from specific tasks to general mathematics procedures and principles. In many cases teachers focus on everyday common sense knowledge that denies learners the opportunity to explain concepts and focus on their Mathematical properties.

### **2.5.1 Literacy and Numeracy Levels**

According to Piper (2010) Literacy is the ability to read and write – is recognized as being one of the most fundamental of core skills contributing to academic achievement, lifelong learning and sustainable development. However, in many African countries, literacy achievement in the formal education system has not attained the levels necessary to support any of these outcomes. Primary curriculum expectations across the continent include literacy acquisition in the early grades, and yet somehow those expectations are not being adequately met. Research from around the world had confirmed that literacy is fundamental to success in the formal education system. As Rockoft (2004) noted, research shows that children who develop good reading skills are more likely to succeed at school and become productive members of our society. The world Bank's education strategy statement for 2010 also notes that in the primary years, quality teaching is critical for giving students the foundational literacy on which lifelong depends in an even stronger statement on the centrality of literacy to learning, the united states Agency for International Development (USAID) has recently established three key education goals one of which is "improved reading skills for 100million children in primary grades by 2015 (Piper 2010). In most cases, the principal site for learning to read and write is

assumed to be the primary school, usually the early grades. Access to primary education in Africa has increased across the continent, but quality of Education including learning to read and write fluently and with comprehension lags behind (Piper, 2010). This can be attributed to poor teaching skills.

The results being found in the Early Grade Reading Assessment (EGRA) are nothing less than disastrous. This is according to (Piper, 2010). For example in Kenya, when asked to read a simple grade 1 level passage in English and answer a set of factual and inferential questions. Results from Grade 3 pupils shows that only 30% of them could answer even one of the questions (Piper, 2010). In Ethiopia more than 25% of children in each of the four largest and wealthiest regions of the country could not read a single word in the test story after two full years of schooling in the local language (Piper 2010 a) . Even more distressing are results from elsewhere in sub-Saharan Africa which show that in some regions and Countries more than 80% and even 95% of children at the end of Grade 2 cannot read one word of a simple story (Gore, 2007).

Research has shown that large numbers of children in East Africa region are simply not learning basic reading outcomes remain significantly deficient despite significant gains in expanding access to primary education. According to Munaro et al. (2008) parents in Kenya, Tanzania and Uganda must start facing hard facts that their children in schools are not learning: Children are not acquiring basic reading skills during their early years of primary education. Statistics showed that less than 50% of teachers have actual contact with pupils. Murnane et al. (1988) posits that many of the performance problems at



secondary school level have their roots from primary school level. This is because few countries have effective strategies for teaching languages to pupils who enter primary schools. This poses a challenge, because English is the medium of instruction and plays a key role in understanding the content of any subject taught in the curriculum. A study by Aburo (2011) found that student's performance in KCPE had a Pearson correlation of 0.452 to their performance in KCSE. This correlation was significant at 0.01 in a two tailed test. Public exit examinations can provide performance information which can hold both schools and students accountable (Hanushek, 2003). The examinations affect the content and the skills conveyed in school and teachers gear their teaching to the examinations which tend to encourage rote learning (Benner, 2000).

According to Aburo (2011) 30% of the teachers in secondary schools use past examination papers on teaching resources in the classroom atleast once a week. Time for teaching is misappropriated to testing. The Kenya's education system is dominated by examination oriented teaching where passing examinations is the only benchmark for performance because there is no internal system of monitoring learning achievements at other levels within an Education cycle (Aburo, 2011). It is generally agreed that the most important manifestations of quality education have to do with literacy, cognitive abilities, performance and progression to higher levels of learning. There is reliance on scores and transition rates as core measures of achievement. In Kenya, examinations are generally acceptable as valid measures of achievement. Although the government has channeled funds into basic education, performance at KCPE shows that most of the students making transition to top schools are from private schools. This creates

inequality to access of opportunities to national and top performing provincial schools. The study by Munaro (2008) showed that adequate prior preparation before a teacher went to class led to good performance by the pupil for this promoted sequential presentation of concepts by the teacher to the learners. There was an indication that Headteachers were not satisfied with the teachers' preparation, that it was not sufficient, hence could be leading to poor performance by pupils. Since most teachers were engaged in other activities given their attitude, they did not have time for lesson preparation before going to class.

In a comparative study of low and high achievement among pupils in rural and urban schools in Munaro (2008) found out that teacher's qualification affect pupils performance. Munaro (2008) also points out that low quality teaching can result in frustration and boredom of learner who may eventually drop out of school. The study by Kikechi and Chepkwony (2012) revealed that most teachers used lecture method in teaching due to increased number of pupils. This method of teaching had a lot of limitations in the provision of quality instruction especially if used on primary school pupils where a close interaction between the pupils and teachers is necessary. Despite all the laid down strategies by the education stakeholders to ensure students perform well in KCPE examinations, many students still continue to perform dismally. The mean score of Thika West District in 2010 for instance was 211.09 marks. This was below average normally both teachers and the Public believe that a low pupil teacher ratio and teacher's high qualifications result in better performance in school. However, studies from other regions have indicated that "on the basis of available data no optimum class size can be

scientifically established as a function of educational benefits “(Wayne & Young, 2003). A teacher who organizes and motivates the class is more important than a class size. The teacher factor /quality here is what matters most.

Teachers attitudes towards their work and pupils their classroom management and their interaction with pupils have a great impact on the academic achievement and the retention in school of their pupils, particularly girls. An obvious result of this absenteeism, poor performance and non-completion of education cycle to Kikechi and Chepkwony (2012) students taught by “ high quality” teachers have significantly higher achievement, resume characteristics on which teacher compensation is bared such as teacher education training and experience which explain little of the variation in teacher quality. Kikechi and Chepkwony (2012) notes that students taught by teachers with a positive attitude towards their work are friendly towards their pupils and this significantly enhances student achievement. Lack of promotion and recognition for work performed as well as lack of chances for advancement among teachers caused dissatisfaction among some of the teachers. On the other hand individuals suffering from “Cancer Stress” often show high job dissatisfaction, job mobility, burn out, poor work performance and less effective interpersonal relationships at work. Teachers are therefore faced with situations in which more efficient and effective school management requires new and improved skills, knowledge and attitudes to cope with a wide range of new demands and changes (Uwezo Kenya, 2012)

Studies done on Sub-Saharan Africa show that the region is making progress towards achieving Education for All (EFA) goals (UNESCO, 2014). However, very little attention has been paid to the quality of education, or to progress in student performance, in international /regional assessment of student learning are low. Primary school students in low income, Sub-Saharan African countries have on average learned less than half of what is expected of them (Uwezo, 2012). A comparison of high – and low income countries using data from the Southern and Eastern Africa consortium for monitoring Education Quality (SACMEQ) and the progress in International Reading Literacy Study (PIRLS) revealed large differences between the poorer economies in SACMEQ ( for example Lesotho, Malawi and Zambia) and the mainly high income economies in PIRLS. The gap between the learning achievements in developed economies and the learning achievements in East and Southern Africa is estimated to be atleast four grades (Uwezo, 2012).

Average test scores for literacy and numeracy in International and Regional assessments undertaken in the ESA region were generally low with a considerable proportion of students not achieving basic skills in reading Mathematics Results from SACMEQ III (2007) show wide disparities in basic reading and Mathematics skills by the end of primary education (Grade 6). In 3 of the 12 participating Countries in the ESA region (Kenya, Tanzania and Swarziland) between 80 % and 93% of students achieved the minimum reading level in SACMEQ. In six Countries (Botswana, Zimbabwe, Namimbia, Mozambique, Uganda and South Africa) between 50 per cent and 80 per cent of students achieved the minimum level. In Lesotho, 48 percent of students in grade 6

achieved basic reading skills, in Zambia and Malawi, only 27 per cent of students reached this level. In Mathematics, the proportion of primary students reaching basic skills was considerably lower with less than 50 per cent of students in grade 6 reaching the minimum level in three quarters of the Countries.

## **2.7 Empirical Studies**

Attitude strength is defined as the extent to which an attitude was stable, resistant to change, impacted information processing and guided behaviour. Warwick (1994) summarized that attitude was poor predictors of behaviour, Gordon (1935) seemed to disagree with Wicker in that he postulated that attitudes determined for each individual what he will do. From these we could ask, do attitudes predict behaviour or when do attitudes predict behaviour? The general conclusion from these literatures is that strong attitudes are predictive of behaviour whereas weak ones are not. Kamba and Nkumbi (2008) defined attitude strength as the extent to which attitudes manifested the qualities of durability and impactfulness.

Bansilal et al. (2014) provided one framework for categorizing measures of attitude strength by dividing them between meta-attitudinal and operative measures. By meta – attitudinal, Bansilal et al. (2014) meant measures that were based on the persons own assessment of his or her attitude. Essentially, operative measures focused on how the respondent used the attitude and meta-attitudinal measures which were based on a subjective assessment made by the respondent. In contrast to Bansilal et al. (2014) conclusion that operative measures had more predictive validity across the board, Holbrook and Krosnick (2003) showed that meta-attitudinal and operative measures of

the same construct predicted different outcomes. Attitudes were a hypothetical construct invented by researchers to account for a body of phenomena. We cannot observe attitudes directly but infer them from individual's self-reports and behaviour. Empirically attitude measurement was highly context dependent and minor changes in question wording, format or order could have a profound impact on the obtained reports (Bansilal et al., 2014).

Respondents may base their attitude judgments on information about their own behaviour towards the attitude object. In doing so they follow the same inferences rules that an external observer would apply as initially suggested by Babalis et al. (2008) self – perception theory. For example, they may conclude that they liked an activity when they seemed to engage in it due to external pressure or high rewards. That is they inferred their attitudes from behaviour under conditions that allow for correspondent inferences, Jones (1979). Moreover, it was not individuals' actual behaviour, but their perception of their behaviour that drove their attitudinal judgments.

The performance of teachers has been accepted as multi-dimensional construct since it measures a variety of different aspects of teaching such as; subject mastery, effective communication, lesson preparation and presentation. The influence of teachers teaching effectiveness on the learning outcomes of the students as measured by students' academic performance has been the subject of several studies (Ischanel-Moran, et al., 2001). The above studies suggested that effective teachers should produce students of higher academic performance. Kirunda (2004) attributed poor academic performance of students in Uganda to poor teachers' performance in terms of accomplishing the teaching

task, negative attitude to work and poor teaching habits which have been attributed to poor motivation (Ofoegbu, 2014).

Although teachers' strong effect would significantly influence students' academic achievement, other factors such as socio-economic background, family support, intellectual attitude of student, personality of student, self-confidence/ and previous instructional quality have been found to also influence students examination score either positively or negatively. To this end, Ofoegbu (2014) stated that students' grades and test scores were not good indicators of the quality of teachers' instruction. In support of this view, a study carried out in Nigeria by Kagoda (2011) showed that Nigerian teachers condemned the use of student achievement scores as indicators of teachers' competences, performance or effectiveness.

There was an emerging understanding about the ways in which professional development impacted student achievement. Although an experimental study examining the features of high quality professional development showed increased teacher knowledge and desired classroom practice, it did not find that this knowledge translated into improved student outcomes or substantial changes in practice overtime (Gelade and Flerning, 2007). A review of professional development programmes in mathematics and science found that programmes focused mainly on teacher behaviours, demonstrated smaller influences on student learning than did programmes concerned primarily with teacher knowledge of the subject, the curriculum or how students learn the subject (Kllcelin, 2011).

Another study reviewed the designs of professional development programmes that had significant effects on improving student achievement in mathematics or science. Such effective programmes tended to have certain features in common including a strong emphasis on teachers learning specific subject content as well as pedagogical content, follow up reinforcement of learning, assistance with implementation and support for teachers from mentors and colleagues in their schools (Blasé and Blasé, 2000).

Parents, teachers and administrators emphasized repeatedly the fundamental role that teachers played in the determination of school quality, yet there remained little consensus among researchers on the characteristics of a good teacher, let alone on the importance of teachers in comparison to other determinants of academic performance. Teachers' quality was the concept that embodied what the teacher did and they could do in terms of their assigned roles in the school. Related to the concept of teacher quality was teaching quality and it had been observed that one way of determining the quality of teaching in schools was by looking at the intermediate outcome of student performance (Sanders, and Rivers, 1996). Proponents pointed out that research had found no consistent links between education credits or degrees and student performance and only modest links between experience and student performance (Sanders, and Rivers, 1996) argued that there was a causal link between the quality of teaching and level of students outcomes, meaning any method that increased the quality of teachers could improve student outcomes.

Teachers were key players in fostering student engagement (Goldhaber and Brewer, 2000). They directly dealt with students and typically were the most influential in



students' educational experience. Creating a culture of achievement in their classroom, developing interactive and relevant lessons and activities and being encouraging and supportive to students were all ways in which teachers could foster student engagement in the classroom. This only worked if the teachers had the right attitude (Goldhaber and Anthony, 2004). study of teachers working conditions, he pointed out that teachers' internal states and their classroom performance contributed much more positively to student learning when there was a consistent, largely uncontested sense of direction for change. Fullan (2010) extended this argument suggesting that there was no way to make whole – system reform work without the entire teaching profession and its leaders working together for the collective good.

Reche (2012) recently published one of the best syntheses to date of empirical research evidence that illuminated the complex relationship between educational leadership and student outcomes. Among the competencies involved in effective educational leadership, these researchers identified building relational trust as essential in schools and systems where the success of one persons' effort was dependent on the contribution of others. It was the intention of this study therefore to address those unexplored issues by including the effect of advanced certification and teacher attitude and increasing the scope of performance outcomes to include school learning outcomes so as to offer additional insights to the literature.

## **2.8 Summary of the Literature Review and the Gap therein.**

The Literature reviewed entailed studies related to the effect of advanced certification, teacher quality and teacher attitude which included commitment on learning outcomes.

The reviewed studies dealt with aspects of teacher function and generated and presented different and even contradictory results. Literature on teacher function was replete with studies on quality of teachers (Aburo, 2011). These studies found out that teacher quality was very important in student achievement. Aburo (2011) demonstrated that teachers' perception of their jobs was strongly related to their perception of their students. Literature had also indicated that teachers attitude and students attitude had exerted some influence on academic achievement of students, Yara (2009) reported that teacher attitude towards science had a strong relationship with students' science achievement as well as attitude towards science. Goldhaber and Brewer (1997) found out that a teacher's advanced degree was not yet generally associated with increased student learning from the eighth to tenth grade. However Rivkin, Hanushek and Kain (2000), Wayne and Young (2003), Levine(2006), Sanders ad Rivers (1996) all agreed that teacher quality influenced performance or rather achievement. Goldhaber and Brewer (1997) in a qualitative research suggested that the teachers' knowledge of the content they taught affected both what teachers taught and how they would teach it Aburo (2011). All demonstrated that teacher related factors hindered good learning outcomes in schools.

Contrary to positive findings, extant studies revealed that advanced certification may not impact positively on learners' achievement. Goldhaber and Brewer (1997) found out that teacher advanced degree generally was not associated with increased student learning.

Considering that this study explored the effect of advanced certification and teacher attitude on learning outcomes at primary level, it was evident that scanty literature existed on how advanced certification affected the attitude of a primary school teacher and as a

result the impact it had on learning outcomes. In Kenya, most studies had been done on issues like evaluation of teacher factors associated with mathematics performance in primary schools (Kikechi and Chepkwony, 2012), most studies had centered on comparing teacher characteristics and student achievement, but no study had tied up advanced certification and attitude on learning outcomes. Most studies had dwelled on school performance Piper (2010), it was therefore for this reason that this study intended to explore this area.

The above studies had concentrated on teacher quality and advanced degrees bearing in mind that in most European countries primary school teachers were basic degree holders hence their advanced certification in their case may be attaining a masters degree. This was not like the Kenyan situation where advanced certification meant acquiring a first degree. Most studies in Kenya had been done on issues like evaluation of teacher factors associated with mathematics performance in primary schools (Kikechi and Chepkwony, 2012). Most studies had also been centered on comparing teacher characteristics and student achievement, Piper (2010) had dealt with school performance but no study had tied up the effect of advanced certification and teacher attitude on learning outcomes at primary level in Kenya and particularly ElgeyoMarakwet County. It was for this reason that the study filled that gap.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research methodology that was used in the study. It explains the research philosophy, design, target population, sampling procedures and sample size, validation procedures, data collection and analysis procedures. Essentially, the purpose of this chapter is to, discuss the research philosophy in relation to other philosophies, expound on the research strategy including the research methodologies adopted and introduce the research instruments that had been developed to be utilized in the pursuit of the research goals. This Chapter also gives the anticipated data collection and analysis procedures along with the ethical consideration of the study.

#### **3.2 The Study Area**

The study was conducted in Elgeyo Marakwet County in the Rift Valley region (Appendix VII). This County extends from latitude 0' 20' to 1' 30' to the North and Longitude 35' 0 to 35' 45' east. The County borders, West Pokot, County to the North, Trans-zoia County to the North West, Baringo County to the East, and UasinGishu County to the West. The County covers a total area of 3053 Km<sup>2</sup> which constitutes about 0.4% of the total area of Kenya. Administratively the County is divided into four sub-counties namely: Marakwet East, Marakwet West, Keiyo South and Keiyo North (Keiyo District Development Plan 2008 – 2012). This area was identified for the study because

of high number of teachers who had advanced certification or were seeking advanced certification and yet the learning outcomes in the schools were not satisfactory.

### **3.3 Philosophical Underpinnings**

A research paradigm is a term derived from the history of Science where it was used to describe a cluster of beliefs and dictated what scientists in a particular discipline influenced what should be studied, how research should be done and how results should be interpreted (Bryman, 2004). Paradigm choice is a reflection of how the researcher views the world (Ontology) and beliefs on how knowledge is created (epistemology). It constitutes a way of looking at the world and interpreting what is studied and gave an indication on how research ought to be conducted by whom, to what degree of involvement and interpretation (Kothari, 2014). As a way of thinking about the nature of truth, it acted as a guide and committed the researcher to particular analysis, data presentation and interpretation of findings (Duyilemi, 1996).

The study adopted pragmatism which is a world view which arises out of actions, situations and consequences rather than antecedent conditions. There was a concern with applications- what works- and solutions to problems. Instead of focusing on methods, researchers emphasized the research problem and used all approaches available to understand the problem. Pragmatism is not committed to any one system of philosophy and reality. This applied to mixed methods research in that inquirers drew literally from both quantitative and qualitative assumption when they engaged in their research because they worked to provide the best understanding of a research problem (Creswell, 2009). In a mixed method approach the researcher used both quantitative and qualitative

approaches in data analyzing and collection for the pragmatist did not see the world as an absolute unit.

Pragmatists linked the choice of approach directly to the purpose of and the nature of the research questions posed (Creswell, 2009). Research is often multi-purpose and a “what works” tactic allowed the researcher to address questions that did not sit comfortably within a wholly quantitative and qualitative approaches to design and methodology. In this study the views of teachers and headteachers sought to determine the effect of advanced certification and teacher attitude on learning outcomes in primary school level. The researcher approached the study from theoretical assumption and hypothesis which were tested and thereby allowed explanations to be made on the effect of advanced certification and teacher attitude on learning outcomes.

### **3.4. Research Design**

A research design is a blue print for the collection, measurement and analysis of data (Kothari, 2009). It is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose. This study adopted mixed methods approach whereby data was collected predominantly by questionnaires and structured interviews on more than one case and at a single point in time to collect a body of quantifiable data, so as to establish patterns of association between the effect of advanced certification and teacher attitude on learning outcomes at primary level. This design was appropriate in the intended study because of the following reasons. One, the study sought to collect data from three eighty six (386) respondents in order to get varied views on the effect of advanced certification and teacher attitude on learning outcomes at primary level. Two, in this study, data on the advanced certification and teacher attitude

on learning outcomes at primary level was collected simultaneously and the researcher determined the effect of the two variables on learning outcomes. Three, the strategies of inquiry led to quantifiable data which was useful in establishing variations between cases and examining association between the attitude of teachers with advanced certification at primary school level and learning outcomes. This was because even though the study adopted a mixed methods approach, it leaned more on quantitative approach, as the data concerned could be analyzed in terms of numbers. The mixed methods approach was more than simply collecting and analyzing both kinds of data, it also involved the use of both approaches in tandem so that the overall strength was greater than action, qualitative and quantitative research (Creswell, 2009).

### **3.5 Target Population**

The study involved 3300 public primary schools teachers in 384 schools since there had been an influx of primary school teachers seeking advanced certification. The study used headteachers, teachers and TSC directors in Elgeyo-Marakwet County. There were 384 headteachers, 3,300 teachers, and 6 TSC directors giving a total target population of 3,690.

### **3.6 Sampling and Sampling Procedures**

Sample is a small population of target population. Sampling means selecting a given number of subjects from a defined population as a representative of that population. Stratified random sampling and then simple random sampling was used to obtain the respondents for this study. The three strata used were headteachers, teachers, and TSC officers. Published table by Krejcie & Morgan (1970) (Appendix 4) was used to

determine the sample size. They presented sample sizes that would be necessary for the given combinations of precision, confidence levels and variability (Krejcie & Morgan, 1970). It was also ideal where stratified simple random sampling technique was to be used in this study as illustrated in table 3.1.

**Table 3.1**

**Sample Size**

Stratum	Target Population	Proportionate Sample Size
Headteachers	384	95
Teachers	3300	342
TSC directors	6	6
<b>Total</b>	<b>3690</b>	<b>443</b>

**Source: Survey data (2015)**

The sample size of the study was 443 respondents which allowed the generalization of the study.

### 3.7 Research Instruments

Two types of instruments were used for the study. These were questionnaires and interview schedules.

#### 3.7.1 Structured Interviews

A structured interview entailed the administration of an interview schedule whereby interviewers were given exactly the same context of questions (Bryman, 2004) and the agenda was totally pre-determined by the researcher who worked through a list of questions in predetermined order (Martin and Marsh, 2005). The goal of this style of interviewing was to ensure that respondents' answers were aggregated because they responded to identical areas (Bryman, 2004). In this study, this form of interviewing was chosen because it allowed the researcher to get the respondents' views on learning



outcomes, advanced certification and teachers' attitude, while increasing the chance that the variations in the respondents (the employer and administrators) replies were due to 'real/true' variation, and, not due to the interview context (Bryman, 2004). An interview schedule was administered to the TSC County Director and Sub county Directors because they were in-charge of teacher management.

### **3.7.2 Questionnaires**

A questionnaire is a method of data collection that consists of questions printed in a definite order on a form (Kothari, 2009) which respondents respond to (Bryman, 2004). The researcher used questionnaires to collect data from teachers in primary schools on their level of education, their attitude to teaching, and learning outcomes. The selection of this tool was guided by the nature of data to be collected, number of respondents, time available and objectives of the study. Because of the large number of respondents (443), self-completed questionnaires were appropriate because they were cheaper and quicker to administer. This approach to data collection was appropriate in this study because; it reduced bias from the part of the researcher, reduced interviewer variability, and was more convenient to the respondents. The questionnaires had closed open-ended items. The closed ended items were of Likert type of scale ranging from: strongly disagree (1) to strongly agree (7).

#### **Headteachers Questionnaires**

Questionnaires were administered to headteachers of the selected schools regarding advanced certification and teacher attitude on learning outcomes in their schools. The researcher went for this because the headteachers were the immediate supervisors of the teachers and they interacted with the teachers on daily basis hence they were in a better

position to give a true picture of the matter at hand. The questionnaire met the thresholds of content validity as it addressed advanced certification and teacher attitude on learning outcomes (Appendix IIB).

### **Teachers Questionnaires**

Questionnaires were administered to Deputy Headteachers, Senior Teachers and teachers. These were teachers who either had advanced certification or did not have. Their input was important because they also had their points of view. The questionnaires met the threshold of content validity as it addressed the advanced certification and teacher attitude on learning outcomes. (Appendix IIC).

### **3.8 Reliability of Research Instruments**

Reliability of the instruments concerned the degree to which a particular measuring procedure gave similar results over a number of repeated trials. Best and Kahn (1989) define reliability as the degree of competency that an instrument or procedure demonstrates.

According to Creswell (2007) the term reliability has two different connotations in psychological testing. First, it refers to the extent to which a test is internally consistent, that is consistency of the results obtained throughout the test when administered once. In other words, how accurate is the test at a particular time. Secondly reliability refers to the extent to which a measuring device yields consistent results upon testing and retesting. That is how dependable it is for the predictive purpose.

Cronbach's Alpha ( Allport, 2005) was used to test the reliability of the instrument. A test – retest or coefficient of stability method was used to estimate the degree to which the same results could be obtained with a repeated measure of accuracy of the same concept

in order to determine the reliability of the instruments. It was assumed that responses to the two tests will be very similar because the later reflected the same thing (content) for respondents. In this case the researcher tested the reliability in UasinGishu County to see if scores obtained by each respondent over the first and second test were similar. The Questionnaires were piloted with a small representative sample population, identical to, but not included in the final sample group in the study. The results were close showing that the instruments were of high reliability. Reliability means that each question was measuring the same thing in the same way. In the test – retest reliability, scores obtained on repeated administrations were correlated by computing a reliability coefficient and such a correlation coefficient ( $r$ ) is an index ranging from -1 ( perfect inverse or negative relation) through 0 (no relationship) to +1 (perfect direct relationship) and summarizes the degree of relationship between the three variables. The higher the value, whether negative or positive, the stronger the relationship. A positive value indicates that as one increases, so does the other, a negative value, as one increases the other decreases. The higher the correlation coefficient, the more stable the instrument. An instrument with  $< 0.70$  may be considered unreliable, 70% of variability in obtained scores represents actual individual difference, while 30% is due to random, extraneous fluctuations. Aside from strong correlation both positive and negative, one could also speak of moderate and weak correlation (Creswell, 2010).

### **3.9 Validity of Research Instruments**

Reliability of a measure could not have been of use unless the measures had validity.

Validity refers to the issue of whether an indicator or set of indicators devised to gauge a concept really measured that concept (Byrman, 2004). It is the extent to which inferences

and uses made on the basis of scores from an instrument are reasonable and appropriate. At the very minimum, a researcher who develops a new measure should establish whether it has content validity. It is the extent to which a measure apparently reflects the content of concept in question (Bryman, 2004), which in this case is advanced certification and teacher attitude on learning outcomes at primary level. Therefore the validity in this study essentially is referred to as content validity. According to Kagoda, and Ezat, 2013) content validity is a non statistical method used to validate the content employed in the Questionnaire. It refers to the extent to which a test measures a representative sample of subject matter content and behavioural content from the syllabus which is being measured. Content validation, therefore is partly a matter of determining if the content that the instrument contains is adequate sample of the domain of content it is supposed to represent. In order to ensure that the questions attempt to fully represent the domain of attitude, advanced certification and learning outcomes, the researcher requested for a rational analysis of the instruments by at least four (4) professors/lectures in the School of Education who are familiar with those constructs. Specifically, the professors/lecturers reviewed all the items for readability, clarity and comprehensiveness and came to some level of agreement as to which items should be included in the final instrument.

Construct validity measured the degree to which a scale measured what it intends to measure (Garver and Mentzer, 1999) and it was assessed by factor analysis in this research. In order to assess the construct validity, the items were examined by principal components extraction with varimax orthogonal rotation. The Kaiser-Meyer-Olkin

(KMO) measure of sampling adequacy, approximate Chi-Square and Bartlett's test of sphericity were all conducted in accordance to Field's (2005) recommendations.

### **3.11 Scoring of the Instrument**

For the close ended items in the tool, the respondents were required to rate their level of agreement with the provided question items based on a 7-point Likert scale. The respondents were to use the key: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

### **3.12 Data Collection**

Preliminary preparation involved obtaining approval letter from the Chairman Department of Education Management, Moi University. After the approval was granted, a research permit was obtained from the National Commission for Science Technology and Innovation (Appendix XI). A copy of the permit was sent to County Director of Education and County Commissioner ElgeyoMarakwet for authorization (Appendix VIII). This was followed by the recruitment of two research assistants per Sub County. The research assistants were given one day introduction by the researcher to make them familiarize themselves with the problem of the study in terms of research methodology and how they would administer the instruments. The appropriate number of copies of the research instruments were made and distributed to the research assistants in each sub county. The administration of the research instruments involved two phases.

In each of the sub counties the researcher set off the process of administering the questionnaire and continued to liaise with the research assistants on a daily but rational basis between the sub counties. Questionnaires were administered to Headteachers and

teachers, of the sampled schools in ElgeyoMarakwet County to solicit information regarding the advanced certification and teacher attitude on learning outcomes.

The interviews were conducted by the researcher to the TSC county Director and the TSC Sub county Directors in ElgeyoMarakwet to solicit information regarding the advanced certification and teacher attitude on learning outcomes in primary school level in Kenya. After the end of the data collection the research assistants surrendered the completed questionnaires from the four sub counties together with their field notes which included the general impression on the research process. All the instruments were put together ready for analysis.

### **3.10 Data Analysis**

The data collected was subjected to mixed method analysis approach. The sample size of the study was 386 subjects, which could allow the generalization of the study. The researcher used wave analysis to determine response bias that is, the researcher examined returns on select items week by week to determine if average responses changed (Creswell, 2009). Based on the assumption that those who returned surveys in the final weeks of the response period were nearly all non respondents, if the responses begun to change, a potential existed for response bias. Most of the questionnaires were returned back to the researcher after two weeks of administering them. Descriptive statistics like mean, standard deviation, frequencies, Cross tabulations and tables were used. Data was collected by means of both questionnaires and interview schedules. Questionnaires were the major instrument as all the 95 Headteachers and 342 teachers totaling 443 used it while only 6 TSC sub county Directors and the County Director were subjected to interview schedules.

The questionnaire had likert rating scale ranging from “strongly agree to “strongly disagree”. Other items were on factual information such as age, level of education and gender, to determine the advanced certification and teacher attitude on learning outcomes. Concurrent and convergent validity (Creswell, 2009) of these measures were established through factor analysis to determine if they were at an adequate level. The underlying assumption of factor analysis is that there existed a number of unobserved latent variables (“or factors”) that account for the correlations among observed variables, such that if the latent variables are partially led out or held constant, the partial correlations among observed variables all become zero. In other words the latent factors determine the values of the observed variables. Factor analysis therefore assessed the validity of the scales, Reliability checks for the internal consistency of the scales were the cronbach alpha statistics. Regression analysis was conducted at 95% confidence level’ ( $\alpha = 0.05$ ) in two stages. The first stage was to find the relationship between the advanced certification and learning outcomes (direct effects analysis) (Baron & Kerry 1986). The second stage was to find the relationship between teacher attitude and learning outcomes.

### **3.11 Model Specification**

Multiple regression analysis was done and the following model constructed to test the set hypothesis.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

Where

Y : Learning Outcomes

X<sub>1</sub>: Advanced Certification

X<sub>2</sub>: Teacher Attitude

$\beta_0$ : Constant

$\beta_1$  and  $\beta_2$ : Regression Coefficients

**Table 3.2**

*Summary of the methods used to test the Hypothesis in the study.*

<b>Hypothesis</b>	<b>Independent Variable</b>	<b>Dependent Variable</b>	<b>Statistical Test</b>
H <sub>01</sub> : Advanced certification has no significant effects on learning outcomes	Advanced Certification	Learning Outcomes	Regression
H <sub>02</sub> : Teacher attitude has no significant effects on learning outcomes	Teacher Attitude	Learning Outcomes	Regression

### 3.14 Ethical Considerations

Ethical issues in human subjects' theory. The first ethical principle according to Belmont Report (1979) is autonomy, which refers to the obligation on the part of the investigator to respect each participant as a person capable of making an informed decision regarding participation in the research study. The researcher ensured that the participants had received a total disclosure of the nature and purpose of the study, the risks, benefits and alternatives. Opportunity to, ask questions, or opt out of the study voluntarily was guaranteed. The principle of autonomy finds expression in the informed consent document. Secondly beneficence ethical principle was used which refers to the obligation on the part of the investigator to attempt to maximize benefits for the individual participant and / or society while minimizing risk of harm to the individual. A honest and thorough risk/benefit calculation must be assessed and implemented.



Lastly the researcher used the ethical principle of justice where there was equitable selection of participants thus avoiding participant populations that could be unfairly coerced into participating such as using an institution to administer questionnaires. The principle of justice also requires equality in distribution of benefits and burdens among the population group(s) likely to benefit from the research. Improved policies as a result of study findings on the effect of advanced certification and teacher attitude on learning outcomes will benefit respondents and other/stakeholders in improving various education sectors.

The respondents were assured that the responses they gave were to be used in complete confidentiality for the purpose of the research study only. The researcher took personal responsibility for the conduct and a consequence of the research by adhering to the schedule, as was agreed upon and honesty when dealing with other researchers and respondents. The researcher was sensitive to not only how information was protected from unauthorized observation but also notified participants of any unforeseen findings from the research that they may or may not want to know. Belmont report 1979 talks of autonomy in Research. Autonomy refers to the obligation on the part of the investigator to respect each participant as a person capable of making an informed decision regarding participation in the research study.

### **3.13 Ethically valid informed consent for research**

For an informed consent to be ethically valid the following components were present; **Disclosure.** The researcher ensured that the participant received the disclosure of the

nature of the study, the risks benefits and alternatives with an extended opportunity to understand and ask questions whenever necessary. The informed consent documents were written in lay language, avoiding any technical jargon. Confidentiality or anonymity of the respondents during the research process and after was ensured.

The participants consent to participate in the research was voluntarily free of any coercion or promise of benefits unlikely to result from participation. The study ensured that the participants were competent enough to give consent. An oral consent was found appropriate in the interviews while a written consent was used and found appropriate for questionnaires.

### **3.12 Principle ethical issues in human subjects research.**

There are several ethical issues that were considered in this particular study when designing research as participants who were teachers and officers need protection. It was borrowed from the Blessum et al. (1998). In British educational research association and others who have developed from the Blessum et al. Report (1998). It included the following:

The investigator obtained informed consent from each research respondent through introductory letter and oral consents as appropriate. The respondents got the opportunity for consideration of the risks and benefits and to ask any clarification from the researcher. Informed consent was ongoing. The Investigator made sure that respondents were safe. This was accomplished by carefully considering the risk/benefit ration using all available information to make an appropriate assessment and continually monitor the research

process. The researcher enumerated how privacy and confidentiality concerns would be addressed and was sensitive to not only how information was protected from unauthorized observation.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

#### 4.0 Introduction

This chapter discusses the results obtained from the data analysis on specific details on advanced certification and teacher attitude on learning outcomes at Primary school level. Following each attribute is a discussion that highlights the research findings. This chapter starts with a summary of the characteristics of the respondents and of the data collected. This is followed by a detailed presentation of results relating to the objectives. A discussion of the main findings follows. In addition and where relevant, related findings from the personal interviews with key respondents are used to inform and contrast for some of the hypotheses set up for the study.

#### 4.1 Response Rate

Out of the targeted 443 respondents, 95 (21%) were headteachers and 342 (77%) were teachers while 6 (2%) were TSC directors. For the headteachers, 57 completed the questionnaire while 183 teachers completed the questionnaire. Four TSC directors were interviewed. This gave a response rate of 55% as presented in Table 4.1.

**Table 4.1:*****Response Rate***

Stratum	Target pop	Sample Size	Realized	Response Rate (%)
Headteachers	384	95	57	60
Teachers	3300	342	183	54
TSC directors	6	6	4	67
<b>Total</b>	<b>3671</b>	<b>443</b>	<b>244</b>	<b>55</b>

**Source: Survey Data (2015)**

The response rate is considered adequate given the recommendations by Saunders, Lewis and Thornhill (2007) who suggest a 30-40% response, Sekeran (2011) documented 30%, and Wilson, Pollack and Rooney (2003) recommends 50%.

#### **4.2 Demographic Characteristics of the Respondents**

The respondents were required to provide information about their gender, age, and experience. The gender distribution of the survey respondents was 66.7% female and 33.3% male. The age distribution was: 13.3% were in the age bracket 21-30, 26.7% age bracket 31-40, 53.3% age bracket 41-50, and 6.7% were above 50 years old. Thus majority of the respondents were in the age bracket of 41-50 (53.3%). For experience 1.7% had 1-5 years, 27% had 6-10, 12.5% had 11-15 years, 17.5% had 16-20 years while 40.8% were above 50 years. The demographic characteristics of the respondents are as summarized in table 4.2.

**Table 4.2:****Summary of Demographic Characteristics of the Respondents**

<b>Variable</b>	<b>Category</b>	<b>No of Respondents</b>	<b>%</b>
Gender	Male	80	33.3
	Female	160	66.7
	Total	240	100.0
Age (years)	21-30	32	13.3
	31-40	64	26.7
	41-50	128	53.3
	Above 50	16	6.7
	Total	240	100.0
Experience (years)	1-5	96	1.7
	6-10	96	27.5
	11-15	32	12.5
	16-20	16	17.5
	Above 20	98	40.8
	Total	240	100.0

**Source: Survey Data (2015)**

### **4.3 Descriptive Statistics of the Variables**

Descriptive statistics of means, standard errors, and standard deviation were obtained for the variables; teacher's attitude and learning outcomes. For advanced certification as a variable frequencies and percentages were used to describe it.

#### **4.3.1 Advanced Certification**

Objective one of the study was to determine the number of primary school teachers who have attained advanced certification. The respondents were asked to indicate their highest academic qualification so as to determine those with advanced certification. The results are as tabulated in Table 4.3.

**Table 4.3:****Certification level**

Education	Frequency	Percent
Certificate	34	14.2
Diploma	114	47.5
Bachelors	60	25.0
Masters	32	13.3
Total	240	100.0

**Source: Survey Data (2015)**

Results presented in table 4.4 indicated that 14.2 % had certificate level education, 47.5% had diplomas, 25.0% had bachelors, and 13.3% had masters. At primary school level in Kenya, the teachers are required to have certificate level education. This study considered those with diploma, undergraduate and master degrees to fall in the category of teachers with advanced certification. Thus 85.8% of the teachers had advanced certification. Harris and Sass (2007) cited advanced certification as a certificate attached to a regular base certificate recognizing that the holder has additional knowledge and skills beyond the base certificate.

#### **4.3.2 Teacher Attitude**

Teacher attitude was quantified using 12 items on a 7-point likert scale. Results indicated that the variable had values in the range of 1.17-5.55 with a mean=2.8119 and a standard deviation of .687 which meant that the responses were spread within one standard deviation from the mean. The results are as tabulated in table 4.4. Considering a 7-point likert scale, the mean 2.8119 for teacher attitude was below average. Thus it implies that as teachers advance their studies they tend to have a poor attitude towards their work,

colleagues, and pupils. Coldhaber and Brewer, (1997) found out that a teacher's advanced degree was not generally associated with increased student learning.

**Table 4.4:**

***Teacher Attitude***

	Minimum	Maximum	Mean	Std. Deviation
Teacher's Attitude	1.17	5.55	2.8119	.687

**Source: Survey Data (2015)**

### 4.3.3 Learning Outcomes

The Learning outcomes were obtained using a 7-point likert scale. A total of 10 question items were used. The descriptive statistics of learning outcomes was as summarized in Table 4.5.

**Table 4.5:**

***Learning outcomes (N=240)***

		Minimum	Maximum	Mean	Std. Deviation	
		Statistic	Statistic	Statistic	Std. Error	Statistic
Teacher's	Academic	1.82	6.64	3.2000	.10235	.78565
Performance						

**Source: Survey data (2015)**

From results in table 4.5 the range was found to be 1.82-6.64 with a mean of 3.2 and a standard deviation of .786 which meant that the responses were spread within one standard deviation from the mean. On a 7-point likert scale, the mean 3.2 for learning outcomes was below average. Thus the classroom performance of the respondents was



poor. Clotfeller Ladd and Vigdor (2006) found a negative effect on student achievement for teachers with a masters degree with a regression coefficient and standard error of 0.012.

#### **4.4 Study Variables Data Analysis**

This section presents the findings and discussion in the order of the specific objectives of the study. Frequencies and descriptive statistics are presented first followed by inferential statistics. The questionnaire responses were based on a likert scale which was coded with numerical values for ease of data analysis. The values assigned to the likert were: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

##### **4.4.1 Effect of Teacher Attitude on Learning Outcomes**

The third objective of the study was to determine the effect of teacher attitude on learning outcomes. The objective was assessed by use of statements which were on the questionnaire where the respondents indicated their degree of agreement with the statements.

**Table 4.6:**

## Descriptive Statistics of Teacher Attitude

Statement	Strongly Disagree	Disagree	Mildly Disagree	Neutral	Mildly Agree	Agree	Strongly Agree	Mean	Std. Dev.
	%	%	%	%	%	%	%		
Exhibited confidence in pupils and their work	20.0	10.0	20.0	6.7	23.3	20.0	0.0	2.607	1.881
willingness to undertake their duties	20.0	10.0	20.0	13.3	16.7	13.3	6.7	2.633	1.892
cooperative	13.3	23.3	6.7	6.7	30.0	13.3	6.7	2.833	1.903
self-driven and motivated to work	13.3	33.3	13.3	6.7	16.7	3.3	13.3	2.933	1.918
Undertook school assignments	20.0	16.7	6.7	0.0	36.7	13.3	6.7	2.833	1.006
Willingly collaborated with their peers	13.3	46.7	10.0	3.3	16.7	0.0	10.0	2.931	1.860
Have no issues levels of pupils they are dealing with	13.3	30.0	10.0	6.7	23.3	16.7	0.0	2.667	1.761
Good interpersonal relationships	16.7	20.0	10.0	6.7	20.0	20.0	6.7	2.800	1.994
Observed punctuality in all school activities	6.7	23.3	33.3	0.0	16.7	20.0	0.0	2.967	1.801
Generally attended their lessons	13.3	16.7	20.0	13.3	10.0	16.7	6.7	2.690	1.863
Adhered to deadlines	3.3	30.0	16.7	6.7	30.0	3.3	10.0	2.800	1.724
<b>Overall Mean and Std. Dev.</b>								<b>2.811</b>	<b>1.687</b>

**Source: Survey Data (2015), N=240**

Data on Table 4.6 showed responses on statements regarding various aspects of attitude of teachers with advanced certification. The mean and standard deviation of the responses for each question item was computed. When asked their opinion on whether teachers with advanced certification had confidence in pupils and their work, majority (50%) disagreed with 20% of them strongly disagreeing, 6.7% were non-committal, while 23.3% agreed. None of the respondents strongly agreed with the statement. This question item had a

mean of 2.607, and SD value of 1.881. Thus from the findings it can be deduced that the teachers with advanced certification had low confidence in pupils and their work. Advanced degrees did not contribute to teachers' effectiveness in high school mathematics and middle school reading (Harris & Sass, 2007).

As to whether teachers with advanced certification were willing to undertake their duties, 20% strongly disagreed, 10% disagreed, while 20% mildly disagreed. Only 6.7% strongly agreed while 13.3% agreed, and 16.7% mildly agreed. It was observed that 13.3% posted neutral response to this question item. The mean was 2.633 with SD value of 1.892. It can therefore be said that teachers with advanced certification were not very willing to take up their duties. According to Sanders and Rivers (1996), the lower achieving students were the most likely to benefit from teacher effectiveness which was not the case in this study.

The respondents were asked to rate the teachers with advanced certification based on how well they cooperated with other members of staff and the management. Results indicated that 23.3% disagreed, 13.3% strongly disagreed, and 6.7% mildly agreed. Majority of the respondents (30%) mildly agreed, 13.3% agreed and 6.7% strongly agreed. Only 6.7% were non-committal. This question item had mean=2.833 and SD value of 1.903. It was therefore observed that most respondents were of the opinion that the teachers with advanced certification were cooperative in their work stations. Rivers (1999) observed that if collaboration occurred in daily interactions among teachers it was likely to produce positive results.

To determine the attitude of teachers with advanced certification, the study sought to find out whether the teachers are self-driven and motivated to work. Results indicated that 13.3% strongly disagreed, 33.3% disagreed, and 13.3% mildly disagreed. On the other hand 13.3% strongly agreed, 3.3% agreed and 16.7% mildly agreed. 6.7% of the respondents indicated they neither agreed nor disagreed. With a mean of 2.933 and SD value of 1.918, it emerged that the teachers scored below average on being self-driven and motivation. (Harris & Sass, 2007) cited that it was a professional necessity for teachers to be professionally committed to their work, without which they faced the constant danger of burn out.

Further the respondents were to indicate their degree of agreement with whether teachers with advanced certification accepted school assignments. The study found that 20.0% strongly disagreed, 36.7% disagreed, while 6.7% mildly agreed. A paltry 6.7% strongly agreed, 13.3% agreed and 16.7% mildly agreed. This particular aspect of teacher attitude scored below average with a mean of 2.833, and SD value of 1.006. It was evident therefore that majority of the respondents were not in agreement that teachers with advanced certification accepted school assignments (63.4%). This could be attributed to the fact that the teacher with advanced certification felt that duties assigned to them were not challenging enough. Donors to African Education (1993) noted that teachers were inadequately prepared for teaching assignment and commitment to school tasks.

This study also set out to determine the level of agreement of the respondents on the aspect of acceptance of their peers by teachers with advanced certification. It was

observed that 13.3% strongly disagreed, 46.7% disagreed, and 10.0% mildly disagree. Only 10.0% strongly agreed and 16.7% mildly agreed. 3.3% neither agreed nor disagreed. The mean was 2.931 with SD value of 1.860. Thus the study found that a large number of the respondents indicated that the teachers with advanced certification did not accept their peers. This could be attributed to the feeling of being superior and being misplaced. (Harris & Sass, 2007) in his study had found out that the majority of stakeholders respondents believed that secondary school teachers tended to be better motivated than primary school teachers.

The respondents were asked to give their level of agreement on whether the teachers with advanced certification accepted the type of pupils they were dealing with. It was noted that 13.3% strongly disagreed, 30.0% disagreed, and 10.0% mildly disagreed. Only 16.7% agreed and 23.3% mildly agreed. 6.7% were non-committal. This question item had a mean of 2.667 and SD=1.761. This was interpreted to mean that the teachers with advanced certification felt that they were not dealing with the right crop of students at primary level for they felt that they were supposed to be teaching students at post-primary level. Harris & Sass (2007) found out that teacher perceptions of their jobs were strongly related to their perceptions of their students.

When required to give their opinion on the aspect of good interpersonal relationships, 16.7% strongly disagree, 20.0% disagreed, and 10.0% mildly disagree. While 6.7% strongly agreed, 20.0% agreed, and 20.0% mildly agreed. 6.7% were neutral. The item posted a mean of 2.800 with SD=1.994. This meant that the item scored below average

on a 7-point likert scale. Hence the teachers with advanced certification were deemed to have poor social skills. This could be due to the feeling of them having better academic qualifications that made them belittle their colleagues or the administration. Spaul and Venkatakrishnan (2014) had sought to investigate how teacher attitude were affected by school and individual factors.

The degree of observance of punctuality in all school activities by the teachers with advanced certification was determined. The level of agreement with the question item scored on a 7-point Likert scale. Results indicated that 6.7% strongly disagreed, 23.3% disagreed, and 33.3% mildly disagreed. This is high compared to only 20.0% who agreed, and 16.7% who mildly agreed. The mean for the item was 2.967 with SD=1.801. This was a below average rating on a 7-point Likert scale. Thus majority (73.3%) disagreed that teachers with advanced certification observed punctuality in all school activities. Ingersoll and Alsalam (1997) in their study agree with these findings for they found out that teachers with advanced degrees expressed slightly less commitment than those without advanced degrees.

Teachers with advanced certification, lesson attendance was determined. Findings showed that 13.3% strongly disagreed, 16.7% disagreed, and 20.0% mildly disagreed. While 6.7% strongly agreed, 16.7% agreed and 10.0% mildly agreed. It was noted that 13.3% neither agreed nor disagreed. The mean for this item was 2.690 with SD=1.863. This aspect of attitude was also poorly scored. This meant that the teachers with advanced

certification were not taking their teaching duties seriously. The study by AIR (2007) revealed that teachers were the major cause of poor mathematics performance in the US.

Adherence to deadlines by teachers with advanced certification was established. Results indicated that 3.3% strongly agreed that teachers with advanced certification adhered to set deadlines, 30.0% disagreed, and 16.7% mildly disagreed. 10.0% strongly agreed, 3.3% agreed and 30.0% mildly agreed. The mean was 2.800 and  $SD=1.724$ . This indicated that the study subjects by and large did not adhere to set deadlines. Ingersoll and Alsalam (1997) found out that teachers with advanced degrees displayed slightly less commitment than those without advanced degrees.

**Table 4.7:*****Learning Outcomes***

Statement	Strongly Disagree	Disagree	Mildly Disagree	Neutral	Mildly Agree	Agree	Strongly Agree	Mean	Std. Dev
	%	%	%	%	%	%	%		
Improved performance in examination preparation before they go to class	10.0	16.7	16.7	13.3	26.7	10.0	6.7	2.8667	.731
Effective supervision	10.0	26.7	6.7	0.0	23.3	23.3	10.0	2.200	.994
Effective evaluation of pupils as expected	16.7	26.7	23.3	0.0	13.3	10.0	10.0	2.233	.049
Being collaborative to other teachers	13.3	26.7	16.7	0.0	13.3	16.7	13.3	2.167	.006
Engages in examination analysis	23.3	13.3	13.3	3.3	16.7	10.0	20.0	2.833	.882
Demonstrate expertise in their subject areas	23.3	23.3	10.0	13.3	16.7	0.0	13.3	2.467	.769
Adheres to professional expectations	6.7	30.0	10.0	0.0	20.0	23.3	10.0	2.067	.986
Engage in innovative pedagogies	6.7	10.0	30.0	16.7	16.7	16.7	3.3	2.900	.560
Effective in classroom delivery		16.7	10.0	16.7	26.7	16.7	6.7	2.393	.523
<b>Overall Mean and Std. Dev</b>								<b>2.650</b>	<b>.586</b>

**Source Survey Data (2015)**

Data on statements regarding various aspects of learning outcomes of teachers with advanced certification was analyzed using descriptive statistics and presented in this section. The mean and standard deviation of the responses for each question item was computed. As to whether teachers with advanced certification improved performance in



examinations, 10.0% strongly disagreed, 16.6% disagreed, 1.6.7 mildly disagreed and 13.3 % were non-committal, while 6.7% strongly agreed, 10% agreed, and 26.7% mildly agreed. This question item had mean=2.8667, and SD=.731. Thus from the findings it can be deduced that the teachers with advanced certification do not improve performance in examination. Spaul and Venkatakrisnan (2014) found out that teachers did not develop in their pupils a deep conception in understanding of mathematics topics and their application.

When asked whether teachers with advanced certification prepare adequately before they go to class, 16.7% strongly disagreed, 20% disagreed, while 13.3% mildly disagree. Only 10% strongly agreed while 20.0% agreed, and 10% mildly agreed. It was observed that 10% posted neutral response to this question item. The mean was 2.067 with SD=.987. It can therefore be said that concluded that teachers with advanced certification were not very willing to take up their duties. The same study by Schmidt, et. al . 2002 also cites that teachers did not prepare adequately for their lessons, they instead followed text books which were too wide.

The respondents were asked to rate how well the teachers with advanced certification carried out supervision. Results indicated that 23.3% disagreed that the teachers carried the supervision well, 26.7% strongly disagreed, and 6.7% mildly agreed. While 10% strongly agreed, 23.3% agreed and 23.3% mildly agreed. This question item had mean=2.800 and SD=.994. It was therefore observed that most respondents were of the opinion that the teachers with advanced certification were not carrying out supervision

effectively. Harris & Sass (2007) found out that teachers did not develop in their pupils a deep conception of understanding of mathematics topics and their application. This bordered on lack of effective supervision.

To determine the attitude of teachers with advanced certification, the study sought to find out whether the teachers evaluated the pupils as expected. Results indicated 16.7% strongly disagreed, 26.7% disagreed, and 23.3% mildly disagreed. On the other hand 10% strongly agreed, 10% agreed and 13.3% mildly agreed. With a mean of 2.233 and  $SD=.049$ , it was indicative of the teachers that they scored below average on this aspect of learning outcomes. Harris & Sass (2007) found out that teacher characteristics in particular attitudes had an important impact on attainment especially for girls.

Further the respondents were to indicate their degree of agreement with the statement that teachers with advanced certification availed learning resources to other teachers. The study found that 13.3% strongly disagreed, 26.7% disagreed, while 16.7% mildly agreed. A paltry 13.37% strongly agreed, 16.7% agreed and 13.3% mildly agreed. This particular aspect of teacher attitude scored below average with a mean of 2.167, and  $SD= .006$ . Thus majority were not in agreement that teachers with advanced certification availed learning resources to other teachers. This could be attributed to the fact that the teachers with advanced certification felt superior and thus did not want to be associated with other teachers with inferior certification. Rivers (1999) cited that teacher's self-perception and related effective factors that is efficacy interacted with and impacted on their professional practices.

This study also set out to determine the level of agreement by the respondents on the aspect on the level of keenness with exam analysis. It was observed that 23.3% strongly disagreed, 13.3% disagreed, and 13.35 mildly disagreed. While 20.0% strongly agreed, 10% agreed, and 16.7% mildly agreed 3.3% neither agreed nor disagreed. The mean was 2.833 with  $SD = .882$ . Thus the study found that a large number of the respondents indicated that the teachers with advanced certification were not keen with exam analysis. This could be attributed to the feeling of being superior and being misplaced. Rivers (1999) found out that teacher perception of their jobs were strongly related to their perception of their students.

The respondents were asked to give their level of agreement on whether the teachers with advanced certification demonstrated expertise in their subject area. It was noted that 23.3% strongly disagreed, 23.3% disagreed, and 10.0% mildly disagreed. Only strongly 13.7% agreed and 13.3% mildly agreed. 13.3% were non-committal. This question item had a mean of 2.467 and  $SD = .679$ . This was interpreted to mean the teachers with advanced certification had acquired knowledge that was not relevant to the primary level of teaching. Lyons (2004). found out that a teacher's advanced degree was not shown to influence student achievement; there was a lack of relationship between science achievement and higher education levels.

When required to give their opinion on the aspect of whether teachers with advanced certification kept all professional documents required, 6.7% strongly disagree, 30.0% disagreed, and 23.3% mildly disagree. While 10.0% strongly agreed, 10.0% agreed, and

20.0% mildly agreed. The item posted a mean of 2.067 with  $SD=.986$ . This meant that the item was scored below average on a 7-point likert scale. Hence the teachers with advanced certification were deemed to be poor in keeping professional documents records. Opolot- Okurut et.al. (2008) found out that teacher related factors which included; lack of teacher preparedness and lack of professional documents hindered mathematics learning.

As to whether teachers with advanced certification engaged in new ways of teaching results indicated that 6.7% strongly disagreed, 10.0% disagreed, and 30.0% mildly disagreed. This was high compared to 16.7 strongly 16.7% who agreed, and 16.7% who mildly agreed. The mean for the item was 2.900 with  $SD=.560$ . This was a below average rating on a 7-point likert scale. Thus majority disagreed with the assertion that teachers with advanced certification observed engaged in new ways of teaching. The APHRC (2010) report pointed out that teachers could be the source of poor performance in mathematics.

Teachers with advanced certification lesson attendance was determined by the questionnaire. Findings showed that 13.3% strongly disagreed, 16.7% disagreed, and 20.0% mildly disagreed. While 6.7% strongly agreed, 16.7% agreed and 10.0% mildly agreed. It was noted that 13.3% neither agreed nor disagreed. The mean for this item was 2.690 with  $SD=1.863$ . This aspect of attitude was also poorly scored. This meant the teachers with advanced certification were not taking their teaching duties seriously. Lyons (2004). found out that government teachers in most countries, most notably in South Asia

were largely blamed for failing educational standards and the wholesale failure of public primary education.

Rating of teachers with advanced certification in terms of classroom delivery was established. Results indicated that 16.7% strongly disagreed that teachers with advanced certification were good on classroom delivery, 10.0% disagreed, and 16.7% mildly disagreed. 16.7% strongly agreed, 16.7% agreed and 26.7 % mildly agreed. The mean was 2.3393 and SD=.523. This indicated that on balance the teachers were not good at classroom delivery. The results for learning outcomes are summarized in Table 4.7. Luekens et al. (2004) found out that learning to feel as a teacher was linked with professional identity and intellectual aspects.

#### **4. 5 Cross Tabulations**

**Table 4.8:*****Gender and Advanced Certification***

			Gender		Total
			Male	Female	
Academic Qualification	Certificate	Count	6	28	34
		% within Gender	7.5%	17.5%	14.2%
	Diploma	Count	34	80	114
		% within Gender	42.5%	50.0%	47.5%
	Bachelors	Count	24	36	60
		% within Gender	30.0%	22.5%	25.0%
	Masters	Count	16	16	32
		% within Gender	20.0%	10.0%	13.3%
	Total	Count	80	160	240
		% within Gender	100.0%	100.0%	100.0%

**Source: Survey Data (2015)**

The above findings indicate that more female than male teachers have advanced certification. The study sought to determine the respondents' level of certification based on their gender. This was achieved by cross-tabulation of gender and advanced certification. Results indicated that 7.5% of the male respondents had certificate level of education, while among female respondents, 17.5% had the same certificate level of education. It was found that whereas 42.5% of the male respondents had diploma qualifications the female were 50.0%. Further, 30.0% of the male respondents had undergraduate qualifications while 22.5% of the females had the undergraduate qualification. For master's degree, 20.0% of the male respondents had this postgraduate qualification while only 10.0% of the female respondents had it. Kagoda (2011) noted that many female teachers were enrolling for advanced studies in Uganda.

**Table 4.9:*****Designation and Advanced Certification***

			Designation		Total
			Headteacher	Teacher	
Academic qualifications	Certificate	Count	3	31	34
		% within Designation	5.3%	16.9%	14.2%
	Diploma	Count	38	76	114
		% within Designation	66.7%	41.5%	47.5%
	Bachelors	Count	8	52	60
		% within Designation	14.0%	28.4%	25.0%
	Masters	Count	8	24	32
		% within Designation	14.0%	13.1%	13.3%
Total	Count	57	183	240	
	% within Designation	100.0%	100.0%	100.0%	

**Source: Survey Data (2015)**

In essence, the study sought to determine the respondents' level of certification based on their designation as either teacher or headteacher, the results are presented in table 4.9. This was achieved by cross-tabulation of designation and advanced certification. Results indicated that 5.3% of the headteachers had certificate level of education, while 16.9% of the teachers had certificate level of education. For the diploma holders, 66.7% were headteachers, and 41.5% were teachers. It was found that 14.0% of the headteachers had undergraduate qualifications while 28.4% had bachelors' degree. For master's degree qualification, 14.0% of the headteachers had it and 13.1% of the teachers had master's degrees. In Uganda a number of primary schools teachers were enrolling for advanced certifications. It was notably a requirement for one to be made a headteacher or an Education officer.

#### 4.5.1 Experience and Advanced Certification

**Table 4.10:**

*Experience and Advanced Certification*

			Experience as teacher or headteacher					Total
			1-5	6-10	11-15	16-20	Above 20	
Academic qualifications	Certificate	Count	0	9	4	4	17	34
		%	0.04%	13.6%	13.3%	9.5%	17.3%	14.2%
	Diploma	Count	4	27	9	13	61	114
		%	100.0%	40.9%	30.0%	31.0%	62.2%	47.5%
	Bachelor's	Count	0	15	17	9	19	60
		%	0.0%	22.7%	56.7%	21.4%	19.4%	25.0%
	Masters	Count	0	15	0	16	1	32
		%	0.0%	22.7%	0.0%	38.1%	1.0%	13.3%
	Total	Count	4	66	30	42	98	240
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Source: Survey Data (2015)**

For experience, when cross tabulated against highest academic qualification, four of the respondents who had below five years' experience had certificate and none had diploma, degree or masters level of education. Among those respondents who had 6-10 years' experience 13.6% had certificate level of education, while 40.9% had diplomas, 22.7% had degrees, and a further 22.7% had masters degrees. Considering those with 11-15 years of teaching experience, 13.3% had certificate level of education, 30.0% had diplomas, 56.7% had degrees and none had masters degrees. While for those who had respondents who had 16-20 years experience, 9.5% had certificate level of education, while 31.0% had diplomas, 21.4% had degrees, and a further 38.1% had masters degrees. Considering those with above 20 years of teaching experience, 14.2% had certificate level of education, 47.5% had diploma, 25.0% had degrees and 13.3% had masters



degrees. The results are presented in Table 4.10. Klecker (2008) study found out that an eighth grade mathematics teacher was more effective with either a major or a minor in a subject a professional degree, a regular or standard teaching certificate and with either a major or a minor in a subject a professional degree, a regular or standard teaching certificate and with twenty and above years of experience in teaching a subject.

#### **4. 6 Reliability Test**

Purification of the scales started with computing reliability coefficients (Cronbach's alpha), in accordance with Luekens et al. (2004) recommendation. Because of the multidimensionality of the study constructs, Cronbach's alpha was computed separately for the study variables to assess the internal consistency or homogeneity among the variable measures (Sekaran, 2000). The results are presented in Table 4.11.

**Table 4.11:*****Results of Reliability Tests of the Variable Measures***

<b>Variable</b>	<b>Measures/Items</b>	<b>Cronbach's alpha coefficient</b>
<b>Teacher's Attitude</b>	Have confidence in the pupils and their work Are willing to undertake their duties Are cooperative Are self-driven and motivated to work Accept school assignments Accept their peers Accept the type of pupils they are dealing with. Are team players Have good interpersonal relationships Observe punctuality in the aspects of all school activities Attend to all their lessons Adhere to deadlines	<b>0.971</b>
<b>Learning Outcomes</b>	Improve performance in examination Prepare adequately before they go to class. Carry out effective supervision. Evaluate the pupils as expected. Make available professional materials and resources to other teachers Are keen on examination analysis Exhibit/show the tendency towards high standards for the pupils Demonstrate expertise in their various subject areas Keep all professional documents required by the school. Engage in new approaches to teaching and evaluation.	<b>0.945</b>

**Source: Research Data (2015)**

Table 4.11 shows that reliability coefficients of each variable are as follows: Teacher attitude is 0.971, and learning outcomes is 0.945. The reliability coefficients of all the variables are above 0.70, which concurs with the suggestion made by (Sekeran, 2000). Since all the reliability results exceeded the 0.7 lower level of acceptability (Sekeran,

2000), the internal consistency reliability of the measures used was considered to be sufficient and to have adequately measured the study's variables. Reliability analysis outlining inter-item correlation of the measures is presented in Tables A1 and A2 in Appendix V.

#### 4.7 Test of Regression Assumptions

The data was tested to determine whether the assumptions of Ordinary Least Square (OLS) were met.

##### 4.7.1 Test of Normality

Both kurtosis and skewness were used to determine the normality of the data distribution for the variable under study. The results of the kurtosis and skewness tests are as shown in Table 4.12.

**Table 4.12:**

#### *Results for Skewness and Kurtosis Analysis*

	Minimum	Maximum	Mean	Std. Dev.	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
LO	1.82	6.64	4.2000	.10235	.58565	-.350	.157	-.546	.313
TA	1.17	5.55	3.8119	.10891	.68716	-.395	.157	-.640	.313
AC	2	5	2.67	.073	1.138	.233	.157	-.261	.313

**Source: Survey data (2015)**

Key: LO: Learning Outcome, TA Teacher Attitude, AC: Advanced Certification

The skewness statistic and kurtosis statistic obtained for the variables of interest in this study were in the range of -0.395 to 0.233 for skewness and -0.640 to -0.261 for kurtosis. According to Sekeran (2000) the requisite range for normally distributed data is between -1.00 and +1.00. All the values of skewness and kurtosis fell in the range -1.00 and +1.00 and it was concluded that the distribution of data for the variables was normal. The normality plots are as presented in appendix IV, V, and VI.

#### **4.7.2 Multicollinearity Diagnostics**

Collinearity means that two or more of the independent/explanatory variables in a regression have a linear relationship. This causes a problem in the interpretation of the regression results.

First, an examination of the correlation matrix of the independent variables was done. Collinearity could be due to the combination of two or more other independent variables. The presence of high correlations in the region of  $r=0.9$  and above is an indication of substantial collinearity. In this study the correlation coefficients for the independent variables advanced certification and teacher attitude was  $r = -.782$  that was below the threshold value of  $r=.9$  and thus the variables were not collinear. Also, multicollinearity was assessed using Variance Inflation Factors (VIF). A threshold of Variance Inflation Factor of 10 is suggested by Sekeran (2000). The variance Inflation Factor values were in the range of 2.654 to 4.075 and/or less than the set threshold which indicate that multicollinearity was not an issue. The results are presented in Table 4.13.

**Table 4.13:****Multicollinearity Test Statistics**

Model	Collinearity Statistics	
	Tolerance	VIF
1		
	(Constant)	
	Age	.280
	Experience	.280
2		
	(Constant)	
	Age	.278
	Experience	.245
	Advanced Certification	.340
	Teacher Attitude	.377

**Source: Survey data (2015)**

**4.8 Validity of Study Measures**

Validity is the degree to which a variable actually measures what it has intended to measure (Nunnally & Burnstein, 1994). For the purpose of this study two forms of validity were utilized- content validity and construct validity.

**4.8.1 Content Validity of Study Measures**

Content validity refers to the adequacy of indicators to measure the concepts. The better the scale items measure the domain of content is the greater the validity. An assessment of content validity requires experts to attest to the content validity of each instrument (Sekaran, 2000). In order to ensure content validity, previously validated measures were pretested and the preliminary questionnaire was pre-tested on a pilot set of respondents from Uasin Gishu county for comprehension, and relevance. Respondents in the pre-test were drawn from teaching fraternity which was similar to those in the actual survey in

terms of background characteristics and familiarity with the topic of research. As recommended by Malhotra (2007), the questionnaire pre-tests were done by personal interviews in order to observe the respondents' reactions and attitudes. All aspects of the questionnaire were pre-tested including question content, wording, sequence, form and layout, question difficulty and instructions. The feedback obtained was used to revise the questionnaire before administering it to the study respondents.

#### **4.8.2 Construct Validity of Study Measures**

Construct validity measures the degree to which a scale measures what it intends to measure (Garver and Mentzer, 1999) and this was assessed by factor analysis in this research. In order to assess the construct validity, the items were examined by principal components extraction with varimax orthogonal rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of Sphericity were conducted in accordance to Field's (2005) recommendations. The following sections present the factor analysis results for each study variable.

##### **4.8.2.1 Factor Analysis for Teacher's Attitude**

Twelve observed items that measured emotional literacy were factor analyzed with a view to further understand the underlying characteristics of the construct. The Kaiser-Meyer-Olkin (KMO) had a measure of 0.750, which is above the threshold of 0.5 (Field, 2005). The Bartlett's test is significant for emotional literacy with Chi-Square= 5307.490 ( $p$ -value < 0.05). Therefore, the KMO value of 0.639 and significance of Bartlett's statistic confirm the appropriateness of the factor analysis for teacher's attitude. The results are presented in Table A1 in Appendix G.

The results of principal component analysis indicated that, there were two factors whose eigenvalues exceeded 1.0. Hence two components were extracted explaining 87.473% of the total variance (Appendix A5). The eigenvalues of a factor represents the amount of the total variance explained by that factor. For teacher's attitude, the two factors had eigenvalues of 9.182 and 1.315. Any item that fails to meet the criteria of having a factor loading value of greater than 0.5 and loads on one and only one factor is to be dropped from the study (Liao *et al.*, 2007). This implies that item three: "Are cooperative", was dropped since it loaded to both component 1 and 2 as presented in table 4.9. It was therefore concluded that characteristics of teacher's attitude are heterogeneous and therefore the items in the instrument were measuring the same construct that had two sub-constructs. Component 1 items pointed towards issues of interpersonal skills and were therefore appropriately labeled interpersonal skills. Component 2 had items that were related to time management and was therefore labeled as time management.

**Table 4.14:*****Teacher's Attitude Un-Rotated Component Score Coefficient Matrix***

	Items	Component	
		1 Interpersonal Skill	2 Time Management
1	Have confidence in the pupils and their work	.937	
2	Are willing to undertake their duties	.877	
3	Are cooperative	.739	.552
4	Are self-driven and motivated to work	.768	
5	Accept school assignments	.843	
6	Accept their peers	.778	
7	Accept the type of pupils they are dealing with	.805	
8	Are team players	.817	
9	Have good interpersonal relationships	.890	
10	Observes punctuality		.832
11	Attend to all their lessons		.934
12	Adhere to deadlines		.915
<b>Notes:</b>			
	Eigenvalues	9.182	1.315
	Percentage of variance	76.513	10.960
	KMO Measure of Sampling adequacy	0.750	
	Aprox. Chi-Square	5307.490 (p-value < 0.05)	
	Cronbach's Alpha value	.971	
	Extraction Method: PCA		
	Two Components Extracted		
	Rotation Method: Varimax with Kaiser		
	Normalization		

**Source: Research data (2014)**

The component matrix in table 4.14 was un-rotated since there was only one component extracted. The reliability indicated Cronbach's Alpha value at 0.971 implying a high reliability of the items measuring the constructs. Based on these results teacher's attitude



was considered to have two sub-constructs. The Chi-square value of 5307.490 ( $p$ -value $<0.05$ ) indicated a good fit between the model and the teacher's attitude data and there existed an adequate correlation among the extracted variables.

#### **4.8.2.2 Factor Analysis for Learning Outcomes**

Eleven observed items that measured learning outcomes were factor analyzed with a view to further understand the underlying characteristics of the construct. The Kaiser-Meyer-Olkin (KMO) had a measure of 0.789, which was above the threshold of 0.5 (Field, 2005). The Bartlett's test was significant for emotional literacy with Chi-Square= 3418.403 ( $p$ -value $< 0.05$ ). Therefore, the KMO value of 0.789 and significance of Bartlett's statistic confirm the appropriateness of the factor analysis for learning outcomes. The results are presented in Appendix A7.

The results of principal component analysis indicated that, there was one factor whose eigenvalues exceeded 1.0. Hence one component was extracted explaining 69.953% of the total variance (Appendix A8). The eigenvalues of a factor represents the amount of the total variance explained by that factor. For learning outcomes, the factor had eigenvalues of 7.695. Invariably, it is probable to assert that any item that failed to meet the criteria of having a factor loading value of greater than 0.5 and loaded on one and only one factor was to be dropped from the study (Liao *et al.*, 2007). This implied that the eleven observed items in learning outcomes loaded exclusively to one component as presented in table 4.15. It was therefore concluded that characteristics of learning outcomes were homogeneous therefore the items in the instrument were measuring the same construct.

**Table 4.15:****Learning outcomes Un-Rotated Component Score Coefficient Matrix**

	Component 1
1 Improve performance in examination	.760
2 Prepare adequately before they go to class.	.619
3 Carry out effective supervision.	.727
4 Evaluate the pupils as expected.	.625
5 Make available professional materials and resources to other teachers	.523
6 Are keen on examination analysis	.865
7 Exhibit/show the tendency towards high standards for the pupils	.610
8 Demonstrate expertise in their various subject areas	.880
9 Keep all professional documents required by the school.	.719
10 Engage in new approaches to teaching and evaluation.	.606
11 Rating of the teacher academic performance	.507
<b>Notes:</b>	
Eigenvalues	7.695
Percentage of variance	69.953
KMO Measure of Sampling adequacy	0.789
Approx. Chi-Square	3418.403 (p-value< 0.05)
Cronbach's Alpha value	0.945
Extraction Method: PCA	
One Component Extracted	
Rotation Method: Varimax with Kaiser Normalization	
<b>Source: Research data (2015)</b>	

The component matrix in table 4.15 was un-rotated since there was only one component extracted. The reliability indicated Cronbach's Alpha value at 0.945 implying a high reliability of the items measuring the construct. Based on these results learning outcomes were considered as a single construct. The Chi-square value of 3418.403 (p-value< 0.05)

indicated a good fit between the model and the learning outcomes data and there existed an adequate correlation among the extracted variable.

#### 4.9 Situational Analysis

The study obtained responses from the teachers and the headteachers on teacher attitude and learning outcomes. The questionnaires given to teachers and headteachers had the same question items for measuring teacher attitude and learning outcomes. It was therefore of interest to determine whether there were any significant differences in the responses from the teachers and the headteachers. This was accomplished by comparing the mean values for teacher attitude and learning outcomes using the independent sample t-test. The results are presented in Tables 4.16 and 4.17.

**Table 4.16:**

#### Group Statistics

	Designation	N	Mean	Std. Dev	Std. Error
Teacher Attitude	Headteacher	57	3.9939	1.66485	.22052
	Teacher	183	3.7552	1.69457	.12527
Learning Outcomes	Headteacher	57	4.4577	1.52323	.20176
	Teacher	183	4.1197	1.60016	.11829

**Source: Research data (2015)**

The mean for teacher attitude as rated by the headteachers was 3.994 with SD=1.665 while for the teachers the value was 3.755 with SD=1.695. Considering learning teacher attitude, the responses from the headteachers gave a mean of 4.478 with SD=1.523, and for the teachers the value was 4.120 with SD=1.600. Hence it was imperative to determine whether the means as demonstrated by the headteachers and the teachers were significantly different. The independent sample t-test results are given in Table 4.17.

**Table 4.17:*****Independent Samples Test***

		Levene's Test		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error	95% Confidence Lower	Upper
Teacher Attitude	Equal variances assumed	1.319	.252	.933	238	.352	.23871	.25599	-.26558	.74300
	Equal variances not assumed			.941	94.931	.349	.23871	.25361	-.26477	.74220
Learning Outcomes	Equal variances assumed	3.698	.056	1.408	238	.160	.33801	.24003	-.13483	.81086
	Equal variances not assumed			1.445	97.567	.152	.33801	.23388	-.12613	.80216

**Source: Research data (2015)**

From table 4.17, Levene's test for equality of variances was used to determine if the responses from the headteachers and the teachers have the same or different amounts of variability between scores. For teacher attitude and learning outcomes as displayed by headteachers and teachers, significance values were .252 and .056 respectively. Further analysis of the results in Table 4.17 showed that the sig. (2-tailed values) for both attitude and learning outcomes were more than the set p-value of .05 and thus the conclusion that the responses were not significantly different. This in effect meant that the study used the mean value obtained by considering the headteachers and teachers' responses in subsequent analyses.

#### **4.10 Correlation Analysis**

Correlation analysis was done to determine the strength and direction of the relationships between the variables in the study. Pearson Product Moment Correlation Coefficient was used. This test was done as a precursor to regression analysis so as to first determine whether the variables were related in a linear manner. The results of the correlation analysis are presented in table 4.18.

Table 4.18:

*correlation analysis*

	Learning Outcomes	Advanced Certification	Teacher Attitude	Gender	Age	Experience
Learning Outcomes	1					
Advanced Qualification	-.717**	1				
Teacher Attitude	.888**	-.782**	1			
Gender	-.130*	-.166**	-.036	1		
Age	-.386**	.559**	-.495**	.059	1	
Experience	-.403**	.620**	-.566**	-.053	.848**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The results as presented in table 4.18 showed a significant strong negative correlation between teacher's attitude (TA) and advanced certification (AC) ( $r = -0.782$ ,  $p=0.000$ ). A significant strong negative correlation was also observed between learning outcomes (LO) and advanced certification (AC) ( $r = -0.717$ ,  $p=0.000$ ). There was a strong significant positive correlation between teacher's attitude (TA) and learning outcomes (LO) ( $r = .888$ ,  $p=0.000$ ). The results showed linear relationships between the variables of interest that were to be used in regression analysis to construct the regression models of interest. Opolot et.al. (2008) had decried poor learning outcomes in Uganda as a result of poor teacher attitudes among other factors which was supported by Kirunda,(2004). Golhaber and Brewer (1997) had found out that a teachers' advanced degree was not associated with increased student achievement gains.

#### 4.11 Regression Analysis

Hierarchical multiple regression method was used to test the hypotheses on the effects of advanced certification and teacher attitude on learning outcomes. First the control variables of age, and experience were regressed against learning outcomes. The results showed that age ( $\beta = -.305, p=.166$ ) had a negative and statistically non-significant effect on leaning outcomes, and experience ( $\beta =.465, p=.016$ ) had a positive and statistically significant effect on learning outcomes as shown in table 4.12. After controlling age and experience, multiple regression was done for effect of advanced certification and teacher attitude on learning outcomes using hierarchical regression technique. The results are presented in table 4.19.

**Table 4.19:**

#### Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.880	.325	18.118	.000		
	Age	-.305	.220	-.155	-1.390	.166	.280
	Experience	-.485	.200	-.271	-2.426	.016	.280
2	(Constant)	1.134	.344	3.298	.001		
	Age	-.184	.105	-.094	-1.745	.082	.278
	Experience	.465	.102	.260	4.548	.000	.245
	Advanced Certification	-.187	.068	-.134	-2.771	.006	.340
	Teacher Attitude	.830	.043	.883	19.164	.000	.377

Values of unstandardized registration coefficients, with standard errors in parenthesis

\* $p < 0.05$ .

Hypothesis 1 ( $H_{01}$ ) stated that advanced certification has no significance effect on learning outcomes. The results of the regression analysis ( $\beta = -.187$ ,  $p > 0.05$ ) suggested that advanced certification had a negative significant effect on learning outcomes. Hence hypothesis  $H_{01}$  was not supported. The finding suggested that as the teacher acquired higher qualifications (advanced certification) there was a decrease in learning outcomes.

Extant literature review done indicated that there was a negative and significant relationship between advanced certification and learning outcomes. Goldhaber and Brewer (1997) in their study in primary schools in South Africa found out in their study that a teacher's advanced degree was negatively associated with increased student learning. The results also mirrored findings by Liao (2007) which suggested that the teachers with advanced certifications did not have better classroom delivery as compared to those with basic qualifications. This could be attributed to the fact that the content learnt at advanced certification level did not match with what the learners required at primary level and hence poor learning outcomes.

Hypothesis 2 ( $H_{02}$ ) stated that teacher's attitude has no significance effect on learning outcomes. The results of the regression analysis ( $\beta = .830$ ,  $p > 0.05$ ) suggested that teachers attitude had a positive significant effect on learning outcomes. Hence hypothesis  $H_{02}$  was not supported. The finding suggested that a teacher with a positive attitude towards his/her work will have better learning outcomes.

The influence of teachers teaching effectiveness on the learning outcomes of the students as measured by students academic performance has been the subject of several studies, (Adediwura & Tayo, 2007; Adu and Olatundun 2007, lockhead & Komenan, 1988, Schacter and Thum 2004, Starr 2002). The above studies suggested that effective



teachers should produce students of higher academic performance. Kirunda (2004) attributed poor academic performance of students in Uganda to poor teachers' performance in terms of accomplishing the teaching task, negative attitude to work and poor teaching habits which have been attributed to poor motivation, Ofoegbu (2014).

The estimated multiple regression model took the form:

$$Y = 1.134 - .187X_1 + .830X_2$$

Where:

Y= Learning Outcomes

X<sub>1</sub> = Advanced Certification

X<sub>2</sub> = Teacher Attitude

**Table 4.20**

**Summary of the Hypotheses Tests Results**

Statements	Verdict
H <sub>01</sub> Advanced certification has no significant effect on learning outcomes	Rejected H <sub>01</sub>
H <sub>02</sub> : Teacher attitude has no significant effect on learning outcomes.	Rejected H <sub>01</sub>

**Source: Survey data (2015)**

**4.12 Interview Schedules**

There were interview schedules for the TSC Sub County Directors and County Director on advanced certification and attitude of teachers in primary schools on learning outcomes with particular reference to:

**4.12.1 Contentment of Teachers with Advanced Certification.**

Teachers with advanced certification were discontented with the fact that even after attaining higher qualifications the only consideration the employer did was to give them an incremental credit instead of deploying them to teach in post primary institutions. The Sub-county Director TSC for Keiyo quoted one to have said; “I am overqualified to teach class one children” in one of the primary schools. In Keiyo Sub County the schools along the Eldoret – Iten Road posted dismal performance and most teachers operated from Eldoret and were moonlighting in the universities in Eldoret town, they arrived in their schools at 9.00 am and left at 1.00pm. They did not have time to do remedial work, mark pupils’ books and do adequate lesson preparation. This had seen 80% of schools along this route post a mean of less than 250 consistently for the last three years. In Keiyo South and Marakwet West the teachers wanted to teach schools along the road and whenever they were late or missed lessons, when asked they always felt that the Head teacher felt threatened by their qualifications. Head teachers had complained of the conduct of this teachers and as the Sub County Director for Keiyo rightly put it “These teachers are frequently surrendered by the head teachers because they are neither cooperative nor committed to their duties”. In fact the degrees they have do not add any value to the students, the P1 teachers remain the best performing in schools”. The County Director also noted that he received so many transfer requests from Marakwet East Sub County to Keiyo North which was deemed to be urban and near Eldoret town. Few if any of such teachers wanted to teach in remote areas. These views are supported by Kirunda (2014) in the study on schools in Brazil who found out that teachers’ advanced degree was generally not associated with student achievement gains.

#### **4.12.2 Advanced Certification Vs Learning Outcomes**

The expectations of many stakeholders are that once a teacher has advanced, they will definitely impact positively in student achievement. However, the TSC County Director noted that reports from schools indicated that these teachers rarely completed the syllabus for their respective classes, there was lack of teacher preparedness for lessons for upon completing their studies these teachers frantically begun looking for jobs elsewhere. In every school at least there was a teacher absent every day and some were in school but not teaching. Most head teachers reported these teachers refusal to teach at lower primary school. These teachers were an embodiment of demotivated staff because their expectations had not been met. The SubCounty Director of Marakwet East observed that they lacked interest in their learners because of the divided attention; job hunting, further studies etc, and some head teachers had reported that these teachers never gave their pupils assignments and rarely marked their books. “These are the issues surrounding teachers who have attained advanced certification.” As reported by the County Director TSC, most teachers undertaking advanced certifications especially those teaching in lower primary schools more often than not gave their pupils work as they sat behind and did their assignments. The director lamented that the children were unable to read and write and the teacher was still doing week two work in week nine of the term, “This is so sad”, he noted. Teacher perceptions of their jobs were strongly related to their perception of their students Lobosco and Newman (1992). Academic achievement may also be dependent upon positive attitude from the teachers according to Duyilemi (1996).

#### **4.12.3 Discipline Related issues**

Across all the sub counties and the county it was noted that teachers with advanced certification had discipline related issues. This was evident from the fact that a number of head teachers were surrendering teachers with advanced certification as surplus and on further investigation, it was noted that most of them arrived in school late and would often miss lessons. They were not cooperative and were at fault obeying instructions from the administration amounting to insubordination. A case in point was a teacher in Keiyo South Sub County who declined a position of responsibility ‘because he was too senior for such a small position’. The said teachers would rather go for part time rather than teach effectively the learners under their care. In addition most of them neglected their duties in the sense that they gave pupils work and did not mark and at times they asked pupils to exchange their books and mark. They did not also submit their marks in time for analyses and, they rarely beat the deadlines. Coming to school late was almost the norm for the teachers and they rarely attended school routines like parades and calendar of activities. These discipline related issues therefore worked against good learning outcomes and the realization of millennium development and EFA goals. Donors to African Education as cited by Chemisto (2007), noted that as a result of teachers getting engaged in other economic activities, direct instructions in schools suffered and inadequate time was given for preparation and marking of pupils work.

#### **4.12.4 TSC’s Directors Suggestions**

The officers interviewed made the following suggestions:-

Teachers with advanced certification could be utilized in recognition of their certificates as Heads of Departments, Deputy Head teachers, Senior teachers or Head teachers. This could motivate them towards feeling appreciated and recognized. The TSC could make it

mandatory that for one to be a head teacher one should have a diploma or degree because at times the head teachers hold a P1 certificate and the teacher has a masters degree, this could lead to a lot of conflict. The policies in TSC ought to be revised to take into cognizance administrative positions to be held by teachers with advanced certifications only.

The Teachers Service Commission would preferably also recognize such teachers and deploy them as HOD's, Deputies or Head teachers directly from the TSC headquarters.

The Teachers Service Commission could also liaise with the universities so that the teachers are encouraged to advance along their areas of specialization because what is causing discontentment is the fact that most of these teachers have done Secondary option which is not relevant to primary school curriculum. This could be the reason why the stakeholders were not satisfied with learning outcomes.

Teachers could be sensitized on career development and the fact that advancing and teaching in lower primary is just but inorder and it does not make one less a teacher. The terms of service for primary school teachers could also be improved by the employer so that the feeling of teaching in post primary schools after attainment of advanced certification could be rendered unrealistic. Once there was a change in the mindset that you can have a masters and still teach in primary school for valued impact in elementary school, that is when advanced certification can have a positive impact on learning outcomes and in return the teachers attitude will be positive towards the learners.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0. Introduction

This chapter presents summary of the research process starting with the problem statement, purpose, objectives, literature review, methodology, data analysis and interpretation. In addition, this chapter contains conclusions and recommendations.

The purpose of this study was to determine the effects of advanced certification and teacher attitude on learning outcomes at primary school level in Kenya. To achieve this it was necessary to develop a conceptual framework with the potential of showing the relationship between the two independent variables of advanced certification and teacher attitude and learning outcomes as the dependent variable.

Questionnaires and interview schedules were used to collect data. Questionnaires were administered to head teachers, and teachers of primary schools while sub-county directors TSC and the TSC county director were interviewed. Through these instruments, data were collected which addressed the research problems posed in the first chapter of this thesis. All the tools had items that were geared towards meeting the objectives of the study which were:

1. To determine the number of teachers with advanced certification.

2. To determine the effect of advanced certification on learning outcomes.
3. To establish the effect of teacher's attitude on learning outcomes
4. To advance strategies to be used to mitigate against teacher attitude

The researcher reviewed extant literature on the effect of advanced certification and teacher attitude on learning outcomes. Most Literature reviewed indicated that there was a negative relationship between advanced certification and learning outcomes. The study adopted a mixed methods approach embracing both qualitative and quantitative. Data was collected through the cross-sectional survey design.

The study involved public primary schools teachers since there had been an influx of primary school teachers seeking advanced certification. The study used headteachers, teachers and TSC directors in Elgeyo-Marakwet County. There were 384 headteachers, 3,300 teachers, and 6 senior TSC directors giving a total target population of 3,690. The sample size was arrived at using Krejcie and Morgan sample size determining formula yielding a sample of 387 respondents. The analysis involved use of both descriptive and inferential statistics. Multiple regression was used to analyze the effect of advanced certification and teacher attitude on learning outcomes.

## **5.2. Summary of Findings**

On the demographic characteristics of the respondents the gender distribution of the survey respondents was 66.7% female and 33.3% male. The age distribution was: 13.3% were in the age bracket 21-30, 26.7% age bracket 31-40, 53.3% age bracket 41-50, and 6.7% were above 50 years old. Thus majority of the respondents were in the age bracket of 41-50 (53.3%). For experience 1.7% had 1-5 years, 27% had 6-10, 12.5% had 11-15

years, 17.5% had 16-20 years while 40.8% were above 50 years. Descriptive statistics for the variables teacher's attitude was quantified using 12 items on a 7-point Likert scale. Result indicated that the variable had values in the range 1.17-5.55 with a mean=2.8119 and a standard deviation of 1.68716. For learning outcomes were obtained using on a 7-point Likert scale range was found to be 1.82-6.64 with a mean of 4.2 and a standard deviation of 1.59.

Reliability coefficients of each variable were as follows: Teacher attitude is 0.971, and learning outcomes was 0.945. The reliability coefficients of all the variables were above 0.70 which concurred with the proposition made by (Sekeran, 2000). Both kurtosis and skewness were used to determine the normality of the data distribution for the variable under study. The skewness statistic and kurtosis statistic obtained for the variables of interest in this study were in the range -0.395 to 0.233 for skewness and -0.640 to -.261 for kurtosis. According to Sekeran (2000) the requisite range for normally distributed data is between -1.00 and +1.00. All the values of skewness and kurtosis fell in the range -1.00 and +1.00 and it was concluded that the distribution of data for the variables was normal.

Teacher attitude and learning outcomes were measured using items in the tool on a 7-point likert scale. While advanced certification was measured by considering the teachers who had a diploma level of education and above, a significant strong negative correlation was found between teacher's attitude (TA) and advanced certification (AC) ( $r = -0.782$ ,  $p=0.000$ ). A significant strong negative correlation was also observed between learning outcomes (LO) and advanced certification (AC) ( $r = -0.717$ ,  $p=0.000$ ). There was a



strong significant positive correlation between teacher's attitude (TA) and learning outcomes (LO) ( $r = .888, p=0.000$ ).

The first objective sought to determine the number of primary school teachers in Elgeyo-Marakwet County that had advanced certification. Results showed that 85.8% of the respondents had advanced certification.

Objective two sought to determine the effect of advanced certification on learning outcomes. The corresponding hypothesis was tested using the p-values and the partial regression coefficients. The results of the regression analysis ( $\beta = -.187, p > 0.05$ ) suggested that advanced certification had a negative significant effect on learning outcomes. The finding suggested that as the teacher acquired higher qualifications (advanced certification) there was a decrease in learning outcomes.

Objective three sought to determine the effect of teacher attitude on learning outcomes. The results of the regression analysis ( $\beta = -.830, p > 0.05$ ) suggested that teacher attitude had a positive significant effect on learning outcomes. Hence hypothesis  $H_{02}$  was not supported. The finding unequivocally asserted that a teacher with a positive attitude towards their work would have better learning outcomes.

The fourth objective was to advance strategies to be used to mitigate against teacher attitude. The TSC county and sub-county directors were interviewed to obtain answers that would answer the attendant research question. The following strategies were advanced:

1. The teachers should be properly remunerated: The interviewees were of the opinion that the teachers sought advanced certification in the hope of getting a

better paying job or making a transition to teaching at a higher level. Dissatisfaction with pay was cited as the driving force for the quest to have advanced certification. The poor attitude by teachers with advanced certification was as a result of low pay that was not commensurate with the investment they thought they had made to advance their careers.

2. Teachers to be guided on relevancy of advanced certification: From the interview responses, it was generally felt that most teachers advanced their studies in courses that did not add value to their teaching and learning outcomes. The respondents therefore were of the opinion that there was need to guide and counsel the teachers on the relevancy of advanced certification. Having an advanced certificate would make the teacher feel like he/she was better placed to handle higher level content at secondary and university level. This had the effect of making the teacher look down upon their teaching work at primary school level.
3. Promotion of teachers with advanced certification: In order to mitigate against the negative effect of teacher attitude upon attainment of advanced certification, the respondents suggested that the TSC should devise mechanisms to reward those with advanced certification through promotion to higher job groups. This, it was advanced, would motivate them. On the other hand, they could be made to be headteachers, deputies and senior teachers.

### **5.3. Conclusions and Policy Implications**

The theoretical underpinning of the study was the theory of planned behavior which has been hailed by several studies, Babu and Mendro (2003) and education production

function theory which has also been recognized by a number of studies. This framework provided crucial guidance on how an attitude of a teacher with advanced certification impacted on learning outcomes. Several studies including Goldhaber and Brewer (1997) showed that there was a very weak support for the belief that a teacher's advanced degree was associated with increased student learning and so is this thesis. The attitude does play a role in the relationship between advanced certification and learning outcomes. This study has used empirical findings to show that advanced certification and teacher attitude has effects on learning outcomes. There study found out that as teachers acquired advanced certifications, they developed negative attitudes towards their work towards their work as primary teachers hence these affected learning outcomes negatively.

#### **5.4. Recommendations of the Study**

In view of the findings, the following recommendations should be considered if the advanced certification is to translate to desired learning outcomes:

1. The teachers seeking advanced certification should be advised on the need to go for courses that add value to their classroom delivery and hence enhance learning outcomes.
2. In light of the fact that teacher attitude has effect on learning outcomes, efforts should be put to change the teacher attitude so that they can have desired classroom delivery.
3. Concerted efforts should be made by all stakeholders in the education sector to have the teachers with advanced certification feel that they are still part of the teaching staff at primary level so that they do not feel like they deserve to be there for better and nowhere else.

#### **5.4.1 Recommended Areas for Further Studies**

This study recommended that:

- i. The moderating and mediating role of teacher's attitude on the relationship between advanced certification and learning outcomes be investigated.
- ii. Studies be done in the context of post-primary teachers.
- iii. The effect of advanced certification on the overall academic performance of the school in point be studied in the future
- iv. Studies be done using a case study and a qualitative approach to get an in-depth understanding on the mediating effect of teacher's attitude on the relationship between advanced certification and learning outcomes.

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## **APPENDICES**

### **APPENDIX 1: LETTER OF TRANSMITTAL**

**Dear Sir/Madam,**

**Re: Request to Participate in the Study**

I am a Post Graduate student at Moi University, Department of Educational Management and policy studies. I am carrying out a research on advanced certification and Teacher Attitude on learning outcomes at primary school level in Kenya. A situational analysis. You have been identified as a possible respondent for the above study. Participation is entirely out of your own volition and very necessary for the success of this study. Your participation will no doubt enhance the usefulness of the research to the society.

Please complete the questionnaire that is attached and note that there is no right or wrong answer. Kindly provide your answers based on your view and do not omit any feature. Your assessment is critical in this study, and without it, this study will not be possible.

I am most obliged that despite your busy schedule you have found time to respond to this questionnaire. Kindly do not indicate your name or that of your institution anywhere in this questionnaire. All responses remain strictly confidential.

Yours sincerely

**Musani Esther,**

D.Phil Student,

Department of Educational Management and Policy Studies

**Moi University.**

## **APPENDIX II: QUESTIONNAIRE**

### **Appendix IIA: Head teachers' Questionnaire**

#### **Instructions**

Please do not write your name or that of your institution anywhere in this form. Kindly fill by indicating your answer/express opinion by putting a tick (√) on the spaces provided.

#### **Section 1: Background Information**

1. Gender

Male [ ]                      Female [ ]

2. Kindly indicate your age bracket

21-30 [ ]      31-40 [ ]      41-50 [ ] over 50 [ ]

3. Number of years as a Headteacher

1-5 [ ]      6-10 [ ] 7-15 [ ] 16-20 [ ] 21 and above [ ]

4. Your highest academic qualifications

Masters [ ] Bachelors [ ] Diploma [ ] Certificate [ ] Other [ ]

5. Kindly indicate the number of teachers in your school.....

6. Number of teachers with advanced certificates.....

#### **Section 2: Teachers' Attitude**

Indicate the extent to which you agree with the following statements by putting a tick (√) against the response which applies in the appropriate box. The numbers assigned stand for: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

Please indicate your level of agreement and rating of the attitude of your teachers with advanced certification on the following aspects of attitude.

	<b>The teachers with higher qualification:</b>							
TA1	Have confidence in the pupils and their work	1	2	3	4	5	6	7
TA2	Are willing to undertake their duties	1	2	3	4	5	6	7
TA3	Are cooperative	1	2	3	4	5	6	7
TA4	Are self-driven and motivated to work	1	2	3	4	5	6	7
TA5	Accept school assignments	1	2	3	4	5	6	7
TA6	Accept their peers	1	2	3	4	5	6	7
TA7	Accept the type of pupils they are dealing with.	1	2	3	4	5	6	7
TA8	Are team players	1	2	3	4	5	6	7
TA9	Have good interpersonal relationships	1	2	3	4	5	6	7
TA10	Observe punctuality in the aspects of all school activities	1	2	3	4	5	6	7
TA11	Attend to all their lessons	1	2	3	4	5	6	7
TA12	Adhere to deadlines	1	2	3	4	5	6	7

### Section III: Learning outcomes

- a) Please indicate the extent to which you agree with the following statements by putting a tick (√) against the response which applies in the appropriate box. The numbers assigned stand for: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

	<b>Teachers with higher qualifications:</b>	1	2	3	4	5	6	7
LO1	Improve performance in examination							
LO2	Prepare adequately before they go to class.							
LO3	Carry out effective supervision.							
LO4	Evaluate the pupils as expected.							
LO5	Make available professional materials and resources to other teachers							
LO6	Are keen on examination analysis							
LO7	Exhibit/show the tendency towards high standards for the pupils							

LO8	Demonstrate expertise in their various subject areas							
LO9	Keep all professional documents required by the school.							
LO10	Engage in new approaches to teaching and evaluation.							

- b) LA11: On a scale of 0 to 7 where 0 is very poor and 7 is excellent, rate the academic performance of the teacher with higher qualification.....

**End**

**Thank You**

## APPENDIX IIB: TEACHERS' QUESTIONNAIRE

### Instructions

Please do not write your name and that of your Institution anywhere in this form. Kindly fill by indicating your answer/express opinion by putting a tick (√) on the spaces provided.

### Section 1: Background Information

1. Gender

Male [ ] Female [ ]

2. Kindly indicate your age bracket

21-30 [ ] 31-40 [ ] 41-50 [ ] over 50 [ ]

3. Number of years as a teacher

1-5 [ ] 6-10 [ ] 7-15 [ ] 16-20 [ ] 21 and above [ ]

4. Your highest academic qualifications

Masters [ ] Bachelors [ ] Diploma [ ] Certificate [ ] Other [ ]

### Section 2: Teachers' Attitude

Indicate the extent to which you agree with the following statements by putting a tick (√) against the response which applies in the appropriate box. The numbers assigned stand for: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

	<b>The teachers with higher qualification:</b>							
TA1	Have confidence in the pupils and their work	1	2	3	4	5	6	7
TA2	Are willing to undertake their duties	1	2	3	4	5	6	7
TA3	Are cooperative	1	2	3	4	5	6	7
TA4	Are self-driven and motivated to work	1	2	3	4	5	6	7
TA5	Accept school assignments	1	2	3	4	5	6	7
TA6	Accept their peers	1	2	3	4	5	6	7
TA7	Accept the type of pupils they are dealing with.	1	2	3	4	5	6	7
TA8	Are team players	1	2	3	4	5	6	7
TA9	Have good interpersonal relationships	1	2	3	4	5	6	7
TA10	Observe punctuality in the aspects of all school activities	1	2	3	4	5	6	7
TA11	Attend to all their lessons	1	2	3	4	5	6	7
TA12	Adhere to deadlines	1	2	3	4	5	6	7

### Section III: Learning outcomes

- a) Please indicate the extent to which you agree with the following statements by putting a tick (✓) against the response which applies in the appropriate box. The numbers assigned stand for: 1-Strongly disagree, 2-Disagree, 3-Mildly Disagree, 4-Neutral, 5-Mildly Agree, 6-Agree, 7-Strongly agree.

	<b>Teachers with higher qualifications:</b>	1	2	3	4	5	6	7
LO1	Improve performance in examination							
LO2	Prepare adequately before they go to class.							
LO3	Carry out effective supervision.							
LO4	Evaluate the pupils as expected.							
LO5	Make available professional materials and resources to other teachers							
LO6	Are keen on examination analysis							
LO7	Exhibit/show the tendency towards high standards for the pupils							
LO8	Demonstrate expertise in their various subject areas							
LO9	Keep all professional documents required by the school.							
LO10	Engage in new approaches to teaching and evaluation.							

- b) LO11: On a scale of 0 to 7 where 0 is very poor and 7 is excellent, rate the academic performance of the teacher with higher qualification.....

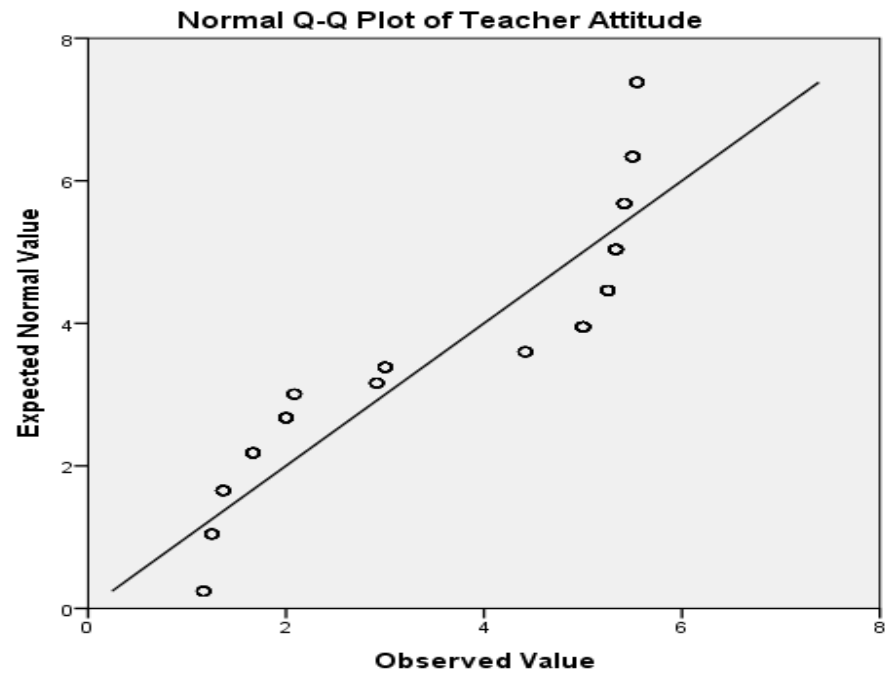


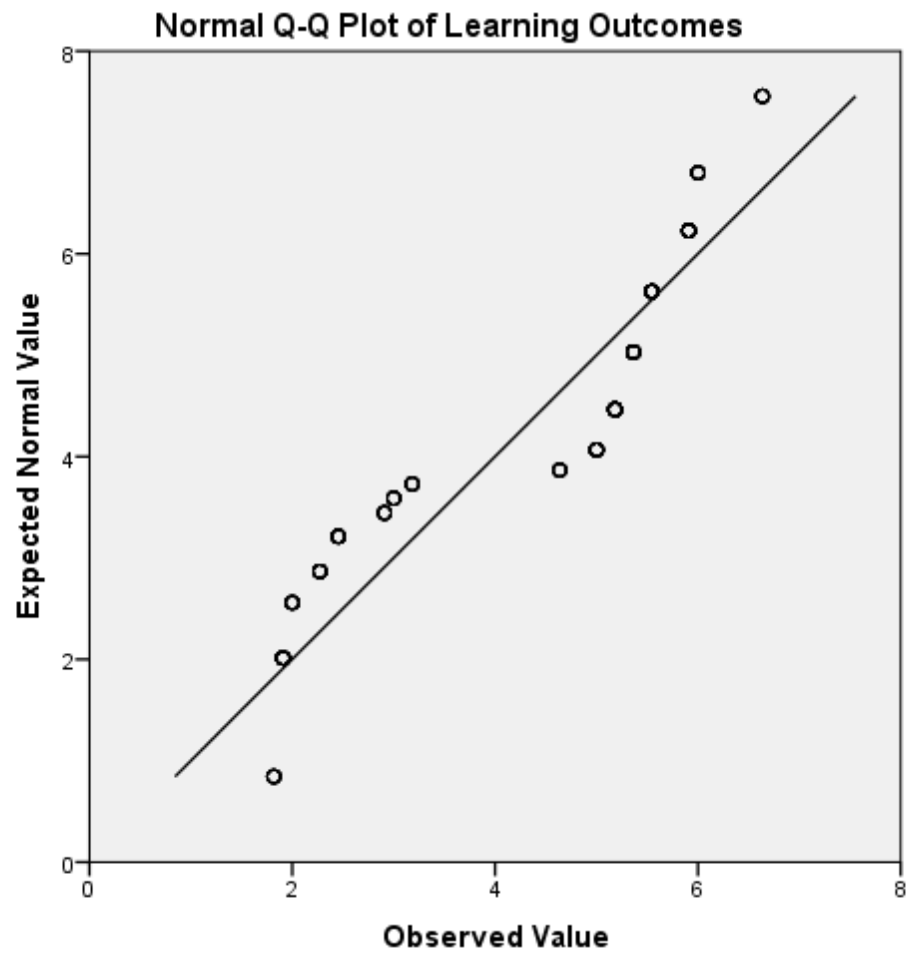
**APPENDIX III: INTERVIEW SCHEDULE FOR TSC COUNTY AND SUB  
COUNTY DIRECTORS**

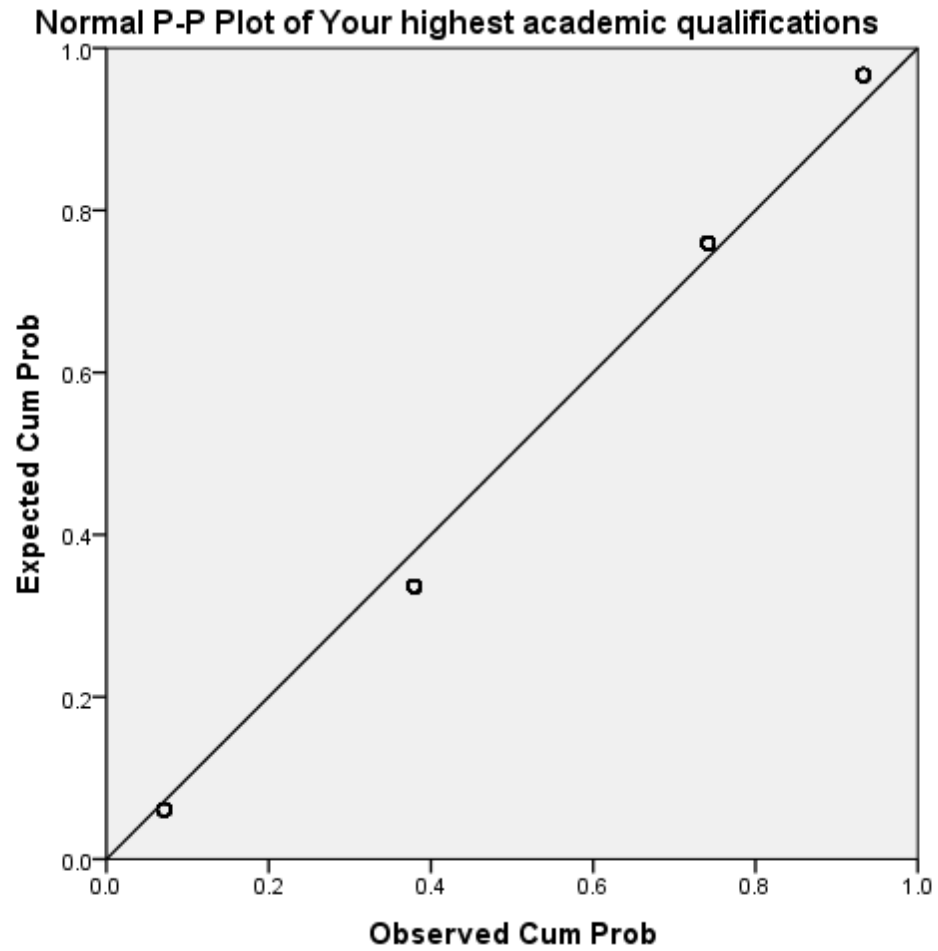
1. It is believed that these teachers are discontented in teaching primary schools;  
what are your views on these?
2. Research in other countries e.g. South Korea has shown that there is no  
correlation between advancement and student achievement. Comment
3. Are there any specific discipline related issues about teachers with higher  
qualifications that have come to your attention?

**End**

**Thank You**

**APPENDIX IVA: NORMALITY PLOT FOR TEACHER ATTITUDE.**

**APPENDIX IVB : NORMALITY PLOT FOR LEARNING OUTCOMES**

**APPENDIX IVC : NORMALITY PLOT FOR ACADEMIC QUALIFICATION**

**APPENDIX V: SAMPLE SIZE DETERMINATION TABLE.**

N	S	N	S	N	S	N	S	N	S
100	80	280	162	800	260	2800	338	10	10
110	86	290	165	850	265	3000	341	15	14
120	92	300	169	900	269	3500	246	20	19
130	97	320	175	950	274	4000	351	25	24
140	103	340	181	1000	278	4500	351	30	28
150	108	360	186	1100	285	5000	357	35	32
160	113	380	181	1200	291	6000	361	40	36
180	118	400	196	1300	297	7000	364	45	40
190	123	420	201	1400	302	8000	367	50	44
200	127	440	205	1500	306	9000	368	55	48
210	132	460	210	1600	310	10000	373	60	52
220	136	480	214	1700	313	15000	375	65	56
230	140	500	217	1800	317	20000	377	70	59
240	144	550	225	1900	320	30000	379	75	63
250	148	600	234	2000	322	40000	380	80	66
260	152	650	242	2200	327	50000	381	85	70
270	155	700	248	2400	331	75000	382	90	73
270	159	750	256	2600	335	100000	384	95	76

Key: N= population size, S = Sample size.

Source: Krejcie & Morgan (1970)

**APPENDIX VI: RESULTS TABLES**

**APPENDIX VIA: INTER-ITEM CORRELATION MATRIX FOR LEARNING  
OUTCOMES**

	LA1	LA2.	LA3.	LA4.	LA5	LA6	LA7	LA8	LA9	LA10	LA11
LA1	1.000										
LA2	.598	1.000									
LA3	.762	.874	1.000								
LA4	.733	.900	.947	1.000							
LA5	.588	.912	.920	.918	1.000						
LA6	.497	.354	.496	.421	.411	1.000					
LA7	.569	.718	.778	.783	.809	.404	1.000				
LA8	.252	.559	.577	.567	.559	.192	.496	1.000			
LA9	.590	.850	.936	.868	.895	.501	.710	.583	1.000		
LA10	.512	.643	.790	.760	.729	.350	.772	.386	.759	1.000	
LA11	.632	.843	.751	.782	.774	.229	.666	.481	.626	.623	1.000

**APPENDIX VIB: INTER-ITEM CORRELATION MATRIX FOR TEACHER****ATTITUDE**

	TA1	TA2	TA3	TA4	TA5	TA6	TA7	TA8	TA9	TA10	TA11	TA12
TA1	1.000											
TA2	.841	1.000										
TA3	.755	.763	1.000									
TA4	.808	.668	.853	1.000								
TA5	.885	.783	.926	.918	1.000							
TA6	.803	.654	.867	.887	.941	1.000						
TA7	.805	.846	.790	.801	.835	.808	1.000					
TA8	.794	.833	.812	.781	.805	.771	.961	1.000				
TA9	.874	.752	.776	.796	.866	.857	.884	.886	1.000			
TA10	.581	.538	.648	.680	.707	.657	.795	.708	.619	1.000		
TA11	.398	.394	.712	.615	.642	.647	.651	.581	.535	.871	1.000	
TA12	.420	.446	.746	.667	.650	.652	.673	.672	.485	.837	.875	1.000

**APPENDIX VIC: KMO AND BARTLETT'S TEST FOR TEACHER'S ATTITUDE**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.639
Bartlett's Test of Sphericity	Aprox. Chi-Square	5307.490
	Df	66
	Sig.	.000

**APPENDIX VID: TOTAL VARIANCE EXPLAINED FOR TEACHER ATTITUDE**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.182	76.513	76.513	6.518	54.314	54.314
2	1.315	10.960	87.473	3.979	33.159	87.473
3	.531	4.423	91.896			
4	.318	2.648	94.545			
5	.232	1.930	96.475			
6	.182	1.517	97.992			
7	.091	.755	98.747			
8	.085	.704	99.451			
9	.039	.324	99.775			
10	.020	.168	99.943			
11	.005	.045	99.988			
12	.001	.012	100.000			

Extraction Method: Principal Component Analysis.

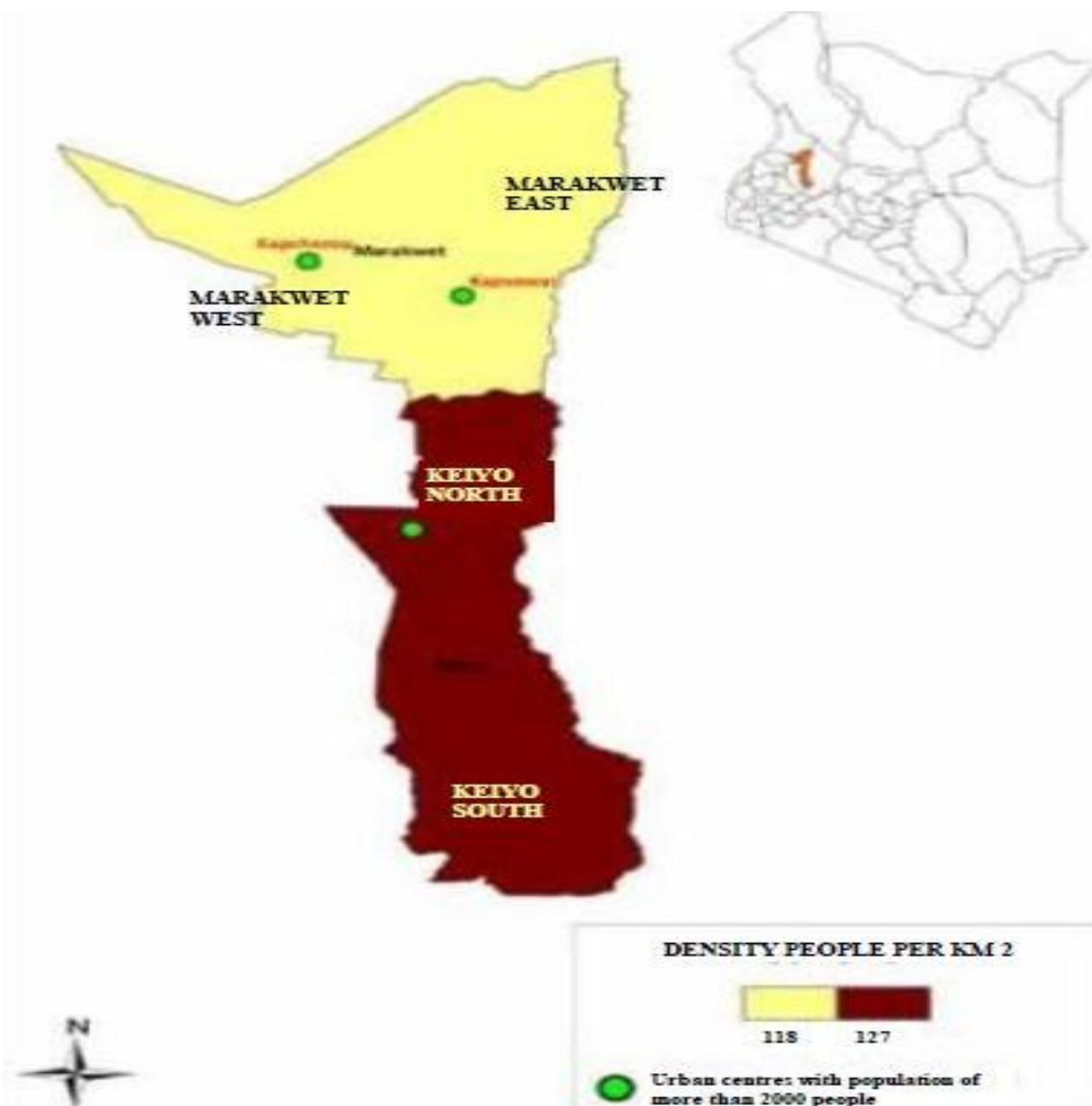
**APPENDIX VIE: KMO AND BARTLETT'S TEST FOR LEARNING OUTCOMES**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.789
Bartlett's Test of Sphericity	Aprox. Chi-Square	3418.403
	Df	55
	Sig.	.000



Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.695	69.953	69.953
2	.973	8.848	78.801
3	.695	6.315	85.116
4	.550	5.001	90.117
5	.367	3.340	93.456
6	.315	2.859	96.316
7	.219	1.994	98.310
8	.079	.718	99.028
9	.065	.593	99.620
10	.023	.212	99.832
11	.018	.168	100.000

## APPENDIX VII: MAP OF ELGEYO MARAKWET COUNTY



APPENDIX VIII: CDE AUTHORIZATION



REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY  
STATE DEPARTMENT OF EDUCATION

TELEGRAM:.....  
TELEPHONE NO: 0534142207  
WHEN REPLYING PLEASE QUOTE OUR REFERENCE  
EMAIL: [cdeelfeyomarakwet@gmail.com](mailto:cdeelfeyomarakwet@gmail.com)

COUNTY DIRECTOR OF EDUCATION,  
ELGEYO MARAKWET COUNTY,  
P.O. BOX 214-30700,  
**ITEN.**

DATE: 21<sup>st</sup> OCTOBER, 2015

REF No: CDE/EMC/R/26/VOL.I/ (159)

✓ Chemisto Esther Musani.  
Moi University,  
P.o.Box 3900-30100,  
Eldoret.

**RE: FORMAL RESEARCH AUTHORIZATION:**

Following the authorization by the National Commission for Science, Technology and Innovation (NACOSTI) to carry out research in **Elgeyo Marakwet County** vide Authority letter Ref.No.NACOSTI/P/15/6420/7351 dated 10<sup>th</sup> August, 2015, you are hereby formally granted authority by this office to proceed with your study on **“Advanced certification and attitude of the teachers on school wellness at primary level in Kenya,”** for a period ending, 4<sup>th</sup> December, 2015.

You are further required to report to all the Sub-County Directors of Education – **Keiyo South, Marakwet west, Marakwet East and Keiyo North Sub Counties** before you embark on your research.

By copy of this letter, the Sub-County Directors of Education- Elgeyo Marakwet are requested to accord you the necessary assistance.

Sabina Aroni  
County Director of Education,  
**ELGEYO MARAKWET.**

Copy to:

1. The Sub-County Directors of Education – ElgeyoMarakwet.
2. The Director General/CEO -NACOSTI





OFFICE OF THE PRESIDENT  
MINISTRY OF INTERIOR & COORDINATION OF NATIONAL GOVERNMENT

Telegrams: "DISTRICTER" Iten  
Telephone: (053) 42007  
Fax : (053) 42289  
E-mail: ccelgeyomarakwet@yahoo.com  
ccelgeyomarakwet@gmail.com  
When replying please quote

COUNTY COMMISSIONER'S OFFICE,  
ELGEYO-MARAKWET COUNTY,  
P.O. BOX 200-30700  
ITEN

PUB/CC/24/2 VOL.1/120  
Ref. ....

21<sup>st</sup> October, 2015  
Date .....

**TO WHOM IT MAY CONCERN**

**CHEMISTO ESTHER MUSANI**

This is to confirm that the above has been authorized to conduct research in the county. The same expires on 4<sup>th</sup> December, 2015. The topic of the research is "***Advanced certification and attitude of the teachers on school wellness at primary level in Kenya***".

Assist her when she comes calling.

  
MATILDA P. SAKWA  
COUNTY COMMISSIONER  
ELGEYO MARAKWET COUNTY

MPS/sjk

**APPENDIX X - RESEARCH PERMIT**

THIS IS TO CERTIFY THAT:  
**MS. CHEMISTO ESTHER MUSANI**  
 of MOI UNIVERSITY, 81-50203  
 KAPSOKWONY, has been permitted to  
 conduct research in *Elgeyo-Marakwet*  
 County

Permit No : NACOSTI/P/15/6420/7351  
 Date Of Issue : 10th August, 2015  
 Fee Recieved : Ksh. 2000

on the topic: **ADVANCED  
 CERTIFICATION AND ATTITUDE OF THE  
 TEACHERS ON SCHOOL WELLNESS AT  
 PRIMARY LEVEL IN KENYA**



for the period ending:  
 4th December, 2015

.....  
 Applicant's  
 Signature

.....  
 Director General  
 National Commission for Science,  
 Technology & Innovation

**CONDITIONS**

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



REPUBLIC OF KENYA



National Commission for Science,  
 Technology and Innovation

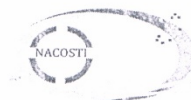
**RESEARCH CLEARANCE  
 PERMIT**

Serial No. A

5110

CONDITIONS: back page

## APPENDIX XI: NACOSTI'S AUTHORIZATION



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

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

Ref. No.

Date:

10<sup>th</sup> August, 2015

NACOSTI/P/15/6420/7351

Chemisto Esther Musani  
Moi University  
P.O Box 3900-30100  
ELDORET.

#### RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Advanced certification and attitude of the teachers on school wellness at primary level in Kenya.*" I am pleased to inform you that you have been authorized to undertake research in **Elgeyo Marakwet County** for a period ending **4<sup>th</sup> December, 2015.**

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

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

  
DR. S. K. LANGAT, OGW  
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner  
Elgeyo Marakwet County.

The County Director of Education  
Elgeyo Marakwet County.