SCHOOL ATTACHMENT PRACTICES AND STUDENT TEACHER PERFORMANCE IN TEACHING PRACTICE IN KENYAN PUBLIC UNIVERSITIES

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of Doctor of Philosophy in Educational Planning and Management at Masinde Muliro University of Science and Technology

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DECLARATION

This Thesis is my original work prepared with none other than the indicated sources and support; therefore, has not been presented elsewhere for a degree or any other award.

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SUPERVISORS CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Masinde Muliro University of Science and Technology a Thesis entitled: **"School Attachment Practices and Student Teacher Performance in Teaching Practice in Kenyan Public Universities."**

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DEDICATION

To my beloved, late mother, Foscah Nakhungu Wanyonyi for her tireless encouragement and support that inspired me to start this work although she did not live to witness its completion.

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ABSTRACT

School attachment is an important component of teacher education. Public universities have thus designed their own rules and regulations that guide school attachment practices to enable student teachers put into practice the theory they have learnt. However, school attachment practices by teacher training institutions remain a contentious issue. The purpose of this study was to establish the effect of school attachment practices on student teacher performance in teaching practice in Kenyan public universities. Specifically, this study sought to establish the effect of; frequency of supervision, supervisor qualifications, span and period of supervision and school characteristics on student teacher performance in teaching practice. The study was guided by the Education Production Function Theory. The study used descriptive research survey design. The study targeted 2,239 respondents comprising of 2,234 student teachers in Western region and 5 heads of school attachment units in public universities in Kenya. Multistage sampling was used to draw a sample of 344. Data was collected using; a questionnaire for student teachers, interview guide for head of school attachment units; and document analysis. Research instruments were validated using face and content validity while reliability was determined using spilt-half test technique at r= 0.8 using data from the pilot study. Data was analyzed descriptively using means and z-scores and inferentially using multiple linear regressions by aid of Stata version 12.1. Data was presented inform of tables. The results of the multiple regression indicate that frequency of supervision, supervisors qualification, selected school characteristics and selected student teacher perception on university assessors were associated with student teacher scores in teaching practice. It is recommended that universities using cooperating teachers should ensure that they adhere to the regulations set by the universities on school assessments. Besides, universities should cultivate in student teachers positive attitude, commitment and confidence towards their assessors. In addition, universities should train adequately all assessors on the tool of assessment to bridge the difference in assessment scores based on assessor's qualification. Further, it is recommended that universities post student teachers in model schools that provide adequate and varied environment such as national and extra country schools to enhance student teacher performance in teaching practice.

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LIST OF ABBREVIATIONS AND ACRONYMS

GOK	Republic of Kenya
GOP	Government of Pakistan
HELB	Higher Education Loan Board
HSAU	Head of School Attachment Unit
KU	Kenyatta University
MMUST	Masinde Muliro University of Science and Technology
MOE	Ministry of Education
SPSS	Statistical Package for Social Sciences
TESSA	Teacher Education in Sub Saharan Africa
TSC	Teachers Service Commission
UNICEF	United Nations Children Fund
UON	University of Nairobi

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A number of terms have been used to emphasize the significance of school attachments as a component of teacher training. Taneja (2000) identifies them as; the practice teaching, student teaching, teaching practice, field studies, infield experience, and school based experience or internship. Therefore, school attachment occupies a key position in the programme of teacher education. Furlong, V.J.; P.U. Hirst & K. Pocklington (1988) assert that the exercise provides an opportunity to beginning teachers to become socialized into the profession

Ekundayo H.T., Alonge H.O., & Kolawalo K.S., (2014) assert that school attachment is a replica of the house man ship in medicine, student industrial work experience scheme for the engineers and court attachment for the lawyers. In teacher education, teaching practice is usually carried out by student teachers in schools under the supervision of lectures and cooperating teachers. Despite the importance of school attachment as a major component of teacher education, it has been faced by a myriad of contentious issues globally.

In Pakistan, the exercise is a compulsory component except M. Ed (Master of Education). Gujjar, (2010) reports that the procedure adopted in Pakistan is just to pass the time as the duration is very short and student teachers are bound to classrooms for teaching but not trained for other activities performed in schools. He concludes that effective learning does not take place therefore affecting the performance of the student teachers.

In Nigerian public universities, the situation is not different. School attachment is a compulsory course in the faculties of Education which forms part of the prerequisite for graduation. According to Ekundayo et al. (2014), there has been a decline in the quality of school attachments being offered by teacher training institutions as the exercise is considered inadequate especially at the university level. In addition, there seem to be a lot of problems facing prospective teachers in the course of carrying out the exercise that seem to affect the effectiveness of the student teachers.

Nakpodin (2011) remarks that the period of two weeks for school attachment is too short as it does not provide the student teacher with ample opportunity to effectively gain the experience which the exercise is intended to encourage. Besides, in some occasions supervisors do not have time to discuss with student teachers due to hastiness to move to another school. Universities have used supervisors with varied qualifications to supervise school attachments without considering how these variants impact upon the performance of the student teachers.

Jekayinfa, A. A.; Yahaya, I. A.; Yusuf, A.; Ajidagba, A. U.; Oniye, A. O.; Oniyangi S. O. & Ibraheem, T. O. (2012) have commended on the quality of school attachments. They lament that the quality of the exercise as currently being run by universities is inadequate. Ogonor & Badmus (2006) concur when they submitted that student teachers are not often properly groomed to put into practice current pedagogy and interactive skills that have been theoretically learnt.

Throughout the history of teacher education in Kenya, school attachment has equally been given prominence as the core component of teacher education programme. At independence the Kenya Education Commission viewed teaching practice as a crucial exercise in a teacher training programme and recommended that teacher colleges

should have school attachment for a duration of twelve weeks equivalent to one school term (GOK, 2007). The importance of school attachment in the training of teachers in Kenya continued to gain strength as pointed out by subsequent committees, commissions and working parties on education such as the National Committee on Education Objectives and Policies, the Presidential Work Party on Education for this Decade and Beyond, and a Review of Graduate Teacher Education in Kenya.

Out of these publicly instituted committees, the one which was most crucial and very elaborate on the important role of school attachment was the committee on the review of Graduate Teacher Education. The committee pointed out that the role of the universities was to produce competent and well-trained teachers who could be able to effectively apply the teaching methods they have learnt at university (UoN, 1979:36).

However, school attachment practices by teacher training institutions remain a contentious issue. According to Kasomo (2012), at the moment there are so many questions concerning school attachment practices being raised by stakeholders that remain unanswered because of lack of dependable guidelines backed by legislation to address issues such as; the span and duration of school attachment, timing and structure of supervision, the frequency of supervision, the qualification of supervisors, the role of cooperating teachers and peers, and the quality and management of teacher training institutions. Besides, there are concerns that school attachments at the university level have not been taken seriously accompanied by inadequate supervision and financial support.

Seemingly, public universities have their own rules and regulations that guide school attachment practices. However, Kasomo (2012) observes that even with the existence

of rules and regulations that guide school attachment practices in public universities, few institutions stick to their rules. This has raised concerns on the quality of teachers trained in public universities. All these issues call for an evaluation of the school attachment practices and how they affect the performance of the student teachers to attain quality and avoid wastage of resources.

1.2 Statement of the Problem

School attachment is an important component in teacher education. Public universities have thus designed their own procedures and guidelines for school attachment practices. The ultimate goal is to produce quality teachers who would train students to take up courses that would shape the economy of the country. Ogonor & Badmus (2006) observe that student teachers from universities are half baked and therefore are not able to put into practice the theory they have learnt. This can be attributed to the way individual universities manage school attachment practices which include; frequency of supervision, span and duration of the exercise and the quality of the supervisors and the type of schools student teachers are posted to.

Public universities in their efforts to utilize the limited resources within their reach are spending a lot of the same resources in terms of finances, qualified supervisors and time on the exercise to attain quality in teacher education. Kasomo (2012) and Ekundayo et al. (2014) assert that in order for the exercise to succeed, adequate finances are required to cover administrative work and student teachers' and supervisors' needs. Yet, empirical evidence on the effect of; frequency of supervision, span and period of supervision, supervisors' qualifications and school type on performance of students in teaching practice in public universities in Kenya are not known. This study is therefore designed to address this concern. Owing to the

expenditure by public universities on teaching practice, this data is considered useful in helping public universities to establish the best management of school attachment practices in teacher training that will be cost effective at the same time maintaining the quality of teacher education.

1.3 Purpose of the Study

This study was primarily designed to establish the effect of school attachment practices on student teacher performance in teaching practice in Kenyan public universities.

1.4 Study Objectives

This study was guided by the following objectives;

i. To establish the effect of frequency of supervision on student teacher performance in teaching practice in Kenyan public universities.
ii. To determine the effect of supervisor's qualification on student teacher performance in teaching practice in Kenyan public universities.
iii. To determine the effect of span and period of supervision on student teacher performance in teaching practice in Kenyan public universities.
iv. To establish the effect of school characteristics on student teacher performance in teaching practice in Kenyan public universities.

1.5 Research Hypotheses

i. Ho_1: The frequency of supervision has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.
ii. Ho_2: A supervisor's qualification has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

iii. Ho_3: The span and period of supervision has no statistically significant effect on student teacher performance in teaching practice in Kenya public universities.

iv. Ho_4: A school characteristics has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

1.6 Justification for the Study

Kenya is in dire need of quality teachers especially at this decade when the country is looking forward to attain Vision 2030. The country also requires investing in projects that are cost effective considering the fact that it's a third world country. The role of a teacher in sustainable development cannot be quantified especially in training students to take up professional courses at tertiary level that will shape the Kenyan economy. Therefore, a teacher needs to be properly educated and trained for professional efficiency and inculcated with a positive attitude that will enable them function in the 21st Century (Nwanekezi, A.U, Okoli, N.J, & Mezieobi, S.A (2011). School attachment as a major component of teacher training plays an important role in the production of quality teachers for the nation. It is a milestone for professional adolescence and a combination of personality, professional skills, knowledge and training, which is fuel for an endless journey.

However, stakeholders have raised concerns on the quality of graduate teachers (Uwezo, 2011). Effective management of school attachment practices such as; frequency of supervisor, peer and cooperating teacher supervision, qualification of supervisors, gender and; the span and period of supervision may be a contributing factor on the quality of graduate teachers. Therefore, school attachment practices are expected to transform a student teacher from a theoretical teacher to a practicing

teacher at the end of the exercise. This study therefore intended to establish the effect of school attachment practices on student teacher performance in teaching practice in public universities in Kenya.

1.7 Significance of the Study

This study aimed at providing universities, lecturers, the Ministry of Education, government, teachers, student teachers and other education stakeholders with data on the effect of frequency of supervision on student teacher performance in teaching practice in Kenyan public universities. This data is expected to provide a basis on which policy formulation on the number of supervisions, and the role of peer and cooperating teachers in teaching practice can be enhanced or adopted in an effort to justify the finances used on supervision of student teachers by Kenyan public universities.

Secondly, the findings on the effect of supervisors' qualification on student teacher performance in teaching practice in Kenyan public universities provides universities with the much needed information on which cadre of academic staff to engage in supervision of student teachers. Besides, the findings may help universities to understand the financial implications of using the different cadres of staff and make informed choices on the cost effectiveness of the cadre of academic staff to engage in student teacher supervision.

Thirdly, the findings on the effect of span and period of supervision on student teacher performance in teaching practice in Kenyan public universities provides public universities with information relating to the appropriateness of the span and supervision that produces the greatest effect on student teachers performance. This data can be used by public universities to plan for supervision schedules that are cost

effective and produce maximum outcomes. This may save universities on financial and human resources used on span and duration of supervision during school attachment.

Fourthly, data on the school characteristics on student teacher performance in teaching practice in Kenyan public universities provides public universities, student teachers and State Department of Education with data on how various school types, category and status affect student teachers performance in school attachment. This may form a basis within which public universities can adopt policies on engagement with model schools that provide an environment that can impact skills and attitudes to student teachers. This can improve the professional standards of Kenyan teachers.

Lastly, the findings on the effect of frequency of supervision, supervisors' qualifications, span and duration of supervision and school type on student teacher performance in teaching practice in public universities in Kenya provides data that may act as a working platform for studies by students and scholars in the field of Educational Planning and Management.

1.8 Scope of the Study

This study was primarily designed to establish the effect of school attachment practices on student teacher performance in teaching practice in public universities in Kenya. The study confined itself to Kenyan public universities offering education programme before the enactment of education Bill 2012, the 2015/16 education students on school attachment in Western Kenya and head of school attachment units.

1.9 Limitations of the Study

The following were the major limitations of the study:

This study only used student teachers on teaching practice and head of school attachment units. Other stakeholders such as, school attachment zone coordinators, secondary school principals, and secondary school students may have an effect on the performance of student teachers in teaching practice. This may have affected the findings of the study.

The study only targeted student teachers in public universities undertaking school practice in Western part of Kenya. Other students doing school practice in other parts did not participate in this study. This could affect the findings of the study as the Western school environment may be different from the other parts of the country. However, it is believed that since this students are from different universities, they are representative enough of the practices by their respective universities and environments.

1.10 Assumptions of the Study

The study was guided by the following basic assumptions:

i. That student teacher performance in teaching practice highly depended on school attachment practices.
ii. That the data obtained on student teacher performance in teaching practice from respective universities were accurate and reliable.
iii. That the student teachers were mature and sincere with the information solicited for the study.

iv. That student teachers in public universities in Kenya are all trained similarly, have equal opportunities to undertake teaching practice and are evaluated based on same rules and practices.

v. School attachment practices of a given university are uniformly applied to student teachers irrespective of the region or school attachment zone

1.11 Theoretical Framework

This study was anchored on the Education Production Function (EPF) model founded by Coleman Report of 1966. The EPF is used to explain the relationship between inputs and outputs of a firm. This study abstracts from this function to investigate student teacher performance in teaching practice as a function of school attachment practices, student characteristics and school characteristics. Therefore, a simple Education Production Function for this study was: Q = f (A, B, C, D …). The education output (Q) is a function of inputs A, B, C and D where: A represents a vector of frequency of supervision, B a vector of supervisors' qualifications, C a vector of span and period of supervision and D a vector of school characteristics. All these factors play a role in determining the educational output (Q) which is the student teacher performance in teaching practice as measured by the student teacher mean score in teaching practice. Therefore, the relationship between inputs and outputs can be used to analyze the efficiency of teacher training in public universities in Kenya. Such a measure of internal efficiency may be achieved by assessing the effectiveness of teacher training in public universities as a function of a variety of school attachment practices.

This study assumed that the input of teacher training could be simply measured in terms of the effectiveness in the management of school attachment practices. The

study postulated that school attachment practices (frequency of supervision, supervisors' qualifications, span and period of supervision and school characteristics), gender of supervisors, and students characteristics (age, gender, education programme, university enrolled) work independently and interdependently to influence student teacher performance in teaching practice in public universities in Kenya. Empirical assessment of this postulation involved the use of multiple linear regression model. The model linked student teacher performance in teaching practice to school attachment practices, gender of supervisors and students' characteristics. This theoretical aspect is explained in a conceptual ideology in Figure 1.1.

1.12 Conceptual Framework

This study was guided by a conceptual framework that represents the interrelation ship among the independent, control and dependent variables. The independent variable is school attachment practices while the dependent variable is the student teacher performance in teaching practice and the controls are supervisors' gender and student characteristics. These relationships are conceptualized in Figure 1.1

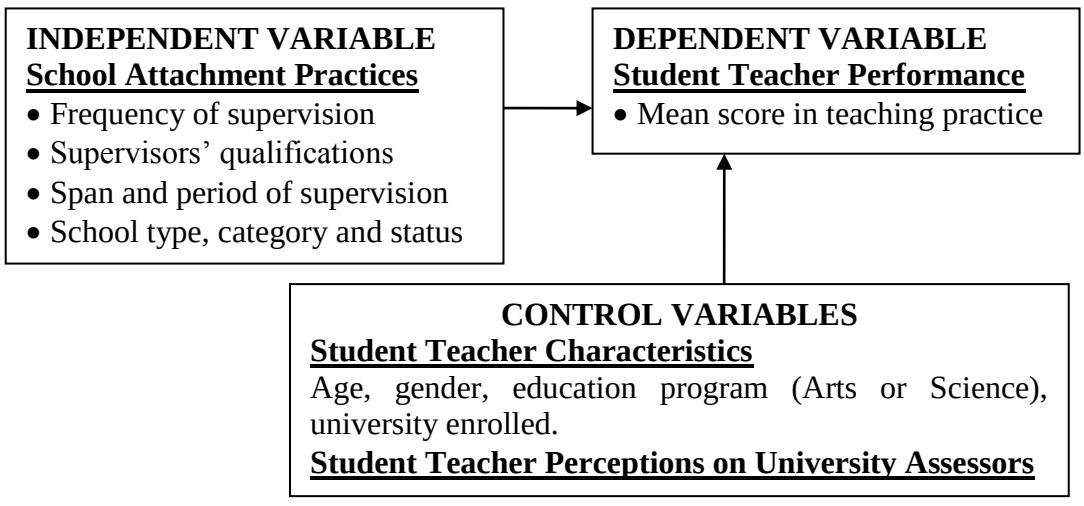

Figure 1.1: Conceptual Framework

Source: Own Conception, 2015

The conceptual framework for this study is the relationship between school attachment practices and student teacher performance in teaching practice in public universities in Kenya. In this relationship; school attachment practices is the independent variable measured by frequency of supervision, supervisors' qualifications, span and period of supervision and school characteristics (type, status and category of schools where student teachers are posted). Student teacher performance is the dependent variable measured by student teacher means scores in teaching practice.

From Figure 1.1, it's clear that school attachment practices can positively or negatively affect student teacher performance in teaching practice. The magnitude and the direction of the effect of the independent variable on the dependent variable were established using the multiple linear regression model. However, from Figure 1.1 this effect can be influenced by other variables such as student teacher characteristics and gender of the supervisors. These variables were treated in this study as control variables and their effect was assessed using multiple linear regression alongside the independent variable.

1.13 Operational Definition of Terms

School Attachment Practices

Activities that take place while assessing a student teacher on school attachment and indicated by the frequency of supervision, supervisors' qualifications, span and period of supervision and supervisors gender

School Attachment

A specified period within a university calendar student teachers are required to be attached to a given secondary school for assessment by identified university supervisors.

Head of School Attachment Unit

An officer of the university appointed to manage school attachment activities

Student Teacher

A training teacher attached to a specified secondary school so as to be assessed and awarded a score by identified university supervisors during classroom and out of classroom instruction.

University Supervisor

Academic staffs identified by the university to assess the performance of a student teacher while on teaching practice and award a score

Peer Supervisor

A student teacher identified by a fellow student teacher to assess him/her during classroom and out of classroom instruction in order to advice on areas of strengths and weaknesses

Cooperating Teacher Supervisor

A qualified teacher assigned to a student teacher by the school to guide, model, assess and award a score to a student teacher during teaching practice

School Attachment Zone Coordinators

An academic staff identified by the university to manage school attachment activities within a designated zone

Western Kenya

Public secondary schools within Kakamega, Vihiga, Busia and Bungoma Counties assigned to student teachers on school attachment by school attachment zone coordinators.

Frequency of Supervision

The number of times a student teacher is assessed by the university supervisor, peer supervisor and cooperating teacher supervisor per subject.

Supervisors' Qualification

A university supervisor highest academic achievement either as masters, doctorate or professorship

Span of Supervision

The number of days between the university supervisions to a student teacher on school attachment

Period of Supervision

The number of university supervisions in the beginning, middle and end of school attachment; the scheduling of the school attachment as either in first term, second term, third term, third year or fourth year

Supervisors Gender

The sex of a university supervisor as either male or female

Student Teacher Characteristics

The age, gender, education program (Arts or Science) and university enrolled of a student teacher on school attachment.

School Characteristics

The school type, school category and school status where a student teacher is assigned to undertake school attachment

School Type

A school establishment as boys, girls' or mixed

School Category

A school establishment as day, boarding or day/boarding

School Status

A school establishment as national, Extra-County, County or Sub-County

Student Teacher Performance in Teaching Practice

A final score awarded to a student teacher at the end of school attachment by university supervisors and standardized as a z-score.

Student Teacher Mean Score in Teaching Practice

The average mark awarded to a student teacher from the university supervisors assessments during school attachment.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Introduction

This chapter presents a review of literature related to the study according to themes derived from the objectives of the study. In this chapter, literature reviewed is divided into four sections. The first section covers literature on frequency of supervision and student teacher performance in teaching practice. The second section covers literature review on supervisors' qualifications and student teacher performance in teaching practice. The third section covers literature review on span and period of supervision and student teacher performance in teaching practice. Finally, literature on school type and student teacher performance in teaching practice is reviewed in section four. The gaps that were filled are in built and summarized at the end of each section.

2.2 Frequency of Supervision and Student Teacher Performance.

This objective will review literature on the frequency of supervision by university supervisors, teacher mentors also referred to as cooperating teachers and peer supervision against student teacher performance during school attachment. Different cadre of supervisors can lead to variations in student teacher performance considering factors such as experience, certification and personality.

2.2.1 Frequency of University Supervision and Student Teacher Performance.

During school attachments supervisors have a duty to supervise their lessons, other assigned activities, guidance and counseling as well as provide the student teachers with feedback that would enable them to criticize their own work and reform themselves. In Nigerian universities, teaching practice is a compulsory course in the Faculties of Education and it attracts 2 or 4 credit load, depending on the nature of the

programme being offered to the students. Although, teaching practice is expected to expose student-teachers to all school programmes, emphasis is laid on classroom practice during which they are supervised by lecturers and given instant feedback. The supervision is usually twice during each of the exercise. The students' performance is determined by finding the means of assessors' grades. The external examiner conducts a random assessment of students on teaching practice and moderate internal assessors' grades (Jekayinfa, et al, 2012).

Chumba & Kiprop (2014) reports that the frequency of student teacher supervision is too short and most university supervisors feel they could do much more if only they could have some continuing contact with their student teachers to improve on their performance. The same sediments are shared by Almikhlaphi (2005) who carried out a study at the University of Ebb. He identified poor supervision, short period of school attachment and having a theoretical rather than a practical programme as some of the short comings of school attachment.

Ineffective supervision has also been linked to failure to adhere to regulations set by public universities to govern the implementation and assessment of school attachments. Several institutions have it that each student shall be assessed at least three times in each subject. Kasomo (2012) reports that Egerton university research has shown that out of the 55 students surveyed none of them was supervised six, five or four times. Those who had the highest frequency of supervision had three supervisions each. The results show that 28 students were supervised three times, 16 were supervised twice and two students were supervised once. The result further show that only a small number of those supervised received post supervision discussion of their lessons.

This is only a situation at one university in Kenya that has been bold enough to conduct a study on teaching practice and publish the results. The situation in other universities though unclear is not expected to be any better. It seems clear that school attachments regulations are not adhered to, a factor that undermines the quality of teaching practice. If supervision is to be regarded as quality, it should be prompt, timely, well-spaced, done frequently, done properly, conducted as a team, that is not as sporadic actions of uncoordinated individuals, coordinated, facilitated and evaluated (Kasomo 2012). On the side of the student teachers there must be factors such as motivation, readiness/willingness, commitment and attendance during work hours.

According to Dunlosky, Rawson, & Nathan, (2013), if a student is trying to learn something well, be it a set of facts, concepts, skills or procedures, a single exposure is usually in adequate for good long term retention just as the old adage goes that practice makes perfect. The student teachers are expected to have more frequencies to perfect on their performance. In normal circumstance, the mistake people make is over learning by spending many hours studying a raw material then a few days later they won't be able to recall what they have learned. This means that there is an exponential loss of memory in our brains unless information is reinforced.

Mere repetition of tasks by students is unlikely to lead to improved performance or keener insights. It does well when students have opportunities to express ideas and get feedback from their instructors which ought to be analytical, suggestive and to come at a time when students are still interested in it. There must be time for students to reflect on the feedback they receive, to make adjustments and to try again Wahlheim, Maddox and Jacoby (2014). As reiterated before, some of the public University

supervisors do not adhere to supervision rules and regulations where some student teachers are supervised fewer times compared to others.

The researcher did not correlate these frequencies and other related factors to the performance of the student teachers. Reviewed literature on the frequency of university supervision and student teacher performance have been limited to finding out the number of times the student teachers have been supervised, and if the supervisors have adhered to the rules and regulations of their respective universities. This study goes beyond to establish the effects of the number of supervisions/ frequency by different public universities on student teacher performance.

2.2.2 Frequency of Peer Supervision and Student Teacher Performance

Peer coaching is an interactive process between two or more teaching professionals that is used to: share successful practices through collaboration and reflective practice, act as a problem-solving vehicle, reduce isolation among teachers, create a forum for addressing instructional problems, and support and assist new teachers in their practice. James & Baldwin (1999), define peer coaching as staff development model one can use to help one teacher and their partners to develop and try new strategies and determine what does and does not work by critically evaluating their own beliefs about teaching and learning. Peer coaching is built upon trusting relationships that develop between teachers based on mutually working together to improve teaching skills in order to improve student learning.

Peer coaching has been used in American schools. Richard (2003) notes that more and more schools across the country are replacing traditional staff development with school-based staff developers. Boston and San Diego School Districts are pioneers of this method of preparing teachers, but they are just two examples of the dozens of

school districts that have adopted peer coaching as a model for school-based staff development. The reasons for this shift are clear; research on effective staff development shows that a peer coaching methodology meets teachers' needs and is effective at shaping classroom practice.

Researchers have noted that workshops that comprise most traditional staff development methodologies do not provide sufficient time, activities, or content necessary to promote meaningful change (Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, S. 2001). Study results by Joyce & Showers (1996; 2002) show that fewer than 15% of teachers implement new ideas learned in traditional staff development settings such as workshops.

Robbins (2006) discusses a type of peer coaching that involves two or more colleagues working together around the shared observation of teaching. In her description, Pam notes that the teacher being observed is responsible for setting the focus of the coaching session: his or her expectations for what is to be observed, how data about that topic will be collected, and how the observing teacher will interact within the classroom. These three elements allow teachers to refine teaching practices, think critically about their teaching practices, and improve engaging in ongoing professional dialogue.

The coach in this model does not need to be a subject area expert. It is important, however that the coach possesses skills such as: questioning, observation, conversation and facilitation. Collegial coaches help each other to reflect on their own teaching practices without passing judgment or making evaluations about their observations. Peer coaches must be committed to spending time coaching each other on a regular basis. Some public universities send more than one student teacher to a

single school for school attachments, or even so student teachers from different universities may meet in one school. They can agree on how to implement peer supervision among themselves with an intention of improving their performance.

The technical coaching model is designed to help teachers transfer what is learned in a workshop environment into the world of the classroom. This coaching allows teachers to work together to share and apply professional strategies and techniques learning in workshops and classes (Russo, 2009). In the case of school attachments, the student teachers are expected to transfer the theory learnt in the universities to practical teaching in a classroom situation. Teachers observe and help each other recognize how to use the newly learned strategies as effective teaching and learning tools. By attending the training together, they can work together to develop the best way to implement and share the newly learned skills and strategies.

Challenge coaching involves a group of teachers working together to solve a specific instructional challenge or problem. Often specialists from outside the teachers' subject area who have skills or experiences that can provide insight into their instructional challenge are invited to participate on the coaching team (Becker, 2000). It is an action-oriented model that involves teachers in developing and testing their own hypotheses about what instructional strategies and techniques would work best for their students. In order to implement effective challenge coaching the teachers and others need to be familiar with collection data tools to be used to determine which strategy should be adopted as the solution to the challenge.

Team coaching involves a teacher who is highly skilled and knowledgeable in a specific area working with another teacher to help him or her develop specific skills and strategies. In this model both teachers plan, implement, and evaluate the success

of the lesson. This means that both teachers: interact with students, lead instruction with students, provide examples for students, pose questions to the students, and give instructions to students. It means that for specific lessons there are two teachers in the classroom. They are not aware that one of the teachers is a more knowledgeable and experienced teacher who is there to support the other's efforts to learn and master and refine a new teaching skill.

The four types of peer coaching discussed above are all very different, but they are built upon effective communication that is honest and open and based on an unbiased attitude and a willingness to help others grow professionally. This involves trust building. Effective peer coaches must be dedicated to working in a trusting relationship with a partner to continually improve his or her teaching skills. They must also be open to new ideas and willingly share classroom experiences with their partners. Effective communication means more than just teachers talking with each other. It involves: conversation skills, listening skills, nonverbal language, giving constructive feedback, and developing trusting relationships.

Constructive feedback is required in peer supervision; it includes providing your partner with descriptive, specific information that is focused on changing behaviors. Irmsher (2008) recommends the following techniques: Focus on describing observable behavior without attaching judgment, accusations, or generalizations to those behaviors, and giving timely feedback. Listening Skills are also critical in peer supervision; it means hearing and understanding what you are being told. It does not mean giving advice, adding detail, or even sharing your own experiences. The peer coach's job is to guide the teacher into reflective thought about his or her own teaching practice.

Cognitive Coaching is a specific peer coaching model developed by Costa & Garmston (2007) that focuses on the cognitive processes of teachers. It is a set of strategies, a way of thinking and a way of working that invites self and others to shape and reshape their thinking and problem solving capacities (Costa, 2002). It involves mediated thinking, or becoming aware of what is going on inside your own head. This allows the teacher to make his or her own decisions about effective or ineffective about his or her own teaching practice. The role of the coach is to act as a mediator between the teacher and his or her own thinking by encouraging the teacher being coached to reflect upon what is happening in his/her classroom and how to make changes or improvements.

Cognitive Coaching is not intended to be another form of evaluation or performance appraisal. It is on four major assumptions: thought and perception produce all behavior, teaching is constant decision-making, to learn something new requires engagement and alteration in thought, and humans continue to grow cognitively. Cognitive coaches are taught to use the five states of mind, to facilitate or mediate a teacher's journey through self-improvement. Cognitive coaching is a three-phase cycle that involves a pre-conference, during which the coach helps the teacher to determine the focus of the observation. Garmston (2011) recommends the following four questions as guides for the pre-conference: What are your objectives? How will you know when you've reached your objectives? What is your plan? And on what other aspects of your teaching do you want information?

Cognitive coaching also entails the coach observing teacher in the classroom teaching the identified focus area for the lesson. The coach is not involved in teaching the lesson or interacting with the students or teacher in any way. The coach only observes

and records observable behaviors and actions. Finally the coach and teacher meet to debrief the observed lesson. The coach helps the teacher become more reflective about the learning that has happened by asking questions, providing data, and facilitating the teacher's own evaluation of the lesson. The coach does not evaluate the lesson.

Becker (2000), observes that peer supervision develop a student teacher in the following ways: enable teachers to give and receive ideas and assistance, it can bring about a better understanding of best practices, and better articulated curriculum, provides a mechanism through which teachers can gain deeper insight from workshops, allows a teacher to try out new strategies learned in a workshop and get feedback on how these strategies worked in the classroom, helps teachers to internalize what they have learned and to apply it in their own classroom, and then take part in professional discussion about it, helps teacher to share new ideas and strategies with one another, and finally, it has contributed to an overall improvement in teaching and learning in schools. Garmston (1997) alluded that peer coaching can further a teacher's individual professional development, for improving school climate.

Collegial peer coaching consists of three basic parts, namely; a pre-conference, an observation and a post-conference. During the pre-conference, teachers meet and discuss the elements that the teacher being observed wants to focus on. They discuss the specific lesson planned, its context, and other relevant factors that influence student outcomes. The peer coach is responsible only for providing that teacher with another perspective of the learning environment so they can mutually improve teaching and learning. The peer coach then observes in the teacher's classroom as a

collegial observer. The coach should focus on finally, the peer coach schedules a post-conference, to discuss the outcome of the lesson.

The observed teacher should take the lead in this conversation, with the observer adding factual information about what happened during the lesson. They may discuss what worked well, what didn't work at all, and what could be changed or improved to have a positive impact on the teaching and learning in the classroom. Important aspects of this stage are; the observed teacher is in control of the lesson, the emphasis is on reflection on what has happened during the lesson and analysis of its impact on student learning.

Russo (2009), warns that collegial peer coaching is not one teacher acting as an expert and the other a novice or apprentice rather both teachers should together as equals who are looking to collaboratively improve their teaching skills; It is not based on evaluating and judging performance rather a system for continual improvement and growth for both educators; It is not just a process for initiating new teachers into the profession instead, it should have a positive impact on all teachers no matter of how long they have been in the profession or what their background may be and lastly; It is not intended to be part of an evaluation process, rather it should be used to foster a focus on continual improvement in teaching and learning. Collegial coaching is built on a trusting relationship between a pair of teachers that is designed to be noncompetitive and mutually respectful focused on the continual improvement their teaching methods.

During school attachments peer supervision can apply where one student teacher plays the role of a mentor as he/she listens to the colleague teach in a class. James & Baldwin (1999), outlines the role of the mentor/coach as; facilitate exploration of

needs, motivations, skills and thought processes; facilitate real and lasting positive change, observe, listen and ask questions, use questioning techniques to identify solutions; support goal setting and assessment; encourage commitment to action; maintain positive, supportive and non-judgmental point of view; ensure mentees develop/improve personal competences and not become dependent on mentor; work within your area of personal competence; Manage the team/project relationships; and support each other.

Richard (2003) notes that there is a correlation between peer supervision and student teacher performance. He observes that the strategy which was part of a broader package of reforms was producing test score improvements in the San Diego schools district. Neufeld and Roper (2003) concludes that coaching can become a powerful vehicle for improving instruction, and, thereby, student achievement. It is also a cost-effective way for schools and school districts to meet their needs. During school attachments, student teachers are likely to be free with their partners taking the supervisory role.

The reviewed literature show that peer supervision has been adopted and used in other countries and more so in schools without any mention of the strategy applied in Kenya. It is not clear whether the frequency of this strategy has an effect on student teacher performance in Kenyan public universities.

2.3 Supervisors' Qualifications and Student Teacher Performance

In the United States of America, some universities have developed criteria for selecting supervisors owing to the importance attached to school attachments. These criteria grow out of the general policies and understanding that form the basis for the Agreement on Student Teaching that is executed between Northern Michigan

University and the cooperating schools. These criteria are similar to those used by teacher education institutions across the nation. Their objective is to define a relationship between the University and the supervising teachers, and between the supervising teachers and the students, who may be assigned to them (Richard & Baldwin, 1999).

The two authors identified the following qualifications: a minimum of three years teaching experience with the most recent year being in the present school system; possess a valid teaching certificate; teaching experience in the area of his/her certified specialty; consistently demonstrates high quality teaching; demonstrates desirable personal and professional attitudes; demonstrates evidence of continuous professional growth; participation in the program voluntarily; looks upon supervising the growth of student teachers as a challenge and a contribution to his/her profession; is recommended by his/her administrator(s); has completed a course in supervision of student teaching or possesses appropriate training as an acceptable alternate; good communication skills and can provide constructive feedback.

TESSA (2015) reported that a good supervisor should be a model in all ratifications, knowledgeable in subject matter and versatile in the facilitation of learning, prudent manager of time and resources possess the ability to utilize methods and strategies that put the student teacher and the pupils at the centre of learning. They should have the ability to plan and design programmes that will facilitate effective school attachments, ability to use appropriate resources to stimulate and facilitate the development and assessment of teacher trainees during school attachments, and ability to observe and assess student teachers objectively.

In an interview by Gitlin (2009) to a group of school attachment supervisors to discuss the qualities of a good supervisor, they reported the following; supervisor should be respectful of the student teacher and understand them, a facilitator and mediator of learning, knowledgeable and understand how adults learn, one who uses creative and problem solving approaches to learning that stimulates student teachers, a good communicator and role model. This is in agreement with Nais (2003) who submits that a supervisor should have the ability to account of what student teachers know and what they can do, appreciate the value of developing links with the school and the community, possess good subject knowledge, awareness of the need to continue developing an understanding and practice of teaching and learning, and lastly, one who carries out professional roles conscientiously. Similarly, Hanushek (1992) estimates that the difference between having a good teacher and having a bad teacher can exceed one grade-level equivalent in annual achievement growth.

A study carried out by Jekayinfa et al. (2012) on lecturers' assessment of teaching practice exercise in Nigerian Universities concludes that; there is no significant difference in the assessment of the quality of teaching practice on the basis of job status, and there is significant difference between lecturers of varying job experience as regards assessment of the quality of teaching practice. With effect to the first findings, the lecturers had been categorized into junior and senior. The authors attributes the difference to the fact that the junior lecturers might not possess the same level of skills as regards assessment of student teachers compared to their senior colleagues. Experience is much talked about as the best teacher.

The above study was carried out in Nigeria on lecturers' assessment of teaching practice. The sample size was 691education lecturers who were requested to fill the

questionnaire. This study goes beyond the above study to investigate on the effects of the supervisors' qualification on student teacher performance. Contrary to the above, this study would use student teachers as the unit of analysis, and the study would be carried out in Kenya.

Further studies have revealed a relationship between the supervisors' qualifications and student teacher performance. Ngidi and Sibaya (2003) noted that lecturers whose years of teaching experience are long were meticulous in their method than less experience teachers. Marais and Meir (2004), Kiggundu and Nayimuli (2009) conclude that experience, job status and age had determining influence on their ways of assessment of student teacher during their internship. Yusuf (2010) states that lecturers' assessment of the student- teachers was based on their occupational status, orientation. On the contrast Jekayinfa (2000) submits that lecturers, irrespective of their occupational status, have the same orientation, and by extension, similar disposition to matters bordering on teaching and learning.

According to Jennipher (2003), teacher quality matters are the most important school related factors influencing student performance. The author highlights the following teacher qualifications that have a positive impact on student performance: teacher experience, teacher preparation programs and degree, teacher certification, teacher coursework, and teachers' own test score. Cavalluzzo (2004), Hanushek, Kain, O'Brien, and Rivkin (2005); Rock Off (2004); Rowan, Correnti, and Miller (2002) observe that teaching experience marginally improved student performance.

On certification, Hammond (2000), Darling-Hammond, Holtzman, Gatlin, and Vasquez (2005) assert that measures of teachers' certification are by far the strongest correlates of student performance. These sentiments are shared by Betts, Zau, and

Rice (2003); and Jennipher (2003) who demonstrates a positive effect of certified teachers on student performance and little clear impact of emergency or alternative route certification on student teacher as compared to teachers' acquire standard certification. Public universities in Kenya use supervisors with different certifications running from bachelor degree holders to doctorates.

Teacher content knowledge was part of a composite of teacher practices that positively impacted on student performance. Using mathematics as a case study, Betts et al., (2003); Cavalluzzo, (2004); Goldhaber and Brewer (1996), observes that a mathematics authorization positively impacted on secondary student achievement in mathematics. They reported that in-subject full state certification contributed to students' mathematics scores. Content knowledge in student teacher supervision and in subject being supervised is expected to impact the performance of the student teacher. However Kenyan public universities are likely to have supervisors with content in supervision but what about content in subjects of supervision?

Public universities have different approaches of identifying human resource for supervision of school attachments. Some universities use university lecturers of different status at the university level as mentors of the student teachers. To justify the use of a mentor, Torrance (1994) observes that those individuals that remained mentor less were more vulnerable than the mentored to a range of problems such as educational failure, lack of career goals or focus or lack of enthusiasm. Many research studies investigating effects of mentoring on the student teacher have reported positive outcomes such as increased self-confidence and belonging within the profession.

Wambugu, Barmao, and Ng'eno (2014) recommends that to enhance supervision, there was need to tap on the experience of the cooperating teachers to mentor the pre-service trainees and the cooperating teachers an opportunity to give a comprehensive report on the trainees which should constitute a certain percentage of the total score attained during school attachments.

Awaya et al, (2003) states that the role of a mentor is sharing practices and knowledge with student teachers as a matter of professional dialogue thus a two way conversation between mentor and mentee on equal basis would be the ultimate representation one could hope for. According to Hayes (1999), supervising tutors have the responsibility of helping and advising the student teacher on how to incorporate their insights gained so far into their practical teaching and maintain a fluidity with their existing notions about teaching and learning until they move beyond a purely intellectual appreciation of their significance and the concepts that have been taken on board by the subconscious.

The relationship between the mentor and the mentee is expected to be professional. Kwo, (1994) notes that learning how to teach relies on empathy, close professional understanding and common language between mentor and mentee. Awaya et al, 2003, emphasizes that sharing practical knowledge between the mentor and mentee is a matter of professional dialogue on an equal basis and not the discourse of instruction or the didactic talk.

Geen et al. (1999) asserts that due to inadequate qualified supervisors, training institutions have resorted to use human resource that has no genuine interest in school attachments. He has also claimed that the supervisors work is in adequate. In Kenya, there is need for a standing committee on school attachments at the national level and

institutional level to ensure that people managing school attachments are academically and professionally qualified, are competent and have a drive to make the exercise successful Kasomo (2012). The author has no verification to proof the personnel that supervises student teachers.

However the above views on qualifications of supervisors and student teacher performance have been challenged by Klicka (2003) who reports that results of the public opinion in America released by Washington Based Belden and Russonello public opinion research firm found out that 3 out of 4 Americans disagree that teachers certification was an assurance of high qualified teachers.

Most of the above reviewed literature focused on certification and school level performance. This study goes beyond to establish the relationship between the qualifications of the supervisors and the student teacher performance in Kenyan public universities.

2.4 Span and Period of Supervision and Student Teacher Performance

Time can sometimes feel very elusive and what started out as a well-planned day, week, month or even years just slip away with little being achieved. This is likely to be a setback with supervision of school attachments. To avoid time crisis and compromise in quality of any given task, Croft (1996) advices people on taking time to plan for the available time and expected activities adequately. Davidson (1997) observes that if managers in any organization put unrealistic time demand on tasks to be accomplished by others, it could compromise the quality of the task.

Common sense suggests that the more time spent on learning, the more students learn. However, available reviewed literature suggests that the duration for school

attachments is short and it is not up to the international standard. Farooq (1990) points out that the duration for school attachments in developing countries is short as compared with the developed countries. Rafaquat (2002) recommends that the duration for school attachment may be increased according to the programme of training.

G.O.P (1998) reports that the procedure adopted for school attachment in Pakistan is just to pass time because the exercise' duration is very short. A study carried out by Gujjar et al (2012) reveals that the duration for school attachment in Pakistan is very short; running from 4 to 8 weeks, equivalent to teaching of 60 to 75 lessons. They further reported that this duration could not allow student teachers to train in activities out of class. Consequently, the student teachers are bound to easy principles and methods of teaching like being taught how to begin a lesson, how to control the class and how to keep an eye over students while writing on the board. It was concluded that student teacher performance did not measure to the standards of ideal teachers.

The above authors used all prospective teachers admitted to B.ED progrmme in 4 public universities in Pakistan as their population with a sample size of 650. A 77 item questionnaire was administered and data analyzed through SPSS XII in terms of percentages and mean scores. This study will go beyond to include the heads of departments as respondents and administer to them an interview schedule.

Nigerian universities offer a four year programme for the Bachelor of Education degree which is the certificate required for employment as a teacher in the senior secondary school level (Federal Republic Nigeria, 2004). Teaching practicum of six weeks duration is a compulsory course both at the penultimate and final levels of the Bachelor of Education programme. It is believed that this duration of time is enough

to provide the “neophites”some type of pre - service training which serves as opportunity to be exposed to the realities of teaching and performance of professional activities besides professional activities, which are part of the teacher roles in schools. Teaching practice duration is usually between four and six weeks which begin in the third and fourth year. Students are usually required to practice in their schools of choice and teach based on their areas of specialization (Jekayinfa, et al, 2012).

Studies carried out by Nakpodia (2011), Ekundayo, Alonge and Kolawalo (2014) reveal that the period of twelve weeks is too short as it does not provide the student teacher an ample opportunity to effectively gain the experience which the exercise is intended to encourage. The author remarked that some supervisors do not even have time to sit down and discuss their observations and comments with the student teachers. The short discussion between the supervisor and the student teacher just after the lesson which should afford the student teacher the opportunity to appreciate his strengths and weaknesses are often ignored because the supervisor is often in a haste to move on to the next school.

Almikhlaphi (2005) in a study conducted at the University of Ebb identifies poor supervision, short period of school attachments and having a theoretical rather than a practical programme as a source of the short comings of school attachments. Marcus (2013) has attributed the short duration to inability to produce teachers who are properly grounded in pedagogy and content as well as ability to collaborate professionally in the work environment. He noted that the transition from academic theories in universities to classroom practice has often been very sharp suggesting that student teachers are not often properly groomed to put into practice current pedagogy and interactive skills. Transition of theory into practice also need not take a longer

time as the information could easily be forgotten. Jimmy (2015) and Kirby (2013), suggest that for better results the students should be allowed to practice what they have learned immediately.

Kasomo (2012), Rafaquat (2002) and Gujjar (2010), after lamenting over short duration for school attachments, proposes that the time should be lengthened according to the programme of training to develop favorable attitudes of student teachers towards the exercise and improve on their achievement. High school calendar in Kenya vary; there are terms that are shorter than others ranging from 8 weeks to 14 weeks, and individual public Universities also vary on the terms when they post student teachers for school attachment. This causes variations on duration when student teachers are exposed to the exercise.

The big issue may not really be the time factor as such, but whether the time available improves performance. Aronson et al., (2005) analyzed 376 students and found out that 88% showed positive relationship between time and learning, strongest correlation between learning and attendance rates and suggested lengthening of the learning duration. He further argued that only when time is used more effectively will adding more of it begin to result in improved performance for students.

From the above reviewed literature, it's obvious that adequate time is required by the student teachers to improve on their performance; however, there is need for this time to be well utilized well by spacing the supervisions adequately. According to Soderstrom et al., (2014), frequencies are good but spaced frequencies are better, spaced frequencies are better than non-spaced frequencies but widely spaced frequencies are better than narrowly spaced frequencies because they produce longer time retention rates. Toppiner and Gerbier (2014) argue that initial study and

subsequent review or practice spaced out over time generally leads to superior learning than having the frequencies occur in close temporal succession. They also report that wider spacing are generally more effective although there may be a point where spacing that are too wide become counterproductive. Therefore a good heuristic is to aim at having the length of spacing the frequencies intervals equal to retention interval. They also argue that gradually expanding the length of spacing supervisions and assessments can create benefits.

Nevertheless, some of the above study focused on the academic staff as the unit of analysis and the data was analyzed using both descriptive and inferential statistics having used only one instrument of a questionnaire in collecting data. The sample frame was 6 universities in Nigeria. The above reviewed literature is an indicator of an outcry over the length of the exercise. However in this study, the researcher goes beyond the conclusion drawn by the previous researchers to establish the effects of the span and duration of school attachment on the performance of student teachers in Kenyan public universities.

2.5 School Characteristics and Student Teacher Performance

There is no doubt that public universities and student teachers have their individual considerations that guide them in selecting secondary schools for school attachments. Some researchers have been interested in finding out how children learning outcome and educational performance are strongly affected by the standard and type of educational institution in which students get their education. The educational environment of the school one attends sets the parameters of students' learning outcomes. This may not be quite different from the relationship between the type and

status of schools student teachers are posted for school attachment and their achievement.

Considine and Zappala (2002) quotes Sparkles (1999) showing that school environment and teachers expectations from their students have strong influence on student performance. Most of the teachers working in poor schools or schools having run short of basic facilities often have low performance expectations from their students and when students know that their teachers have low performance expectations from them, hence it leads to poor performance by the students. Kwesiga (2002) approves that performance of the students is influenced by the school in which they studied and that the number of facilities a school offers usually determine the quality of the school, which in turn affect the performance and accomplishment of its students.

Sentamu (2003) argues that schools influence educational process in content organization, the teacher, teaching and learning process, and in the end evaluation of them all. All these educationists and researchers agreed with the principle that schools put strong effect on academic performance and educational attainment of students.

According to Shoukat et al. (2013), students from elite schools are expected to perform better because they attend these elite schools and the main reason behind is that these schools are usually very rich in resources and facilities. Some researchers have the view that school ownership and the funds available in schools do indeed influence the performance of the student. Crosne & Elder (2004) notices that school ownership; provision of facilities and availability of resources in school is an important structural component of the school. Private schools due to the better funding, small sizes, serious ownership, motivated faculty and access to resources

such as computers perform better than public schools. These additional funding resources and facilities found in private schools enhance academic performance and educational attainment of their students.

It is concluded that the type of schools in which students studies greatly influence the educational performance and academic achievement of the students. Miller and Birch (2007) summarizes the views of many researchers and educationists in their study on the influence of high school attended on university performance. This study let the research scholars to hypothesize that the background to the students positively correlates with the academic attainment of graduate students. The above reviewed literature has laid emphasis on resources and facilities in schools and how they impact on the performance of students. Most of the studies have been conducted outside Kenya.

Some studies have defined school type as either girls', boys' or co-educational schools. They have investigated on how this category affects the performance of students. A study carried out by ACER (2008) found out that girls attending single sex schools produced higher tertiary entrance scores than those in coeducational schools. Most other studies have indicated that boys contribute more to classroom interaction by calling out answers and dominate in hands-on activities, such as laboratory work and computer sessions (Francis, 2004). From this perspective, the presence of boys in the classroom is seen as having a negative effect on girls" academic engagement and achievement.

Saidin and Brahim (2011) in a study carried out in single-sex schools in Malaysia they found out that boys performance in English and foreign languages, and girls performance in Mathematics and science improved in a single gender settings. The

study reveals that in gender separate classroom, students have higher motivation and higher confidence levels which offer them better educational opportunities. Participation and general behavior of learners during classroom lesson assessment plays a vital role in the performance of a student teacher.

A study carried out by Mburu (2013) discloses that teachers had developed a negative attitude towards mixed schools and most of them were in favour of single sex schools. Only a few teachers preferred to teach in mixed boarding and mixed day schools. He also states that the type of school attended affected students' academic performance. The study limited itself to effects of the type of school attended on student academic performance in two Districts in Kenya. It adopted the descriptive survey design, sampled teacher and students and used 2 questionnaires to collect data

These studies have only focused on the performance of the learners without analyzing the behavior of students visa vie student teachers who are being trained to become teachers. This study goes a step further to establish the effects of school type on the performance of a student teacher during school attachments in public universities.

2.6 Knowledge Gap

Reviewed literature indicates that most studies that have been carried out on school attachment are outside Kenya. Others have restricted themselves to a single university within Kenya or still others have addressed other issues that affect school attachments. Some studies have presented the need for increased and improved resources invested in school attachments practices. Further, others have used varied methodologies in carrying out their studies.

This study goes beyond the previous studies to establish the effect of school attachments practices; frequency of supervision, span and duration of school attachments, qualifications of supervisors, and school type on student teacher performance in Kenyan public universities. The study adopts a descriptive survey design and targets a wide sample of 6 public universities and uses the 2015/16 student teachers posted to Western Kenya. Besides, it includes Heads of Sections of teaching practice units. Unlike the other reviewed studies, this study establishes the magnitude and direction of the independent variables on the dependent variable using multiple linear regression. The findings of this study are thus expected to provide empirical data to public universities and other stakeholders on school attachment practices that may enhance cost effectiveness of running school attachments for quality teacher education.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was used to carry out the study. The chapter presents information on the research design, study area, study population, sample size and sampling procedures, pilot study, validity, reliability, data collection instruments, data collection procedures, methods of data analysis and ethical considerations.

3.2 Research Design

This study used survey research design. A survey is an attempt to collect data from a population in order to establish the current status of that population with respect to one or more variables (Mugenda & Mugenda, 2003). Survey design can effectively be used to measure the characteristics of a large sample qualitatively and quantitatively in order to explain causal explanation to phenomena (Kombo & Tromp 2006). Besides, a survey research design is sufficient in collecting large amounts of information within the shortest time (Kombo & Tromp, 2006; Polland, 2005; Orodho, 2005).

A survey research design was useful to this study as the intention was to investigate the effect of school attachment practices on student teacher performance in teaching practice in public universities in Kenya in a number of ways. This design allowed the researcher to collect data from a large sample of student teachers and heads of school attachment units using questionnaires and an interview guide respectively. Besides, the design allowed this study to establish exploratory changes that took place in the dependent variable given the independent variable using multiple linear regression. In

addition, the design allowed the collection of both quantitative and qualitative data that was subjected to both descriptive and inferential analysis.

3.3 Study Area

This study targeted the six public universities (Nairobi, Moi, Kenyatta, Egerton Maseno and Masinde Muliro) in Kenya before the enactment of the University Bill 2012 that offer education programme. Of these six public universities, Nairobi and Kenyatta are located in Nairobi region; Moi and Egerton in Rift Valley region. The remaining two: Masinde Muliro and Maseno are located in Western and Nyanza regions respectively. The six public universities were considered because they have offered the education programme for a long time and have a large population of education students as well as established school attachment mechanisms that span for over 10 years.

3.4 Study Population

The target population of this study was 2239 comprising of the 2234; 2015/16 student teachers in the five public universities in Kenya namely: Moi, Kenyatta, Egerton, Maseno and Masinde Muliro before the enactment of the University Bill 2012 undertaking school attachment in the four Counties of Western Kenya namely: Kakamega, Bungoma Vihiga and Busia; and, the five heads of school attachment units in the five public universities. Nairobi University was dropped because it was used for piloting.

Western part of Kenya was considered because all the 6 public universities offering education programme send student teachers in secondary schools in the region to undertake school attachment. Since the study was interested in school attachment practices by public universities offering education programme, student teachers

undertaking school attachment in Western region was a good representative of the rest of the students undertaking school attachment in other regions of Kenya from the same universities. School attachment practices of a given university are uniformly applied to all the student teachers irrespective of the region they are posted.

The 2015/16 student teachers were considered by virtue of undertaking school attachment as a requirement for teacher training, which was the interest of this study. Therefore, the student teachers as consumers of school attachment practices were considered to have vital information regarding supervisors' qualifications, frequency of supervision, span and duration of supervision and school type. On the other hand the head of school attachment units in public universities were considered in their capacity as officers in charge of managing teaching practice activities that include among others posting student teachers and university supervisors in the designated teaching practice zones. Therefore, these officers were considered to have vital information regarding supervisor qualifications, frequency of supervision and span and duration of supervision. This information was useful in the triangulation of the students' teacher information. The distribution of this study population is presented in Table 3.1.

Table: 3.1: Population of Student Teachers and Heads of School Attachment Unit by University and County

University	Kakamega			Vihiga			Bungoma			Busia			Total	HSAU	Grand Total
	Male	Female	Sub-Total	Male	Female	Sub-Total	Male	Female	Sub-Total	Male	Female	Sub-Total			
Egerton	43	49	92	48	50	98	24	40	64	37	33	70	324	1	325
Kenyatta	29	34	63	22	26	48	25	34	59	27	28	55	225	1	226
Maseno	62	72	134	163	150	313	38	32	70	35	33	68	585	1	586
MMUST	145	156	301	70	73	143	83	76	159	43	51	94	697	1	698
Moi	49	54	103	45	49	94	51	56	107	47	52	99	403	1	404
Total	328	365	693	348	348	696	221	238	459	189	197	386	2234	5	2239

Source: Teaching Practice Manuals, 2015

NB: HSAU=Head of School Attachment Unit

3.5 Sample Size and Sampling Techniques

The sample size of the 2015/16 student teachers in the five public universities in Kenya undertaking school attachment in the four Counties of Western Kenya that was used in this study was determined by using the formula prescribed by Glenn (1992) as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where n = sample size required; N = number of people in the population (2,234) and e = level of precision (0.05);

Therefore, the sample size (n) = $\frac{2234}{1+2234(0.05)^2}$ = 339

A 95% confidence level and a precision level of +5% (p=0.05) was assumed in the study. Watson (2001) asserts that this precision level reduce the marginal error as much as possible while the confidence level was adopted as standard for most social sciences applications. The study also estimated the proposition of the population having requisite characteristics at 50% (0.5) which according to Glenn (1992) is an indicator of a greater level of variability than either 20% or 80%.

In addition, five (5) heads of school attachment units from the five public universities were purposively sampled to participate in the study. This enabled the researcher to use cases that had required information with respect to the objectives of the study (Mugenda & Mugenda, 2003). The study sample was 344 (N=344), comprising of 339 student teachers and five head of school attachment units as tabulated in Table 3.2.

Table: 3.2: Sample of Student Teachers and Heads of School Attachment Unit by University and County

University	Kakamega			Vihiga			Bungoma			Busia			Total	HSAU	Grand Total
	Male	Female	Sub-Total	Male	Female	Sub-Total	Male	Female	Sub-Total	Male	Female	Sub-Total			
Egerton	7	7	14	7	8	15	4	6	10	6	5	11	50	1	51
Kenyatta	4	5	9	3	4	7	4	5	9	4	4	8	33	1	34
Maseno	9	11	20	25	23	48	6	5	11	5	5	10	89	1	90
MMUST	22	23	45	11	11	22	13	12	25	7	8	15	107	1	108
Moi	7	8	15	7	7	14	8	8	16	7	8	15	60	1	61
Total	49	54	103	53	53	106	35	36	71	29	30	59	339	5	344

Source: Student Teachers and Head of School Attachment Unit Mapping Data, 2015, p.44

NB: HSAU=Head of School Attachment Units

This study employed purposive, stratified and proportionate random sampling techniques. The sampling frame was the public university while the sampling unit was the 2015/16 student teachers undertaking school practice in public secondary schools in Western region from the five public universities in Kenya offering education programme. All the five public universities were purposively sampled because they were the only ones offering education programmes (except Nairobi University which was used in piloting) before the enactment of the University Bill 2012. Kombo and Tromp (2006) recommend that the technique can be used if the population contains few relevant cases.

A list of 2015/16 student teachers undertaking school practice in public secondary schools in Western region from the five public universities was solicited from the respective university school attachment units and fed in the computer. The student teachers were then stratified by gender and County in which they were posted. A proportionate formula given by total male or female accessible population multiplied by the sample size and divided by the total accessible population size was used to establish the sample size for each of the sampled universities by gender in each of the four Counties of Western region using a computer. This was to enable the researcher to achieve desired representation from various subgroups in the population (Mugenda & Mugenda, 2003). Simple random sampling by aid of computer was used to select student teachers for each university using their university registration number to participate in this study.

3.6 Pilot Study

A pilot study was conducted in Nairobi University which is one of the public universities offering education programme that was not included in this study. One hundred, 2015/16 student teachers and one head of school attachment unit were purposively sampled for piloting. The purpose of piloting was to generate data that was used to analyze the reliability of the student teacher questionnaire (STQ). Besides, the data collected was analyzed to establish the appropriateness of the proposed test statistics for data analysis and the outputs required. Piloting was used to train research assistants on the procedures of actual data collection, coding and data entry. During piloting, the student teacher questionnaire (STQ) was self-administered by the research assistants to the student teachers while the head of school attachment unit interview (HSAUIG) was conducted by the researcher.

3.6.1 Validity of Research Instruments

This study employed face and content validity to validate the student teacher questionnaire (STQ) and the head of school attachment units interview guide (HSAUIG) by the help of the supervisors. The supervisors examined the items in STQ and HSAUIG to ascertain that they were clear, meaningful, and relevant to the respondents and that they adequately measured the domain under study (Cohen et al., 2000). The researcher made necessary adjustments to the STQ and HSAUIG as per the supervisors' advice.

3.6.2 Reliability of Research Instruments

This study used the split-half test technique to test the reliability of the student teacher questionnaire (STQ) using data obtained from the pilot study. The STQ was coded and randomly divided into two halves using an even-odd number approach. The Cronbach's Alpha reliability for STQ was established and compared to the set threshold of 0.8. A reliability of 0.93 for the STQ was considered high to make the instrument reliable for generating data for this study (Kathuri & Pals, 1993; Mugenda & Mugenda, 2003). The auto taped interview was scrutinized and rated to establish the consistency of the information solicited.

3.7 Data Collection Instruments

This study used a questionnaire for student teachers, interview guide for the head of school attachment units and document analysis check list to solicit data required for the study. The student teacher questionnaire (STQ) was considered appropriate as it enabled the researcher to collect adequate data from the large student teacher sample within the shortest time with minimal costs (Kothari, 2003; Mugenda & Mugenda, 2003).

Similarly, the head of school attachment unit interview guide (HSAUIG) was considered appropriate as it enabled the study to collect detailed data and where possible allowed clarification of any issues related to the themes of the study. According to Kombo and Tromp (2006) an interview guide is capable of soliciting in-depth information, is systematic, time saving, comprehensive, and data collected is quantifiable. In addition, it yields high response rate since it is difficult for a subject to completely refuse to answer

questions or to ignore the interviewer (Kothari, 2003). Besides, an interview guide made it possible for the study to obtain data required to meet specific objectives of the study hence increasing precision (Kerlinger, 1973).

3.7.1 Student Teachers Questionnaire (STQ)

A questionnaire was designed for all the sampled 2015/16 student teachers. The questionnaire included both closed and open ended questions. The STQ solicited information on; school attachment practices (supervisors' qualifications, frequency of supervision, span and duration of supervision and school type, school category and school status); gender of supervisors (male, female); and student characteristics (age, gender, education programme, university enrolled). The STQ was self-administered.

3.7.2 Head of School Attachment Unit Interview Guide (HSAUIG)

An interview guide was designed for the head of school attachment unit in each of the five sampled public universities. The focus of the interview with the head of school attachment unit was on school attachment practices (supervisors' qualifications, frequency of supervision, span and duration of supervision and school type) and the performance of student teachers in teaching practice (student teachers mean scores). This information on school attachment practices was used in the triangulation of the information given by the student teachers.

3.7.3 Document Analysis Check List

A check list was designed to guide the researcher on areas where document analysis was required on documents available in the sampled universities. Therefore, document analysis was done on documents relating to a list of students posted in Western region, list of supervisors posted to supervise students in Western region, and consolidated mark sheet of student teachers scores in teaching practice from Western region. These data was used in the triangulation of the information solicited by STQ and HSAUIG.

3.8 Data Collection Procedure

The researcher sought a research permit from the university and the National Commission for Science, Technology and innovations (NACOSTI) before collecting data. A research permit was granted by NACOSTI after meeting the requirements. The permit was used to conduct research in the 5 sampled universities between 1st May 2016 and 12th August 2016. It was used to seek permission from the academic registrars of the sampled public universities to use student teachers and heads of school attachment unit.

The researcher identified and trained four research assistants who had completed an undergraduate programme in education on methodology of data collection, data coding, data entry and ethical issues in data collection. Each research assistant was in charge of one of the four Counties in Western region and was tasked to administer the student teacher questionnaire in the county, code and enter the collected data. However, for Moi University the (STQ) was administered to the sampled student teachers from Moi university main campus because they had carried out teaching practice in term one while

they were in their third year. The researcher conducted all the interviews with the head of school attachment units in the sampled universities and conducted document analysis.

After seeking consent from the university registrars, the researcher visited all the sampled universities to inform the head of school attachment unit on the study, the subjects involved, the instruments to be used and the areas required for document analysis. At the same time an appointment was made on when to administer the questionnaire to the student teachers; an interview with the head of school attachment unit and conduct document analysis. The researcher requested for information from the documents on the list of the sampled student teachers and supervisors posted to Western Kenya and their schools of attachment. The head of school attachment unit in each of the sampled universities was requested to write a letter to student teachers sampled to request them to respond to the questionnaire and the school principals and supervisors to allow the research assistants to engage the student teachers.

On the material day, the student teacher questionnaire was self-administered in the presence of the research assistants and collected on the same day. This exercise was done simultaneously in the four counties. The interviews with the head of school attachment unit were auto taped. All the participants were thanked for their time and cooperation. Towards the end of school attachment exercise, the researcher went back to the sampled universities and conducted document analysis on student teacher performance during school attachment. This information was given by the heads of school attachment unit in each of the sampled universities.

3.9 Ethical Considerations

This study was only conducted with permission from the National Commission for Science, Technology and Innovations (NACOSTI), the university registrars, head of school attachment units and school principals. This study also sought consent from the student teachers to participate in the study. The respondents were informed of the purpose of the study, the instrument to be used and the information solicited. Only those who were willing to participate were engaged (Cohen et al., 2000). The respondents were adequately briefed on how to respond to the questionnaire and assured of the confidentiality of the information solicited.

The data collected was only be used for the purpose of this study and in no way was the information solicited shared with a third party. In no way did the researcher bribe or use other unconventional means to generate information for this study. Acknowledgement and credit was given to all contributions to this study. In addition, citing of intellectual resources and property used in this study was done to avoid plagiarism.

3.10 Data Analysis

The research assistants with the help of the researcher edited, coded and keyed in data collected from the student teachers and head of school attachment units in the computer using Epi Info 7 data entry screen. Data cleaning was done and data analyzed by objective using Stata version 12.1. Data generated for objective one sought to establish the effect of frequency of supervision on student teacher performance in teaching practice in public universities in Kenya. The independent variable; frequency of supervision had

multiple variables which were either ordinal or interval whereas the dependent variable (student teacher performance in teaching practice) was interval. Therefore, this study used multiple linear regression (MLR) to test the null hypothesis that the frequency of supervision had no statistically significant effect on student teacher performance in teaching practice in public universities in Kenya while controlling for supervisors' gender and student teacher -characteristics. Multiple linear regression enabled to establish the magnitude and the direction of the effect of the independent variable on the dependent variable. Besides, MLR was used to establish student teacher performance in school practice given a variety of explanatory variables.

In model 1, the study assessed the effect of frequency of supervision on student teacher performance in teaching practice in public universities in Kenya while controlling for supervisors' gender and student teacher characteristics. In the model, the positive sign of the coefficient indicated increased effect of the independent variable on the student teacher performance in teaching practice while the negative sign indicated decreased effect of the independent variable on student teacher performance in teaching practice. The value of the coefficient of the independent variable signified the magnitude of its effect on student teacher performance in teaching practice. The significance of the relationship between a given independent variable and the dependent variable was tested at $p = 0.05$ on a two tailed test.

Similarly, data collected for objective two sought to determine the effect of supervisor's qualifications on student teacher performance in teaching practice in public universities

in Kenya. Therefore, this study sought to test the null hypothesis that a supervisor's qualification had no statistically significant effect on student teacher performance in teaching practice in public universities in Kenya using MLR while controlling for supervisors' gender and student teacher characteristics.

Data that were generated for objective three sought to determine the effect of span and period of supervision on student teacher performance in teaching practice in public universities in Kenya. Consequently, this study sought to test the null hypothesis that the span and period of supervision had no statistically significant effect on student teacher performance in teaching practice in public universities in Kenya using MLR while controlling for supervisors' gender and student teacher characteristics.

Lastly, data that was generated for objective four sought to determine the effect of school characteristics on student teacher performance in teaching practice in public universities in Kenya. Similarly, this study used MLR to test the null hypothesis that the school characteristics has no statistically significant effect on student teacher performance in teaching practice in public universities in Kenya while controlling for supervisors' gender and student teacher characteristics.

The summary of statistical data analysis is presented in Table 3.3.

Table 3.3: Summary of Statistical Data Analysis

Objective	Independent Variable	Dependent Variable	Statistical Tool
1. To establish the effect of frequency of supervision on student teacher performance in teaching practice in public universities in Kenya.	Frequency of supervision (Interval)	Performance in teaching practice (Interval)	Multiple Linear Regression (MLR)
2. To determine the effect of supervisors qualifications on student teacher performance in teaching practice in public universities in Kenya	Supervisors qualifications (Ordinal)	Performance in teaching practice (Interval)	Multiple Linear Regression (MLR)
3. To determine the effect of span and period of supervision on student teacher performance in teaching practice in public universities in Kenya	Span and period of supervision (Ordinal)	Performance in teaching practice (Interval)	Multiple Linear Regression (MLR)
4. To establish the effect of school type on student teacher performance in teaching practice in public universities in Kenya	School type (Nominal)	Performance in teaching practice (Interval)	Multiple Linear Regression (MLR)

Source: Author, 2015

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents findings from a research survey conducted on school attachment practices and student teacher performance in Kenyan public universities. This study was designed to establish the effect of supervision on student teacher performance in Kenyan public universities. It also sought to determine the effect of supervisors' qualifications on student teacher performance in Kenyan public universities. In addition, the study determined the effect of the span and period of supervision on student teacher performance in Kenyan public universities. Finally, the study sought to establish the effect of school characteristics on student teacher performance in Kenyan public universities. The results of this study are presented in form of tables and discussed in the context of objectives after the demographic data and description of the variables used in the study.

4.2 Demographic Data and Variables used in this Study

This section presents data on distribution of student teacher respondents, description of the variables used in the study and descriptive statistics of variables used in the analysis of data.

4.2.1 Distribution of Student Teacher Respondents by Sex and University

A total of 339 student teachers in the five universities namely; Egerton, Kenyatta, Maseno, Masinde Muliro and Moi were sampled to participate in the study. Therefore,

respondents were asked to indicate the university enrolled and their sex. The distribution of the student teachers by sex and university is presented in Table 4.1.

Table 4.1 Student Teacher Respondents by Sex and University

Sex of student		Student's University					Total
		Egerton	Kenyatta	Maseno	MMUST	Moi	
Female		22	16	39	50	27	154
	a	14.29	10.39	25.32	32.47	17.53	100
	b	51.16	53.33	50	53.76	51.92	52.03
Male		21	14	39	43	25	142
	a	14.79	9.86	27.46	30.28	17.61	100
	b	48.84	46.67	50	46.24	48.08	47.97
Total		43	30	78	93	52	296
	a	14.53	10.14	26.35	31.42	17.57	100
	b	100	100	100	100	100	100

Note. a=row percentages, b=column percentages

Source: Field Data, 2016

Table 4.1 indicates that the response rate for student teachers was 296 (87.32%). Besides, Table 4.1 indicates that the female student teacher respondents were more than their male counterparts within and across the public universities except Maseno. The preliminary results suggest gender parity in enrolment in education programme in public universities; however, female teachers seem to be slightly higher. Besides, data in Table 4.1 indicate that MMUST had the highest number of respondents followed by Maseno. This could be attributed to the fact that the two universities are within Western region and their high enrolment could be because student teachers prefer schools nearer their locality. This

could explain the low number of respondents in Kenyatta and Moi universities. The sex of the student teachers and their university was considered important in establishing whether these variables explained variations in student teacher performance in teaching practice. The variables are treated in the study as controls.

4.2.2 Description of the Variables used in the Analysis of Data

This study used a total of thirty six (36) variables in the analysis of data. The description of the variables is presented in Table 4.2.

Table 4.2: Description of Variables used in the Analysis of the Data

Variable	Variable label	Scale	Min	Max
b82	Student's assessment z-score	Interval	-1.63	1.83
b115	Total assessments	Interval	2	8
b2111	Number of times for professor in subject 1	Interval	0	3
b2121	Number of times for doctor in subject 1	Interval	0	3
b2131	Number of times for M.Ed/B.Ed holders in subject	Interval	0	3
b315	Number of days between 1st and 2nd assessment	Interval	5	81
b316	Number of days between 1st and 3rd assessment	Interval	22	87
b318	Number of days between 2nd and 3rd assessment	Interval	11	75
b323	Total number of assessments	Interval	2	8
b116	Assessor 1=Cooperating teacher	Dummy	0	1
b34	Student's year of study 1=4th	Dummy	0	1
b511	Type of school of attachment 1=Boys School	Dummy	0	1
b513	Type of school of attachment 3=Mixed School	Dummy	0	1
b521	Category of school of attachment 1=Day School	Dummy	0	1
b522	Category of school of attachment 2=Boarding School	Dummy	0	1
b531	Status of school of attachment 1=National School	Dummy	0	1
b532	Status of school of attachment 2=Extra County School	Dummy	0	1
b533	Status of school of attachment 3=County School	Dummy	0	1
b65	Students' programme 1=Arts	Dummy	0	1
b712	2=Disagree that student was at ease with assessor	Dummy	0	1
b714	4=Agree that student was at ease with assessor	Dummy	0	1
b715	5=Strongly Agree that student was at ease with assessor	Dummy	0	1
b742	2=Disagree that learners were free during the lesson	Dummy	0	1
b744	4=Agree that learners were free during the lesson	Dummy	0	1
b745	5=Strongly Agree that learners were free during the lesson	Dummy	0	1
b752	2=Disagree that assessor appreciated student's lesson	Dummy	0	1
b755	5=Strongly Agree that assessor appreciated student's lesson	Dummy	0	1
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	Dummy	0	1
b772	2=Disagree that assessor took enough time to discuss the lesson	Dummy	0	1
b774	4=Agree that that assessor took enough time to discuss the lesson	Dummy	0	1
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	Dummy	0	1
b781	1=Strongly Disagree that assessor supervised other activities out of class	Dummy	0	1
b783	3=Neutral that assessor supervised other activities out of class	Dummy	0	1
b793	3=Neutral that assessor boosted my performance	Dummy	0	1
b794	4=Agree that assessor boosted my performance	Dummy	0	1
b795	5=Strongly Agree that assessor boosted my performance	Dummy	0	1

Note. Min=Minimum; Max=Maximum:

Source: Field Data, 2016

From Table 4.2 the variables used in the data analysis were dummy or interval. Out of the thirty six variables; nine were interval while the rest were dummy. The outcome variable for the study was the student teacher assessment z-score and was measured at interval scale with a minimum of -1.63 below the mean and 1.83 above the mean. The three independent variables namely: frequency of supervision (total assessments and Assessor 1=Cooperating teacher); supervisor's qualification (number of times for professor in subject 1, number of times for doctor in subject 1 and number of times for M.Ed/B.Ed holders in subject); and span and period of supervision (number of days between 1st and 2nd assessment, number of days between 1st and 3rd assessment, number of days between 2nd and 3rd assessment and total number of assessments) were measured at interval scale and used in the analysis of objective1, 2 and 3 respectively. The fourth independent variable (school characteristics) with indicators of school type (boys or girls or mixed), school category (boarding or day) and school status (National, Extra County, County, Sub-County) was a dummy variable and used in the analysis of objective 4. The variables student characteristics (programme of study and year of study) and students' perception on university supervisors (was rated from 1 to 5 where 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree) were dummy variables and used in the study as controls.

4.2.3 Student Teacher Scores in Teaching Practice

The Heads of Teaching Practice Units were asked to indicate the results of the sampled student teacher respondents in teaching practice. This data was matched with the student

responses in the questionnaire using their university registration numbers. Besides, the student raw scores in teaching practice were standardized using z-scores with a mean of zero and standard deviation of 1. To do so each of the student's raw score in teaching practice were tabulated. Thereafter, the mean and standard deviation of the student raw scores in teaching practice were calculated by the aid of Stata and found to 66.32095 and 6.935663 respectively with a minimum of 55 and a maximum of 79. The mean and standard deviation of the raw scores were used to convert each of the student teacher raw score into z-scores using the formula: student teacher z-score (b82) = (student teacher raw score (b81)-66.32095)/6.935663.

The standard score (more commonly referred to as a z-score) is a very useful statistic because it allows a researcher to calculate the probability of a score occurring within the normal distribution. Besides, it enables the researcher to compare two scores that are from different normal distributions. The standard score does this by converting/ standardizing scores in a normal distribution to z-scores in what becomes a standard normal distribution (http://influentialpoints.com).

Z-Scores tell us whether a particular score is equal to the mean, below the mean or above the mean of a bunch of scores. Besides, they can also tell us how far a particular score is away from the mean in other words how is a particular score close to the mean or far away from the mean. Further z-scores can help a researcher understand how typical a particular score is within a bunch of scores. If data are normally distributed, approximately 95% of the data should have z-score between -2 and +2. Z-scores that do

not fall within this range may be less typical of the data in a bunch of scores. In addition z-scores helps the researcher to compare individual scores from different bunches of data. We can use Z-scores to standardize scores from different groups of data. Then we can compare raw scores from different bunches of data. This was the aim of this study such that student scores were compared for various universities. Since various universities has varied criteria for scoring students on teaching practice there was need to standardize the scores. The student teacher raw and z-scores are presented in Table 4.3.

Table 4.3: Student Teacher Performance in Teaching Practice

Raw Scores	Z-Score	Frequency	Percent	Cumulative %
55	-1.632281	12	4.05	4.05
56	-1.488099	8	2.7	6.76
57	-1.343916	3	1.01	7.77
58	-1.199734	13	4.39	12.16
59	-1.055552	25	8.45	20.61
60	-0.9113693	22	7.43	28.04
61	-0.7671869	15	5.07	33.11
62	-0.6230046	8	2.7	35.81
63	-0.4788223	14	4.73	40.54
64	-0.33464	14	4.73	45.27
65	-0.1904576	20	6.76	52.03
66	-0.0462753	4	1.35	53.38
67	0.097907	4	1.35	54.73
68	0.2420893	11	3.72	58.45
69	0.3862717	13	4.39	62.84
70	0.530454	22	7.43	70.27
71	0.6746363	7	2.36	72.64
72	0.8188186	11	3.72	76.35
73	0.963001	17	5.74	82.09
74	1.107183	3	1.01	83.11
75	1.251366	14	4.73	87.84
76	1.395548	8	2.7	90.54
77	1.53973	9	3.04	93.58
78	1.683913	7	2.36	95.95
79	1.828095	12	4.05	100
Total		296	100	

Source: Stata Output, 2016

Data in Table 4.3 indicates that 53% of the students' scores were lying below the mean while 47% were above the mean. The data suggests that most of the student teachers performed below the mean. The variation in student scores in the study is linked to frequency of supervision, supervisors' qualification, span and period of supervision and

school characteristics. The student teacher z-score in teaching practice is treated as the outcome variable.

4.2.4 Descriptive Statistics of the Variables used in the Analysis of Data

The study also generated descriptive statistics for the variables used in the analysis of data. The results are presented in Table 4.4.

Table 4.4: Descriptive Statistics for Variables used in the Analysis of the Data

Variable	Variable label	Mean	SE	SD	Min	Max
b82	Student's assessment z-score	0.00	0.06	1.00	-1.63	1.83
b115	Total assessments	5.14	0.08	1.45	2	8
b2111	Number of times for professor in subject 1	0.02	0.01	0.25	0	3
b2121	Number of times for doctor in subject 1	1.13	0.06	1.01	0	3
b2131	# of times for M.Ed/B.Ed holders in subject	1.07	0.05	0.84	0	3
b315	# of days between 1st and 2nd assessment	33.63	0.72	12.16	5	81
b316	# of days between 1st and 3rd assessment	56.21	1.00	12.29	22	87
b318	# of days between 2nd and 3rd assessment	29.79	0.79	9.71	11	75
b323	Total number of assessments	5.17	0.08	1.43	2	8

Frequencies and percentages for dummy variables (percentages in parentheses)

Variable	Variable label	0=Otherwise	1=Yes
b116	Assessor 1=Cooperating teacher	266 (89.86)	30 (10.14)
b34	Student's year of study 1=4th	176 (59.46)	120 (40.54)
b511	Type of school of attachment 1=Boys School	201 (67.91)	95 (32.09)
b513	Type of school of attachment 3=Mixed School	231 (78.04)	65 (21.96)
b521	Category of school of attachment 1=Day School	259 (87.50)	37 (12.50)
b522	Category of school of attachment 2=Boarding School	110 (37.16)	186 (62.84)
b531	Status of school of attachment 1=National School	236 (79.73)	60 (20.27)
b532	Status of school of attachment 2=Extra County School	230 (77.70)	66 (22.30)
b533	Status of school of attachment 3=County School	194 (65.54)	102 (34.46)
b65	Students' programme 1=Arts	153 (51.69)	143 (48.31)
b712	2=Disagree that student was at ease with assessor	221 (74.66)	75 (25.34)
b714	4=Agree that student was at ease with assessor	240 (81.08)	56 (18.92)
b715	5=Strongly Agree that student was at ease with assessor	289 (97.64)	7 (2.36)
b742	2=Disagree that learners were free during the lesson	152 (51.35)	144 (48.65)
b744	4=Agree that learners were free during the lesson	256 (86.49)	40 (13.51)
b745	5=Strongly Agree that learners were free during the lesson	284 (95.95)	12 (4.05)
b752	2=Disagree that assessor appreciated student's lesson	157 (53.04)	139 (46.96)
b755	5=Strongly Agree that assessor appreciated student's lesson	288 (97.30)	8 (2.70)
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	279 (94.26)	17 (5.74)
b772	2=Disagree that assessor took enough time to discuss the lesson	131 (44.26)	165 (55.74)
b774	4=Agree that that assessor took enough time to discuss the lesson	261 (88.18)	35 (11.82)
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	280 (94.59)	16 (5.41)
b781	1=Strongly Disagree that assessor supervised other activities out of class	132 (44.59)	164 (55.41)
b783	3=Neutral that assessor supervised other activities out of class	262 (88.51)	34 (11.49)
b793	3=Neutral that assessor boosted my performance	44 (14.86)	252 (85.14)
b794	4=Agree that assessor boosted my performance	273 (92.23)	23 (7.77)
b795	5=Strongly Agree that assessor boosted my performance	288 (97.30)	8 (2.70)

Note. Min=Minimum; Max=Maximum; SE=Standard Error of Mean; SD=Standard Deviation, #=Number

It can be discerned form Table 4.4 that most of the universities assessors were Doctorate holders with an almost equal number of masters' holders and very few professors. The varied professional qualifications may have varied effect on students' performance in teaching practice. Professors are expected to have vast experience compared to doctorate and masters holders. Besides, the data in Table 4.4 indicates that the universities had an average span of one month between the assessments. A span of one month is relatively long and may impact negatively on the performance of student teachers in teaching practice.

In addition, the data in Table 4.4 indicate that the average assessments per student were five suggesting that the supervisions were adequate. In relation to where students were posted the data in Table 4.4 indicate that most of the student teachers were posted in boys schools compared to mixed schools, boarding schools compared to day schools, County schools compared to National and Extra County schools. These practices may have varied effect on student teacher performance in school practice. In addition, data in Table 4.4 show that there were more science based student teachers compared to Art based. An analysis of students' perception on their university lecturers indicate varied responses. The variables in Table 4.4 are used in the regression analysis for objective 1, 2, 3 and 4 and the results are presented in section 4.3, 4.4, 4.5 and 4.6 respectively.

4.3 The Effect of Frequency of Supervision on Student Teacher Performance in Teaching Practice

The first objective of the study was to establish the effect of frequency of supervision on student teacher performance in teaching practice in Kenyan public universities. The null hypothesis tested was that the frequency of supervision has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

This study therefore modeled the effect of the frequency of supervision on student teacher performance in teaching practice in Kenyan public universities using multiple linear regression analysis. To effectively do so, the study first ran a pair-wise correlation between the outcome variable (student teacher z-scores in teaching practice) and its covariates to establish plausible variables to pursue in the regression model at p=0.05. The results are presented in Table 5.1 in Appendix 5. Besides, the Kernel density results (p= 0.1117) in Figure 5.1 in Appendix 5 showed the variables included in the model were normally distributed. Further, the results of multicollinearity using variance inflation factor (VIF) test in Table 5.2 in Appendix 5 indicate that the regression model did not experience collinearity problems (Stock & Watson, 2003).

Consequently, the study used three models to measure the effect of the frequency of supervision on student teacher performance in teaching practice in Kenyan public universities. In model 1, the study assessed the effect the frequency of supervision on student teacher performance in teaching practice. In model 2 and 3 the study assessed the effect the frequency of supervision on student teacher performance in teaching practice

while controlling for students characteristics; and students characteristics and student teacher perceptions on university assessors respectively.

In the model, the value of the coefficient indicates student teacher z-scores in teaching practice. The positive sign and negative signs of the coefficient indicate increased and decreased student teacher z-scores in teaching practice respectively. The significance of the relationship between a given independent variable and the dependent variable is tested at p=0.05. The result of the multiple regression model is presented in Table 4.5.

Table 4.5: Multiple Linear Regression Coefficients of the Effect of Frequency of Supervision on Student Teacher Performance in Teaching Practice

Variable	Variable label	Model 1 (b82)			Model 2 (b82)			Model 3 (b82)		
		U.Coef	*p*	β	U.Coef	*p*	β	U.Coef	*p*	β
b115	Total assessments	-0.38	<.001	-0.548	-0.37	<.001	-0.53	-0.42	<.001	-0.61
b116	Assessor 1=Cooperating teacher	1.99	<.001	0.603	1.89	<.002	0.57	1.34	<.001	0.41
b34	Student's year of study 1=4th				-0.14	0.205	-0.07	0.01	0.96	0.00
b65	Students' programme 1=Arts				0.19	0.073	0.09	0.09	0.36	0.05
b712	2=Disagree that student was at ease with assessor							-0.18	0.18	-0.08
b714	4=Agree that student was at ease with assessor							0.45	0.02	0.18
b715	5=Strongly Agree that student was at ease with assessor							0.94	0.04	0.14
b742	2=Disagree that learners were free during the lesson							0.02	0.86	0.01
b744	4=Agree that learners were free during the lesson							0.00	1	0.00
b745	5=Strongly Agree that learners were free during the lesson							0.45	0.22	0.09
b752	2=Disagree that assessor appreciated student's lesson							0.07	0.550	0.04
b755	5=Strongly Agree that assessor appreciated student's lesson							0.37	0.23	0.06
b765	5=Strongly Agree that assessor took time to highlight my weaknesses							0.37	0.35	0.09
b772	2=Disagree that assessor took enough time to discuss the lesson							0.16	0.25	0.08
b774	4=Agree that that assessor took enough time to discuss the lesson							0.23	0.29	0.08
b775	5=Strongly Agree that assessor took enough time to discuss the lesson							-0.61	0.18	-0.14
b781	1=Strongly Disagree that assessor supervised other activities out of class							-0.25	0.04	-0.12
b783	3=Neutral that assessor supervised other activities out of class							-0.07	0.75	-0.02
b793	3=Neutral that assessor boosted my performance							0.62	0.05	0.22
b794	4=Agree that assessor boosted my performance							1.05	0.01	0.28
b795	5=Strongly Agree that assessor boosted my performance							0.78	0.18	0.13
Constant		1.74	<.001	n/a	1.65	<.001	n/a	1.25	<.001	n/a
N			296			296			296	
R^2			0.2238			0.2368			0.3550	
Root Mean Squared Error (RMSE)			0.8841			0.8796			0.8333	

Note. U.Coef=Unstandardized Coefficient; RMSE=Standard deviation of the regression model (the closer to zero better the fit)
Source: Stata Output, 2016

It can be discerned from Table 4.5 that the MLRA results in model 1 indicate that an extra assessment (whether by university supervisors or cooperating teachers) is associated with up to -0.3780916 standard deviation units below the mean. Assessment by cooperating teachers is associated with a massive 1.993505 standard deviation units above the mean. Both results are statistically significant (p<.001). The model's constant is statistically significant 1.739507 (p<.001) and explains up to 0.2238 (22.38%). The overall model is statically significant (p<.001).

In model 2 controlling for the student's characteristics (the students year of study and programme) b115 and b116 are still statistically significant with marginal differences from model 1 in their effects. The student characteristics are not significant at 5%. This suggests that students year of study and programme do not account for differences in student teacher scores in school practice. This is expected given that variation in student scores in school practice should be objectively guided by their ability to execute class and out of class activities. The overall model is significant (p<.001) and explains up 0.2368 or 23.68% of the variation in students assessment z -score (b82).

In model 3, controlling for student characteristics and their likert responses, b115 and b116 are still statistically significant (p<.001). An extra assessment (b115) is associated with decreased scores of up to -0.4194368 standard deviation units below the mean. This is contrary to the expectation that the more the assessments the higher the score of student teachers in teaching practice. The results suggest that with increased supervision student teachers scores are bound to shrink. The explanation could be that after certain

supervisions the number of supervisions do not improve but rather worsens student scores. This clearly suggests that there is no need for the university to increase the number of supervisions beyond 5 as this may disadvantage students' performance in teaching practice yet with increased supervisions it's expected that student teachers should benefit from a wider advice to improve on their areas of weaknesses within and out of class.

A number of explanations can be given for the above findings. The first could be that with increased supervisions there could be a tendency of diminishing returns on the student teacher and the assessors and both may end up not being objective. Secondly, there is a tendency of students getting tensed as supervisions increase hence more likely to make more mistakes than the previous assessment worsening further their scores. Still, there could be weak or no interactions between the student teacher and the assessor hence limited quality time on students' guidance. The assessors may also have varied expectations and instructions which may leave the students more confused than before.

Studies done (Chumba & Kiprop, 2014; Almikhlaphi, 2005), Kasomo (2012) on teacher assessments show similar results. For example, Chumba & Kiprop (2014) report indicate that the frequency of student teacher supervision being too short to make any impact on student teacher performance. Almikhlaphi (2005) attributes poor performance despite increased supervision frequencies to poor quality supervision, short period of school attachment and having a theoretical rather than a practical programme. Similarly, Kasomo (2012) observes that diminishing performance of student teachers in teaching

practice is due to failure to adhere to regulations set by public universities to govern the implementation and assessment of school attachments. He further observes that rarely do student teachers receive post supervision discussion of their lessons.

The results in Table 4.5 also show that assessment by cooperating teachers is associated with up to 1.3438 standard deviation units above the mean. This suggests that student teachers who were assessed by cooperating teachers were predicted to score higher than their counterparts assessed by the university lecturers. The results suggest that cooperating teachers may not be objective while assessing student teachers. The results also suggest failure by the cooperating teachers to adhere to regulations set by public universities to govern the implementation and assessment of school attachments. This may be a drawback to universities which use cooperating teachers instead of university lecturers to assess student teachers as a cost saving measure. The reason for the variation may also be attributed to the fact that university assessors train the student teachers and have a mandate to implement the school practice rules and instill professionalism as per the theory learned in university classrooms. Cooperating teachers may lack this enthusiasm and conformity to university expectations.

The results also indicate that the student teachers who agreed that they were at ease with the assessor were associated with up to 0.446489 standard deviation units above the mean in student assessment scores. In other words, ease with the assessor earns a student better scores. Further, the results indicate that student teachers who strongly agreed with the statement that assessor appreciated their lesson were associated with up to 0.9384008

standard deviation units above the mean in student assessment scores. Besides, the results in Table 4.5 further indicate that students who agreed with the statement that assessor boosted their performance were associated with up to 1.0538 standard deviation units score above the mean in student assessment scores.

These results suggest that student's attitude, commitment and confidence towards their assessors improves their performance in school attachment. The results also suggest that assessors who are able to motivate their students during school practice are more likely to improve their performance in school practice. Chumba & Kiprop (2014) agrees with the fact that quality supervision and increased contact of supervisor with student teacher improves student teacher performance in teaching practice. Contrary, the results of the regression in Table 4.5 show that student teachers who strongly disagree with the statement that assessor supervised other activities out of class is associated with up to -0.2498599 standard deviation units score below the mean in student assessment scores.

The results reinforce the fact that student attitude and commitment towards assessors is important in explaining variation in student teacher performance in school practice. The results also indicate that student selected perceptions towards university assessors were able to improve the overall model by 11.82 points suggesting that the variable plays an important role in predicting students' scores in school practice.

Awaya et al. (2003) suggests the need for a mentor in sharing practices and knowledge with student teachers as a way of improving the mentees performance in teaching

practice. Similarly, Hayes (1999) stresses the need for assessors having the responsibility of helping and advising the student teacher on how to incorporate their insights gained so far into their practical teaching and maintain a fluidity with their existing notions about teaching and learning until they move beyond a purely intellectual appreciation of their significance and the concepts that have been taken on board by the subconscious. The overall model is significant ($p<.001$) and explains up 0.3550 or 35.50% of the variation in students assessment z-score.

The interview with heads of school attachment units revealed that:

> *Most universities had regulations and rules regarding the frequency of supervisions. For instance Egerton, Kenyatta and Maseno Universities have a policy of 4 assessments per student teachers while Masinde Muliro and Moi Universities emphasize on at least 3 assessments' per student teacher. The heads of school attachment units from Egerton, Moi, Maseno and Masinde Muliro Universities also indicated that supervisors were send out for supervision between 2 and 3 times throughout the school attachment session while Kenyatta University did not send any supervisor for classroom assessment.*

This study therefore modeled the predictors of school assessment to be total assessments, assessor is a cooperating teacher, agree that student was at ease with assessor, strongly agree that student was at ease with assessor, strongly disagree that assessor supervised other activities out of class and agree that assessor boosted their performance. These variables have met and surpassed the ≥ 0.10 (Hox, 1995; Hungi & Thuku, 2010; Ejakait et al, 2016a; 2016b).

This study further tested the overall effect of the individual proxies of frequency of supervision on student teacher performance in teaching practice in Kenyan public

universities. Since frequency of supervision is statistically significant at the 95% level test b115 (total assessments), F (1, 274) = 61.86, p =0.0000), test b116 (1=Cooperating teacher's assessment; 0=University supervisor assessment) F (1, 274) = 14.24, p=0.0002. The hypothesis which states that frequency of supervision has no statistically significant relationship with overall student performance score in school attachment is therefore rejected. Indeed the results show that frequency of supervision has a statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

4.4 The Effect of Supervisors Qualification on Student Teacher Performance in Teaching Practice

The second objective of the study was to establish the effect of supervisor's qualification on student teacher performance in teaching practice in Kenyan public universities. The null hypothesis tested was that the supervisor's qualification has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities. To achieve this objective , the study first ran a pair-wise correlation between the outcome variable (student teacher z-scores in teaching practice) and its covariates to establish plausible variables to pursue in the regression model at p=0.05. The results are presented in Table 5.3 in Appendix 6. Besides, the Kernel density results (p= 0.1330) in Figure 5.2 and multicollinearity results in Table 5.4 in Appendix 6 showed the variables included in the model were normally distributed and that the regression model did not experience collinearity problems (Stock & Watson, 2003).

This study therefore modeled the effect of the supervisor qualifications on student teacher performance in teaching practice in Kenyan public universities using multiple linear regression analysis. In model 1, the study assessed the effect of supervisor qualifications on student teacher performance in teaching practice. In model 2 and 3, the study assessed the effect of supervisor qualifications on student teacher performance in teaching practice while controlling for students characteristics; and students characteristics and student teacher perceptions on university assessors respectively.

Similarly, in the model, the value of the coefficient indicates student teacher z-scores in teaching practice. The positive sign and negative signs of the coefficient indicate increased and decreased student teacher z-scores in teaching practice respectively. The significance of the relationship between a given independent variable and the dependent variable is tested at p=0.05. The result of the multiple regression model is presented in Table 4.6.

Table 4.6: Multiple Linear Regression Coefficients of the Effect of Supervisors Qualifications on Student Teacher Performance in Teaching Practice

Variable	Variable label	Model 1 (b82)			Model 2 (b82)			Model 3 (b82)		
		U.Coef	*P*	B	U.Coef	*P*	B	U.Coef	*p*	β
b2111	Number of times for professor in subject 1	-0.47	0.011	-0.12	-0.43	0.06	-0.11	-0.44	0.01	-0.11
b2121	Number of times for doctor in subject 1	-0.71	<.001	-0.72	-0.68	<.001	-0.68	-0.72	<.001	-0.73
b2131	Number of times for M.Ed/B.Ed holders in subject	-0.37	<.001	-0.31	-0.33	0.001	-0.28	-0.39	<.001	-0.33
b34	Student's year of study 1=4th				-0.17	0.096	-0.08	-0.04	0.670	-0.02
b65	Students' programme 1=Arts				0.207	0.037	0.10	0.152	0.13	0.08
b712	2=Disagree that student was at ease with assessor							-0.205	0.11	-0.09
b714	4=Agree that student was at ease with assessor							0.490	0.01	0.19
b715	5=Strongly Agree that student was at ease with assessor							0.465	0.25	0.07
b742	2=Disagree that learners were free during the lesson							0.040	0.73	0.02
b744	4=Agree that learners were free during the lesson							-0.120	0.52	-0.04
b745	5=Strongly Agree that learners were free during the lesson							-0.112	0.72	-0.02
b752	2=Disagree that assessor appreciated student's lesson							0.086	0.46	0.04
b755	5=Strongly Agree that assessor appreciated student's lesson							0.342	0.29	0.06
b765	5=Strongly Agree that assessor took time to highlight my weaknesses							0.713	0.060	0.17
b772	2=Disagree that assessor took enough time to discuss the lesson							0.17661	0.17	0.09
b774	4=Agree that that assessor took enough time to discuss the lesson							-0.1562	0.45	-0.05
b775	5=Strongly Agree that assessor took enough time to discuss the lesson							-0.9133	0.07	-0.21
b781	1=Strongly Disagree that assessor supervised other activities out of class							-0.0765	0.52	-0.04
b783	3=Neutral that assessor supervised other activities out of class							-0.0414	0.85	-0.01
b793	3=Neutral that assessor boosted my performance							0.30723	0.240	0.11
b794	4=Agree that assessor boosted my performance							0.73437	0.03	0.20
b795	5=Strongly Agree that assessor boosted my performance							0.07333	0.88	0.01
Constant		1.21	<.001	n/a	1.10	<.001	n/a	0.74	<.001	n/a
N			296			296			296	
R^2			0.2862			0.3032			0.3840	
Root Mean Squared Error (RMSE)			0.8492			0.8419			0.8159	

Note. U.Coef=Unstandardized Coefficient; RMSE=Standard deviation of the regression model (the closer to zero better the fit)
Source: Stata Output, 2016

The results of the multiple regression in model 1 in Table 4.6 indicate that all assessors qualifications from masters to professor are statistically significant at p=0.05 and are associated with scores below the mean in student assessment scores. The overall model was statistically significant (p<.001) explaining 0.2862 or 28.62% of the variation in student assessment scores.

Controlling for the student's characteristics in model 2, the results in Table 4.6 indicate that supervisors' qualification is still significantly associated with student assessment scores except the supervisor being a professor (b2111) which is insignificant at 5%. Surprisingly, student teachers undertaking Arts programme are predicted to score up to 0.2065637 standard deviation units above the mean compared with their science programme colleagues. The overall model is significant (p<.001) and explains up 0.3032 or 30.32% of the variation in student teacher z-scores in teaching practice.

Controlling for the student's characteristics and their responses on the five-point likert scale in model 3, supervisor qualifications are all negatively associated with student scores. The results indicate that professors are associated with up to -0.4447395 (p=0.013) standard deviation units below the mean in their assessment. PhD holders (Doctors) are associated with up to -0.7216197 (p<.001) standard deviation units below the mean in their assessment. Master's degree and first degree holders are associated with up to -.3921366 (p=0.001) standard deviation units below the mean in their assessment.

The results suggest variations in the effect of supervisor's qualification on students' z-scores in school practice in assessments with a wider gap between PhD holders and the rest and smaller one between professors and master's holder. The results suggest that masters' holders and professors could be more objective that the PhD holders as they had a smaller negative effect on student z-scores compared to the PhD holders. The results also suggest that the assessor's qualification may be impacting negatively on students' z-scores in school practice.

The difference in the effect of supervisor's qualification on students' z-scores in school practice could be explained by a number of reasons. Kenyatta University used a different model during school attachment. The findings revealed that the university inducted cooperating teachers, also referred to as mentors, and used them to supervise student teachers as a cost effective move.

According to TESSA (2015) the variation could be as a result of teaching experience in the area of assessors certified specialty; consistently in demonstrating high quality teaching; desirable personal and professional attitudes; professional growth; perception of assessors upon supervising the growth of student teachers as a challenge and a contribution to assessors profession; good communication skills and constructive feedback. This is in agreement with Nais (2003) who submits that a supervisor should have the ability to account of what student teachers know and have good knowledge of content. Similarly, Hanushek (1992) estimates that the difference between having a good

teacher and having a bad teacher can exceed one grade-level equivalent in annual achievement growth.

Other studies (Ngidi & Sibaya, 2003; Marais & Meir, 2004; Kiggundu & Nayimuli, 2009; Yusuf, 2010) have also revealed a relationship between the supervisors' qualifications and student teacher performance. For example, Ngidi and Sibaya (2003) and Yusuf (2010) posit that experience, job status and age had determining influence on assessor's ways of assessment of student teacher during their internship.

The results are at variance by those done by a number of scholars. For instance, a study by Jekayinfa et al. (2012) on lecturers' assessment of teaching practice exercise in Nigerian Universities indicate no significant difference in the assessment of the quality of teaching practice on the basis of job status. The difference could be attributed to the sample used. While Jekayinfa et al. used only lecturers; this study used the student teachers who are the main consumers of school attachment practices and heads of school practice units. Unlike Jekayinfa et al. who asked the lecturers to fill required information about student teachers, the present study used the actual student teachers while on school practice. Similarly, the results by Jekayinfa (2000) indicate no variance in disposition to matters bordering on teaching and learning irrespective of assessors qualification. Cavalluzzo 2004, Hanushek et al., 2005; Rock Off, 2004; Rowan et al, 2002 studies also content that assessors qualifications marginally improved student performance in teaching practice.

The interviews with the head of school attachment units indicated that:

> *Egerton, Moi, Masinde Muliro and Maseno universities required that school attachment supervisors to either have masters or PhD degree while Kenyatta university were flexible enough to accommodate Bachelors' degree. The interview results further revealed that Maseno university send out 20 PhD holders' 12 of who were males while 9 were female and 15 masters' holders with 9 males and 6 females. Egerton had 10 PhD holders; 7 males and 3 females and 6 masters' holders with 4 males and 2 females. Moi had 8 PhD holders 5 male and 3 females and 11 master holders 7 male with 4 female. MMUST had 12 PhD holders 7 males and 5 females, 9 masters' holders 5 male and 4 females. Finally, Kenyatta University sends out 15 masters/bachelors holders 8 males and 7 females. These results indicate that few professors were sent by the universities in the field as indicated by the regression model. The results also showed that most assessors were master's holders*

In addition, results in Table 4.6 show those student teachers who agree that they were at ease with the assessor and that the assessor boosted their performance were associated with up to 0.490 and 0.73437 standard deviation units score above the mean in student assessment scores respectively. The results further suggest that student's attitude, commitment and confidence towards their assessors improves their performance in school attachment as depicted in Table 4.5. The results echo those of Kwo (1994) which emphasis on a strong relationship between the mentor and the mentee that relies on empathy, close professional understanding and common language. Similarly, Awaya et al, 2003, emphasizes sharing of practical knowledge between the mentor and mentee.

This study therefore modeled the predictors of school assessment scores in teaching practice in Kenyan public universities to be supervisor's qualification (professors, PhD holders and Masters holders'), agree that student was at ease with assessor, and agree that assessor boosted my performance as they meet the ≥0.10 threshold. The overall model is

significant (p<.001) and explains up 0.3840 or 38.40% of the variation in student teacher z-scores in teaching practice.

This study further pursued the overall effect of the individual proxies of supervisor's qualification on student teacher performance in teaching practice in Kenyan public universities. Since supervisor's qualification is statistically significant, at the 95% level scores (b2111 = 0, F (1, 273) = 6.26, p = 0.0129; b2121 = 0, F (1, 273) = 58.67, p< 0.001 and b2131 = 0, F (1, 273) =10.34 p= 0.0015), The study therefore reject the null hypothesis that supervisor's qualification has no statistically significant effect on overall student teacher assessment score in school attachment. Indeed, the results show that supervisor's qualification has a statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

4.5 The Effect of Span and Period of Supervision on Student Teacher Performance in Teaching Practice

The third objective of the study was to establish the effect of span and period of supervision on student teacher performance in teaching practice in Kenyan public universities. The null hypothesis tested was that the span and period of supervision has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

In order to model the effect of the span and period of supervision on student teacher performance in teaching practice using multiple linear regression analysis the study first

ran a pair-wise correlation between the outcome variable (student teacher z-scores in teaching practice) and its covariates. This was intended to establish plausible variables to pursue in the regression model at p=0.05. The results are presented in Table 5.5 in Appendix 7. Besides, the Kernel density results ($p<.001$) in Figure 5.3 and multicollinearity results in Table 5.6 in Appendix 7 showed the variables included in the model were normally distributed and that the regression model did not experience collinearity problems (Stock & Watson, 2003).

In model 1, the study assessed the effect of span and period of supervision on student teacher performance in teaching practice. In model 2 and 3, the study assessed the effect of span and period of supervision on student teacher performance in teaching practice while controlling for students characteristics; and students characteristics and student teacher perceptions on university assessors respectively.

In the model, the value of the coefficient indicates student teacher z-scores in teaching practice. The positive sign and negative signs of the coefficient indicate increased and decreased student teacher z-scores in teaching practice respectively. The significance of the relationship between a given independent variable and the dependent variable is tested at p=0.05. The result of the multiple regression model is presented in Table 4.7.

Table 4.7: Multiple Linear Regression Coefficients of the Effect of Span and Period of Supervision on Student Teacher Performance in Teaching Practice

Variable	Variable label	Model 1 (b82)			Model 2 (b82)			Model 3 (b82)		
		U.Coef	*p*	β	U.Coef	*p*	β	U.Coef	*p*	β
b315	Number of days between 1st and 2nd assessment	0.01	0.384	0.12	0.01	0.338	0.14	0.01	0.484	0.06
b316	Number of days between 1st and 3rd assessment	-0.03	0.074	-0.32	-0.03	0.082	-0.32	0.00	0.796	-0.03
b318	Number of days between 2nd and 3rd assessment	0.00	0.882	0.02	0.00	0.868	0.03	-0.01	0.353	-0.07
b323	Total number of assessments	0.41	<.001	0.38	0.37	0.002	0.35	0.10	0.522	0.09
b34	Student's year of study 1=4th				-0.20	0.218	-0.10	0.21	0.150	0.10
b65	Students' programme 1=Arts				0.11	0.450	0.05	-0.03	0.830	-0.01
b712	2=Disagree that student was at ease with assessor							-0.37	0.017	-0.16
b714	4=Agree that student was at ease with assessor							0.93	0.001	0.41
b715	5=Strongly Agree that student was at ease with assessor							0.47	0.178	0.09
b742	2=Disagree that learners were free during the lesson							0.29	0.076	0.15
b744	4=Agree that learners were free during the lesson							0.18	0.446	0.07
b745	5=Strongly Agree that learners were free during the lesson							0.02	0.954	0.01
b752	2=Disagree that assessor appreciated student's lesson							0.15	0.290	0.08
b755	5=Strongly Agree that assessor appreciated student's lesson							0.20	0.532	0.05
b765	5=Strongly Agree that assessor took time to highlight my weaknesses							1.25	<.001	0.32
b772	2=Disagree that assessor took enough time to discuss the lesson							-0.22	0.161	-0.12
b774	4=Agree that that assessor took enough time to discuss the lesson							0.16	0.569	0.06
b775	5=Strongly Agree that assessor took enough time to discuss the lesson							-0.44	0.060	-0.12
b781	1=Strongly Disagree that assessor supervised other activities out of class							-0.26	0.109	-0.13
b783	3=Neutral that assessor supervised other activities out of class							-0.17	0.453	-0.05
b793	3=Neutral that assessor boosted my performance							-0.29	0.232	-0.11
b794	4=Agree that assessor boosted my performance							-0.02	0.953	-0.01
b795	5=Strongly Agree that assessor boosted my performance							-0.34	0.367	-0.07
Constant		-1.95	<.001	n/a	-1.72	<.001	n/a	0.74	<.001	n/a
N			152			152			152	
R^2			0.316			0.3268			0.5915	
Root Mean Squared Error (RMSE)			0.8492			0.8152			0.6759	

Note. U.Coef=Unstandardized Coefficient; RMSE=Standard deviation of the regression model (the closer to zero better the fit)
Source: Stata Output, 2016

It can be discerned in Table 4.7 that an extra assessment (range is from 2 to 8) is associated with up to 0.4129307 standard deviation units above the mean. This is expected finding because students need to be getting better scores with time the rest of the span and period variables are insignificant. The overall model was statistically significant, p=.001 explaining 0.3160 or 31.60% of the variation in student teacher scores in teaching practice.

Controlling for the student's characteristics in model 2, an extra assessment (b323, range is from 2 to 8) is associated with up to 0.3724918 (p=.002) standard deviation units above the mean in student teacher scores in teaching practice. The rest of the span and period variables are insignificant. The overall model is significant (p=.001) and explains up to 0.3268 or 32.68% of the variation in student teacher scores in teaching practice.

Controlling for the student's characteristics and students' responses on their university assessors on a likert scale in model 3, none of the span and period variables (number of days between 1st and 2nd assessment, number of days between 1st and 3rd assessment, number of days between 2nd and 3rd assessment and total number of assessments) are statistically significant. The results suggests that variations in students teacher scores in teaching practice in Kenyan public universities are not influenced by span and period of assessment. The findings are expected given the fact that what matters is the quality of assessment and not how they are spaced. This finding suggests that if quality assessment is done the span within which is done is not important.

Croft (1996) emphasizes on the need for assessors taking time to plan for the available time and expected activities adequately to improve of teacher performance during teaching practice. Davidson (1997) also contents for the need of organizations and having realistic quality time with mentees if any positive impact is to be achieved. Universities have been accused of overburdening supervisors with a lot of work making school practice fruitless. For instance, during school practice supervisors have a duty to supervise their lessons, other assigned activities, guidance and counseling as well as provide the student teachers with feedback that would enable them to criticize their own work and reform themselves. This has been a major setback to quality supervision during school assessment.

The results differ with those of Soderstrom et al., (2014) suggesting that spaced frequencies are better than non-spaced frequencies but widely spaced frequencies are better than narrowly spaced frequencies because they produce longer time retention rates. Similarly, Toppiner & Gerbier (2014) results indicate that subsequent review spaced out over time leads to superior learning than having the frequencies occur in close temporal succession.

The findings from the interviews with the head of school attachment units indicated:

> *Responses from heads of school attachment unit on the year when student teachers are send out for school attachment revealed that apart from Maseno University which carried out attachment during 4th year, the rest did it during 3rd year. There were a small number of 4th years from Masinde Muliro University who were facing out the trend. Responses from the interviews further revealed that apart from Moi University that send out student teachers for*

school attachment during term one, the rest carried out the practice during 2nd term.

The multiple linear regression in Table 4.7 indicate selected student perceptions on their university supervisors to have had varied effect on student teacher scores in teaching practice reinforcing the results in Table 4.5 and 4.6. The results indicate that student teacher disagreeing with the statement that they were at ease with supervisor is associated with up to -0.3693256 (p=0.017) standard deviation units below the mean and meets the threshold to be flagged as a predictor. This suggests that students who are uneasy with their assessor are predicted to score less. The opposite is true.

Besides, a student teacher agreeing with the statement that they were at ease with supervisor is associated with up to 0.9301205 (p=0.001) standard deviation units above the mean and meets the threshold to be flagged as a predictor. In the same vein, a student teacher who strongly agreed with the statement that an assessor took time to highlight their weaknesses is associated with up to 1.25059 (p<.001), more than one standard deviation above the mean and surpasses the threshold to be flagged as a predictor.

This results emphasis those in Table 4.5 and 4.6 indicating that student's attitude, commitment and confidence towards their assessors improves their performance in school attachment. Besides, the results indicate that assessors' quality time with the student teacher significantly increased their scores in teaching practice. This is expected given that assessors are supposed to guide student teachers in classroom and out of class

activities so as to perfect their professionalism. The big issue may not really be the time factor as such, but whether the time available improves performance.

This finding is in tandem with Aronson et al., (2005) study which showed positive relationship between time spent by assessors and student learning outcomes in assessment. The study indicates a strong correlation between quality time of assessors with students and the teaching practice outcomes. Similarly, Wahlheim, et al, (2014) study emphasizes on the need for quality time between the assessor and student teachers so as to allow the student teachers reflect on the feedback they receive and enable them to make adjustments and to try again. This he argues improves student teachers scores in teaching practice.

However, available reviewed literature suggests that the duration for school attachments is short and it is not up to the international standard. Farooq (1990) points out that the duration for school attachments in developing countries is short as compared with the developed countries. Rafaquat (2002) recommends that the duration for school attachment be increased so as to provide quality interactions between assessors and student teachers. Almikhlaphi (2005) identifies poor supervision, short period of school attachment and having a theoretical rather than a practical programme as some of the short comings of school attachment. In addition, Nakpodin (2011) remarks that the period of two weeks for school attachment is too short as it does not provide the student teacher with ample opportunity to effectively gain the experience which the exercise is intended to encourage while Ekundayo et al. (2014) lament on the decline in the quality of school

attachments being offered by teacher training institutions as the exercise is considered inadequate especially at the university level.

The overall model is significant ($p<.001$) and explains up 0.5915 or 59.15% of the variation in student teacher z-score in teaching practice. Since span and period variables are all statistically insignificant (b315 =0, F (1, 128) = 0.49, p= 0.4843; b316 = 0, F(1, 128) =0.07, p =0.7960; b318 = 0, F(1, 128) = 0.87, p= 0.3532 and b323 = 0, F(1, 128) =0.41, p =0.5216 in the final model, at the 95% level, the study fails to reject the null hypothesis that such span and period variables do not have any effect on student assessment scores in teaching practice in Kenyan public universities. Indeed, the finding suggest that that span and period of supervision has no statistically significant effect on student teacher performance in Kenyan public universities.

4.6 The Effect of School Characteristics on Student Teacher Performance in Teaching Practice

The fourth objective of the study was to establish the effect of school characteristics on student teacher performance in teaching practice in Kenyan public universities. The null hypothesis tested was that school characteristics have no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities.

In order to model the effect of school characteristics on student teacher performance in teaching practice using multiple linear regression analysis the study also ran a pair-wise correlation between the outcome variable (student teacher z-scores in teaching practice)

and its covariates. This was intended to establish plausible variables to pursue in the regression model at p=0.05. The results are presented in Table 5.7 in Appendix 8. Besides, the Kernel density results ($p<.001$) in Figure 5.4 and multicollinearity results in Table 5.8 in Appendix 8 showed the variables included in the model were normally distributed and that the regression model did not experience collinearity problems (Stock & Watson, 2003).

In model 1, the study assessed the effect of school characteristics on student teacher performance in teaching practice. In model 2 and 3 the study assessed the effect of school characteristics on student teacher performance in teaching practice while controlling for students characteristics; and students' characteristics and student teacher perceptions on university assessors respectively. In the model, the value of the coefficient indicates student teacher z-scores in teaching practice. The positive sign and negative signs of the coefficient indicate increased and decreased student teacher z-scores in teaching practice respectively. The significance of the relationship between a given independent variable and the dependent variable is tested at p=0.05. The result of the multiple regression model is presented in Table 4.8.

Table 4.8: Multiple Linear Regression Coefficients of the Effect of School Characteristics on Student Teacher Performance in Teaching Practice

Variable	Variable label	Model 1 (b82)			Model 2 (b82)			Model 3 (b82)		
		U.Coef	*p*	β	U.Coef	*p*	β	U.Coef	*p*	β
b511	Type of school of attachment 1=Boys School	0.00	0.965	0.00	-0.02	0.810	-0.01	0.00	0.981	0.00
b513	Type of school of attachment 3=Mixed School	-0.14	0.233	-0.06	-0.15	0.195	-0.06	-0.06	0.485	-0.03
b521	Category of school of attachment 1=Day School	-0.08	0.506	-0.03	-0.13	0.273	-0.04	0.00	0.990	0.00
b522	Category of school of attachment 2=Boarding School	0.19	0.128	0.09	0.15	0.225	0.07	0.13	0.232	0.06
b531	Status of school of attachment 1=National School	1.89	<.001	0.76	1.89	<.001	0.76	2.03	<.001	0.82
b532	Status of school of attachment 2=Extra County School	1.25	<.001	0.52	1.24	<.001	0.52	1.33	<.001	0.55
b533	Status of school of attachment 3=County School	0.51	<.001	0.24	0.48	<.001	0.23	0.52	<.001	0.25
b34	Student's year of study 1=4th				-0.23	0.001	-0.12	-0.06	0.430	-0.03
b65	Students' programme 1=Arts				0.04	0.576	0.02	0.02	0.723	0.01
b712	2=Disagree that student was at ease with assessor							-0.05	0.544	-0.02
b714	4=Agree that student was at ease with assessor							0.24	0.040	0.09
b715	5=Strongly Agree that student was at ease with assessor							0.53	0.008	0.08
b742	2=Disagree that learners were free during the lesson							0.11	0.160	0.06
b744	4=Agree that learners were free during the lesson							0.08	0.566	0.03
b745	5=Strongly Agree that learners were free during the lesson							0.55	0.034	0.11
b752	2=Disagree that assessor appreciated student's lesson							-0.07	0.396	-0.04
b755	5=Strongly Agree that assessor appreciated student's lesson							0.07	0.813	0.01
b765	5=Strongly Agree that assessor took time to highlight my weaknesses							-0.58	0.031	-0.13
b772	2=Disagree that assessor took enough time to discuss the lesson							-0.02	0.805	-0.01
b774	4=Agree that that assessor took enough time to discuss the lesson							0.26	0.130	0.09
b775	5=Strongly Agree that assessor took enough time to discuss the lesson							-0.17	0.467	-0.04
b781	1=Strongly Disagree that assessor supervised other activities out of class							-0.15	0.069	-0.08
b783	3=Neutral that assessor supervised other activities out of class							0.10	0.533	0.03
b793	3=Neutral that assessor boosted my performance							-0.09	0.616	-0.03
b794	4=Agree that assessor boosted my performance							0.20	0.416	0.05
b795	5=Strongly Agree that assessor boosted my performance							-0.08	0.859	-0.01
Constant		-0.92	<.001	n/a	-0.79	<.001	n/a	-0.88	<.001	n/a
N			152			152			152	
R^2			0.6338			0.6469			0.7246	
Root Mean Squared Error (RMSE)			0.6125			0.6035			0.5496	

The results of the multiple regression in model 1 in Table 4.8 indicate that all school status variables are statistically significant at the 95% level. The other school characteristics variables (school type and school category) are not statistically significant. The results in Table 4.8 indicate that national schools are associated with up to 1.888713 ($p<.001$) close to 2 standard deviations above the mean in assessed score compared with the rest. Extra county schools are associated with up to 1.2471 ($p<.001$) more than 1 standard deviation above the mean in assessed score compared with the rest. County schools are associated with up to .5080398 ($p<.001$) standard deviation units above the mean in assessed score compared with the rest. The overall model was statistically significant, $p<.001$ explaining 0.6338 or 63.38% of the variation of in student teacher scores in teaching practice.

Controlling for the student's characteristics in model 2, the results of the multiple regression in Table 4.8 indicate that all school status variables are significant at the 95% level. The other school characteristic variables are not statistically significant. National schools are associated with up to 1.888823 ($p<.001$) close to 2 standard deviations above the mean in assessed score compared with the rest. Extra county schools are associated with up to 1.240454 ($p<.001$) more than 1 standard deviation above the mean in assessed score compared with the rest. County schools are associated with up to 0.4805283 ($p<.001$) standard deviation units above the mean in assessed score compared with the rest.

The results also show that 4th year student-teachers are predicted to score up to -.2343693 ($p=.001$) standard deviation units below the mean scored by their 3rd year counterparts (this is a dummy on a 0/1 scale holding 0 at mean which in this case is

0). The overall model was statically significant, p<.001 explaining 0.6469 or 64.69% of the variation of in student teacher scores.

Controlling for the student's characteristics and their responses on university assessors on a five-point likert scale, all school status variables are significant. The other school characteristic variables are not statistically significant. National schools are associated with up to 2.034261 (p<.001) more than 2 standard deviations above the mean in assessed score compared with the rest. Extra county schools are associated with up to 1.325649 (p<.001) more than 1 standard deviation above the mean in assessed score compared with the rest. County schools are associated with up to .5176501 (p<.001) standard deviation units above the mean in assessed score compared with the rest.

The results suggest that school status has a great effect on variation of student teachers scores in teaching practice. The results also indicate that national schools had the greatest effect on variation of student teachers score in teaching practice followed by Extra County and County schools respectively. The results suggest that National schools offer better environment for student teachers to perform well in school assessment.

This is expected given that national schools are well endowed with resources that student teachers can use. Besides national and extra county schools have a large teaching staff which student teachers can tap teaching talent from. In addition national and Extra County schools tap the cream of students from primary schools with high entry behaviour that may offer student teachers with an academic environment that is challenging hence the need for the teachers to meet their expectations. This may improve the student teacher content delivery. Besides, national and extra County schools have a broad out of class activities that may challenge student teachers to

engage in making them better performers compared to county or sub-county schools. The findings resonates those of Considine and Zappala (2002), Sparkles (1999) and Kwesiga (2002)

For instance Considine and Zappala (2002) study indicate that school environment and teachers expectations from their students have strong influence on student teacher performance. Their findings also indicate that teachers working in poor schools or schools having run short of basic facilities often have low performance expectations from their students. Similarly, Kwesiga (2002) posits that performance of student teachers in school practice is highly influenced by the school they are practicing in terms of the number of facilities a school offers and the quality of the environment. Sentamu (2003) argues that schools influence educational process in content organization, the teacher, teaching and learning process, and in the end evaluation of them all.

The results in Table 4.8 also show that a student teacher who agreed or strongly agreed with the statement that they were at ease with assessor is associated with 0.2362147 (p=040) and 0.5348531 (p=.008) scores above the mean respectively. Similarly, a student teacher who strongly agreed with the statement that learners were free during the lesson is associated with up to 0.5462831 standard deviation units score above the mean (p=.034). Beside, a student teacher who strongly agreed with the statement that assessor took time to highlight their weaknesses is associated with up to -0.5778944 standard deviation units score below the mean (p=.031). This is an expected negative score.

Ideally, students should benefit from mistakes raised by the assessors by correcting them to improve on their performance. This suggests that student teachers take

negatively corrections given by assessors and this may have an effect on performance in their subsequent assessments. The results of the linear regression on student teacher perceptions on university lecturers are similar to those in Table 4.5, 4.6 and 4.7 suggesting that this variable plays an important role in variation of students' scores in teaching practice in Kenyan public universities. The overall model was statically significant, p<.001 explaining 0.7246 or 72.46% of the variation in student scores in teaching practice.

This study further pursued the overall effect of the individual proxies of school characteristics variables on student teacher performance in teaching practice in Kenyan public universities. Since school status variables are statistically significant (b511=0, F(1, 269) = 0.00, *p*=0.9811; b513 = 0, F(1, 269) =0.49, *p*=0.4850; b521 = 0, F(1, 269) =0.00, *p* =0.9900; b522 =0, F(1, 269) =1.43, *p*=0.2323; b531 = 0, F(1, 269) =195.32, *p*=0. <0.001; b532 = 0, F (1, 269) =93.92, *p*<0.001 and b533 =0, F (1, 269) =24.71, *p* <0.001), at the 95% level, the null hypothesis which states that school characteristic has no statistically significant effect on student teacher performance in teaching practice in Kenyan public universities is rejected.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to establish the effect of school attachment practices on student teacher performance in teaching practice in Kenyan public universities. Therefore, the present study summarized the research findings along the themes: Frequency of supervision and student teacher performance in teaching practice, supervisor qualification and student teacher performance in teaching practice, span and period of supervision and student teacher performance in teaching practice, and school characteristics and student teacher performance in teaching practice. This chapter therefore presents a summary of the findings of the study, the conclusions reached as well as the recommendations made. Finally, suggestions for further research are given.

5.2 Summary of Research Findings

This section presents the summary of research findings as established in chapter four. The section presents a summary of the demographic data for the respondents in section 5.2.1. Besides, a summary of the research findings on the effect of frequency of supervision, supervisor qualification, span and period of supervision and school characteristics on student teacher performance in teaching practice is presented in sections 5.2.2, 5.2.3, 5.2.4 and 5.2.5 respectively.

5.2.1 Demographic Data

The findings indicate that the study had a response rate of 87.32% and that there was gender parity in enrolment in education program in the sampled universities. The results further show that student teachers prefer schools near their locality

5.2.2 Frequency of Supervision and Student Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate frequency of supervision was significantly associated with student scores in teaching practice at the 95% level. The study rejects the null hypothesis that such frequency has no statistically significant effect on the overall student assessment score in school attachment.

An extra assessment is associated with decreased scores of up to -0.4194368 standard deviation units below the mean. The results suggest that with increased supervision student teachers scores are bound to shrink. This clearly suggests that there is no need for the university to increase the number of supervisions beyond 5 as this may disadvantage students' performance in teaching practice yet with increased supervisions it's expected that student teachers should benefit from a wider advice to improve on their areas of weaknesses within and out of class.

The results further show that assessment by cooperating teachers is associated with up to 1.3438 standard deviation units above the mean. This suggests that student teachers who were assessed by cooperating teachers were predicted to score higher than their counterparts assessed by the university lecturers. The results suggest that cooperating teachers may not be objective while assessing student teachers. This may also suggest failure by cooperating teacher to adhere to regulations set by public universities to govern the implementation and assessment of school attachments.

Further, the results show that student teacher perceptions on the university supervisors had varied results. Positive perceptions on university lecturers showed higher standard deviation above the mean while negative perception showed lower standard deviations below the mean. The results suggest that student's attitude, commitment

and confidence towards their assessors improves their performance in school attachment. The results also suggest that assessors who are able to motivate their students during school practice were predicted to improve student teacher score above the mean in teaching practice.

5.2.3 Supervisor Qualification and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that supervisor's qualification was negatively associated with students' scores in teaching practice in Kenyan public universities at the 95% level. The study rejects the null hypothesis that supervisor's qualification has no statistically significant effect on overall student teacher assessment score in school attachment. The results indicate that professors, doctors and masters holders are associated with up to -0.4447395 ($p=0.013$), -0.7216197 ($p<.001$) and -.3921366 ($p=0.001$) standard deviation units below the mean in their assessment respectively.

The results suggest variations in the effect of supervisor's qualification on students' z-scores in school practice in assessments with a wider gap between PhD holders and the rest and smaller one between professors and master's holder. The results suggest that masters' holders and professors could be more objective that the PhD holders as they had a smaller negative effect on student z-scores compared to the PhD holders. In addition, student teacher perceptions on the university supervisors had varied results. The results suggest that student's attitude, commitment and confidence towards their assessors improves their performance in school attachment.

5.2.4 Span and Period of Supervision and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that the span and period of supervision was not associated with students' scores in teaching practice in Kenyan public universities at the 95% level. The study fails to reject the null hypothesis that the span and period of supervision has no statistically significant effect on overall student teacher assessment score in school attachment. The findings are expected given the fact that what matters is the quality of assessment and not how they are spaced. The finding suggests that if quality assessment is done the span within which it is done is not important.

Croft (1996) and Davidson (1997) emphasizes on the need for assessors having quality time with student teachers in an effort to improve of teacher performance during teaching practice. Similarly, the student teacher varied perceptions on the university supervisors had varied effects on their scores in teaching practice. The results still suggest that student's attitude, commitment and confidence are important in explaining variations in student teacher scores in teaching practice.

5.2.5 School Characteristics and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that the selected school characteristics (school status) was associated with students' scores in teaching practice in Kenyan public universities at the 95% level while the rest (school type and school category) were not. The study rejects the null hypothesis that school characteristics have no statistically significant effect on overall student teacher assessment score in school attachment. The results show that

students practicing in national, extra county and county schools are associated with up to 2.034261 (p<.001), 1.325649 (p<.001) and .5176501 (p<.001) standard deviations above the mean in assessed score respectively compared to the referenced school status. The results suggest that school status has a great effect on variation of student teachers scores in teaching practice. The results also indicate that national schools had the greatest effect on variation of student teachers score in teaching practice followed by Extra County and county schools respectively. The results suggest that national schools offer better environment for student teachers to perform well in school assessment.

The findings resonates those Considine and Zappala (2002), Sparkles (1999) and Kwesiga (2002). Just like in the other models for objective 1, 2 and 3; student teacher varied perceptions on the university supervisors had varied effects on their scores in teaching practice. The results still suggest that student's attitude, commitment and confidence are important in explaining variations in student teacher scores in teaching practice.

5.3 Conclusions

The following conclusions were drawn from the results of the study presented in chapter four following the themes developed from the objectives of the study.

5.3.1 Frequency of Supervision and Student Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate frequency of supervision was significantly associated with student scores in teaching practice at the 95% level. It was concluded that variations in student teacher scores in teaching practice are as a result of frequency of supervisions. The results also show that assessment by cooperating teachers is associated with up to

1.3438 standard deviation units above the mean compared to university assessors. It was concluded that cooperating teachers could be faulting university regulations on school assessments. Besides, the results showed that student teacher positive and negative perceptions on their university assessors had varied effects on their scores in teaching practice. It was concluded that student's positive attitude, commitment and confidence towards their assessors improves their performance in school attachment

5.3.2 Supervisor Qualification and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that supervisor's qualification was negatively associated with students' scores in teaching practice. It was concluded that supervisor's qualification had varied effect on students' z-scores in school practice. It was also concluded that unlike PhD holders masters' and professors were more objective in assessing students.

5.3.3 Span and Period of Supervision and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that the span and period of supervision was not associated with students' scores in teaching. It was concluded that it is not the span or period of assessments but the quality of assessment that may be accounting for differences in student scores in teaching practice.

5.3.4 School Characteristics and Student Teacher Performance in Teaching Practice

The results of the multiple regression analysis after controlling for all variables in the model indicate that selected school characteristics (school status) was associated with

students' scores in teaching practice. The results show that students practicing in national, extra county and county schools are associated with up to 2.034261 ($p<.001$), 1.325649 ($p<.001$) and .5176501 ($p<.001$) standard deviations above the mean in assessed score respectively compared to the referenced school status. It was concluded that national schools offer better environment for student teachers to perform well in school assessment.

5.4 Recommendations

The following recommendations were made from the conclusions drawn from the themes under the main objectives of the study

i. The findings of the present study showed that frequency of supervision was significantly associated with student scores in teaching practice at the 95% level. The results also show that assessment by cooperating teachers is associated with up to 1.3438 standard deviation units above the mean compared to university assessors. It therefore recommended that universities which use cooperating teachers should ensure that they adhere to the regulations set by the universities on school assessments so that they are objective in scoring students on teaching practice. Besides, the results indicate that increased supervisions impacted negatively on student scores in teaching practice contrary to the expectations that they would result to improved scores. It is therefore recommended that universities should improve more on the quality of supervisions rather than their frequency.

ii. The findings also showed that student teacher positive and negative perceptions on their university assessors had varied effects on their scores in teaching practice. It therefore recommended that universities should cultivate in student

positive attitude, commitment and confidence towards their assessors to improve on student teacher scores in school attachment. Besides, the findings showed that assessors who were able to spend more time with the student teachers advising them improved their scores in school attachment. It is therefore recommended that universities should enforce quality time of assessors with the teacher trainees in their manuals on school assessments.

iii. The results show that supervisor's qualification was negatively associated with students' scores in teaching practice. The findings suggest that unlike PhD holders masters' and professors were more objective in assessing students. It is therefore recommended that universities should be able to train adequately all assessors on the tool of assessment so as to bridge the differences in qualification status and experience among the assessors. These way junior assessors may learn from experienced assessors and vice versa. This may ensure objectivity in student assessment in school practice.

iv. The findings show that school status was important in explaining variations in students' scores and that national schools offer better environment for student teachers to perform well in school assessment followed by extra county schools. It is recommended that universities should post student teachers in model schools that provide adequate and varied environment such as national and extra country schools that enhances student teacher performance in teaching practice. National and extra county schools are well endowed with resources, teachers and students with high entry behaviour. These resources can be tapped by the student teachers thus improving on their professional delivery during teaching practice.

5.5 Suggestions for Further Research

This study suggested the following areas for future research.

i. A study on the effect of school attachment practices on student teacher performance in teaching practice in public universities using all students.

ii. A comparative study on the effect of school attachment practices on student teacher performance in teaching practice in public and private universities in Kenya.

iii. A comparative study on the effect of assessors' model and cooperating teacher model on student teacher performance in teaching practice in public universities in Kenya.

iv. An evaluation on perception of principals and student teachers on school attachment practices and student teacher performance in teaching practice in public universities

REFERENCES

Aaronson, D., Barrow, L., & Sanders, W. (2005). Teachers and student achievement in the Chicago public high schools (Working Paper No. 2002-28). Chicago: Federal Reserve Bank of Chicago. Retrieved August 15, 2015, from http://www.chicagofed.org/publications/workingpapers/papers/wp2002-28.pdf

Almikhalafi, M. (2005). *A suggested Programme for Developing Practicum in the School of Education at Ebb University Researcher*. (Unpublished PhD Thesis).

Awaya, A, et al (2003). "Mentoring as a journey", *Teaching and Teacher Education* Vol 19, issue 1, January 2003, 45-56.

Australian Council for Educational Research (ACER). (2008). *Senior secondary achievement in member schools of the Alliance of Girls' Schools*. Camber well: ACER.

Betts, J. R., Zau, A. C., & Rice, L. A. (2003). *Determinants of student achievement: New evidence from San Diego*. San Francisco: Public Policy Institute of California. Retrieved August 08, 2015, from http://www.ppic.

Cavalluzzo, L. C. (2004). *Is National Board Certification an effective signal of teacher quality?* (Report No. IPR11204). Alexandria, VA: The CNA Corporation. Retrieved August 08, 2015, from http://www.cna.org/documents/CavaluzzoStudy.pdf

Chumba S.K, & Kiprop C. (2014), Teacher Preparation in Public Universities in Kenya: Challenges and Mitigations; *International Journal of Education and Research,* Moi University.

Cohen, L., Manion, L. & Morison K. (2000). *Research methods in Education. London:* Routledge Falmer.

Considine, G. & Zappala, G. (2002). Influence of social and economic disadvantage in the academic performance of school students in Australia. *Journal of Sociology,* 38, 129-148.

Croft, C. (1996). Self Development for Managers: Time Management. International Thoson Publishing Company, London. UK.

Crosnoe, R., Johnson, M. K., & Elder, G. H. (2004). School size and the interpersonal side of education: An examination of race/ethnicity and organizational context. Social Science Quarterly, 85(5), 1259-1274.

Costa, A.L. (2002). I nvesting in Teacher Quality. Christopher Gordan Publishers. Texas, USA.

Costa, A.L, & Garston, R.J. (2007). Cognitive Coaching: a Foundation for Renaissance School. Christopher Gordan Publishers. Texas, USA.

Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Vasquez Heilig, J. (2005). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. Education Policy Analysis Archives, 13(42). Retrieved August 29,2015, from http://epaa.asu.edu/epaa/v13n42/v13n42.pdf

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. Education Policy Analysis Archives, 8(1).

Dunlosky, F., Rawson, J, and Nathan, G (2013). Practice and Forgetting Effects on Vocabulary Memory: An activation based model of the spacing effect. *Social Science Quarterly*, 96(2).

Ejakait, E.,Olel, M., Othuon, L., & Khasenye, O. (2016). A hierarchical Modelling of Teacher Effects on Academic Achievement in the Kenya Certificate of Primary Education Examination. American Journal of Education Research, 4(14), 1030-1040.

Ekundayo H.T., Alonge H.O.,Kolawalo K.S., (2014). Teaching Practice Exercise for Education Students in Nigeria Universities: Challenges and Wayforward. *Mediterranean Journal of Social Sciences*, MCSER Pub, Rome-Italy.

Farooq, R, A, (1994). Education System in Pakistan: Issues and Problems, Asia Society for Promotion of Innovation and Reforms in Education, Islamabad.

Federal Republic of Nigeria (2004). National policy on Education. Abuja: NERDC

Francis, B. (2004). *Classroom interaction and access: Whose space is it? In H. Claire (Ed) Gender in education: A fresh approach* (3-19), London: Association of Teachers and Lecturers.

Furlong, V.J.;P.U. Hirst and K. Pocklington.(1988). *Initial Teacher Training and The Role of the School.* Open University Press, Philadelphia.

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38 (4), 915–945. Retrieved August 03, 2015, from http://aztla .asu.edu/ProfDev1.pdf.

Garmston, R. (1987). "How Administrators Support Peer Coaching." Educational Leadership 44, 5: 18-26.

Garmston, R., C. Linder, and J. Whitaker. (1993). "Reflections on Cognitive Coaching." Educational Leadership 51, 2: 57-61.

Geen, A., Bassett, P. and Douglas, L. (1999) "The Role of the secondary Mentor: An evaluation of the UWIC experience", *Mentoring & Tutoring*, Vol.7, No. 1, 55-65

Gitlin Mark, 2009, *Making Time work for you: An inner Guide to Time Management*, Sheldon Press, London.

Glenn, D.S. (1992). Determining Sample Size. IFAS, University of Florida. PEOD6-August. Retrieved on 18th July 2015. http://edis.ifas.ufl.edu

Goldhaber, D. D., & Brewer, D. J. (1996). *Evaluating the Effect of Teacher Degree Level on Educational Performance*. Paper Presented at the NCES State Data Conference.

Government of Kenya, (2010). *Kenya National Bureau of Statistics*. Retrieved on 4th. Aug. 2015.

Government of Kenya, (2011). *Report for Selected Countries and Subjects; Population of Kenya GDP International Monetary Fund*. Retrieved on 5th Aug. 2015.

Government of Pakistan (1998). National Education Policy 1998-2010, Ministry of Education, Islamabad.

Gujjar, A.A, Naoreen, B, SAIFI, S, Bajwa, M.J, (2012). Teaching Practice in Pakistan: Problems and Issues in Pakistan. *International Online Journal of Educational Sciences.*

Hayes, D (1999). "Decisions, Decisions, decisions: the process of getting better at teaching", *Teacher Development*, Vol. 3, No.3: 341-354.

Hanushek, E. A. (1997). Assessing the Effects of Schoo Resources on Student Performance: An Update Educational Evaluation and Policy Analysis. 19(2), 141-164.

Hanushek, E. A., Kain, J. F., O'Brien, D. M., & Rivkin, S. G. (2005). *The market for teacher quality* (Working Paper No. 11154). Cambridg e, MA: National Bureau of Economic Research.http://influentialpoints.com http://statistics-help-for-students.com

Hox, J.J.(1995). Applied Multilevel Analysis. Amsterdam. The Netherlands: TT-Publikaties.

Hungi, N.& Thuku, F. W. (2010). Differences in Pupil Achievement in Kenya. implications for International Journal of Educational Development. 30(1), 33-43.

Jekayinfa, A. A.; Yahaya, I. A.; Yusuf, A .; Ajidagba, A. U.; Oniye, A. O.; Oniyangi S. O. & Ibraheem, T. O. (2012). Lecturers' assessment of teaching practice exercise in Nigerian universities. Journal of Education and practice. 3(4): 79—85.

Jekayinfa, A.A. (2000). The essence of lesson presentation in teaching practice . In A.I.

Jennifer K. R, 2003. Teacher Quality: Understanding the Effectiveness of Teacher

Attributes. Washington: Economic Policy Institute.

Jimmy, L.I. (2015). Study Repetitions and Retention. *Australian Journal of Teacher Education. 31(4):90-143.*

Joyce, B., & Showers, B. (1996). The evolution of peer coaching. *Educational Leadership Journal,* 53 (6), 12–16.

Joyce, B., & Showers, B. (2002). *Student achievement through professional development.* Alexandria, VA: Association for Supervision and Curriculum Development.

Kasomo,D., (2014), *Role of Supervision in an Education System*. LAP Pub.

Kathuri, J.N & D.A Pals, (1993). *Introduction to Education Research*. Education Media Research Educational Media Centre, Egerton University, Njoro. Pp 82-121.

Kerlinger, F. N. (1973). *Foundations of Behavioural Research*. New Delhi: Surfeet Publishers.

Kiggundu, E. & Nayimuli, S. (2009). Teaching practice: A make or break phase for student-teachers. South African Journal of Education. 29: 345—358.

Kirby, J.B. (2013). Why students do not remember what they have learned. Journal of Memory and Language, 89,179-255.

Kombo, D. K. & Tromp, D .L .A. (2006). *Proposal and Thesis Writing*. Nairobi: Pauline's Publications Africa.

Kothari, C. R. (2003). *Research Methodology: Methods and Techniques*. New Delhi: Wishwa Prakashan.

Kwesiga, C.J. (2002). *Women's access to higher education in Africa: Uganda's experience.* Kampala: Fountain publishers Ltd.

Kwo, O. W. Y. (1994) "*Towards Reflective Teaching: Curriculum development and Action Research"* in D.C.S. Li, D. Mahoney, and J.C. Richards (Eds), *Exploring Second Language Teacher Development*. City Polytechnic of Honk Kong, Hong Kong: 113-130.

Marais, P. & Meier, C. (2004). Hear our voice: Student teachers' experience during practical teaching. African Journal of Education review. 1. 220-233.

Mburu, D.N.P. (2013). Effects of the School attended on Students' Academic Performance in Kericho and Kipkelion Districts, Kenya. *International Journal of Humanitiesa and Social Sciences.* Vol. 3, No. 4

Miller, W.P and Birch, R.E. (2007). The influence of type of high school attended on university performance. Retrieved on December 3, 2008. from http://www3.interscience . *Education Journal*. wiley.com/journal/118538313.

Mugenda, O.M & Mugenda, A.G (2003), *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press

Napkodia, E.D. (2011). Teacher and the Student Practice Programme in Nigeria. *Educational System International Journal of Education Administration and Policy Studies*.

Neufeld, B., & Roper, D. (2003). *Coaching: A strategy for developing instructional Capacity Providence, RI: The Annenberg Institute for School Reform*. Retrieved August 03, 2015, from http://www.annenberginstitute.org/images/Coaching.pdf

Ngidi, D.P. & Sibaya, P.T. (2003). Student teachers' anxieties related to practice teaching. South African Journal of Education. 23. 18-22.

Nwanekezi, A.U, Okoli, N.J, and Mezieobi, S.A (2011). Attitude of Student Teacher towards Teaching Practice in the University of Port- Harcourt, River State, Nigeria. *Journal of Emerging Trends in Educational Research and Policy. Studies.* 2(1):41-46.

Ogonor, B.O. & Badmus, M.M. (2006). Reflective Teaching Practice among Student Teachers: The case in Tertiary Institutions in Nigeria. *Australian Journal of Teacher Education. 31(2):1-11*.

Orodho, R.J. (2003). Essentials of Educational and Social Sciences research methods. Nairobi: Masola Publishers.

Polland, R. J. (2005). Essentials of Education Research and Analysis: Methods for determining sample size. http://www.unf.edu/dept/cirt/workshop/survey/polland manual.pdf (july2015)

Rafaquat, A.A. (2002). Problems of Practice Teaching in Teacher Training Institutions in Punjab. Journal of Elementary Education. A publication of Deptt. of Elementary Education. IER, University of the Punjab, Lahore-Pakistan. Vol.20(2) 31-40.

Richard, A. (2003). *Making our Own Way: The Emergence of School-Based Staff Developers in America's Public Schools*. Retrieved August 04, 2015, from http://www.emcf.org/pdf/student_ourownroadbw.pdf

Richard, J. & Baldwin, G. (1999). Eleven Principles of Effective Post Graduate Supervisors. Pub. Centre for the Study of Higher Education and the School of Graduate Studies, University of Melbourme Parkville, Victoria 3052. Australia.

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review Journal*, 94 (2), 247–252.

Robbins, P. (2006). How to plan and implement a peer coaching program. 1703 North Beauregard Street. Alexandria.

Rowan, B., Correnti, R., & Miller, R. J. (2002). *What large-scale, survey research tells us about teacher effects on student achievement: Insights from the Prospects Study of Elementary Schools.*Teachers College Record, 104(8), 1525–1567

Russo, A. (2009). *School-Based Coaching. Harvard Education Letter Research Online.* Retrieved August 04, 2015, from http://www.edletter.org/past/issues/2004-ja/coaching.shtml

Saidin, N.& Brahim, M.F. (2011). No girls for me mummy: Providing a positive language learning environment for boys in single gender classes. *Procedia-Social and behavioural Sciences,* 38(2012)

Sentamu, N.P. (2003). *School's influence of learning: A case of upper primary schools in Kampala & Wakiso Districts.*

Shoukat, A., Zubair, H., Fahad, M., Hamid, K., Awais, A. (2013). Fcators Contributing to the Students' Academic Performance: A Case Study of Islamia University Sub Campus. *American Journal of Education*. Vol. 10, 2327-6150

Soderstrom, N.G, and Bjork, R.A. (2014). Testing Facilities the Regulation of subsequent Study Time. Journal of Memory and Language, 73, 99-115.

Sparkes, J. (1999), Schools, Education and Social Exclusion, and the interpersonal side of education: An example of CASE Paper 29, Centre for Analysis of Social Exclusion, London Race/Ethnicity and organizational context. Social Science School of Economics, London. Quarterly, 85(5).

STATA. (2005). STATA for Windows. College Station, TX: Stata Press.

Stock, J. H. & Watson, M. W. (2003). Introduction to Econometrics, Boston: Addison Wesley, chapter 4, 5.

Tanega, R.P. (2000). *Encyclopedia of Comparative Education,*Vol.4. Anmol Publications Pvt. Ltd., New Delhi.

Teacher Education in Sub-Saharan Africa (TESSA). (2015). Summary Report of all TESSA Contributions at DETA Conference in Mauritius. Retrieved on 7th June 2015.

Toppinner,T.C, and Gerbier, E. (2014). Above Practice: repetition, spacing and abstraction. The Psychology of Learning and Motivation. 60,114-189.

Torrance, E. P. (1984) *Mentor Relationships. How They Aid Creative Achievement, Endure, Change and Die*, Bearly Ltd., New York.

UWEZO (2010). Are out Children Learning. Annual Learning Assessment Report, Kenya 2010. UWEZO, Nairobi, Kenya.

Wahlheim, C.N, Maddox, G.B, and Jacoby,L.L (2014). The role of reminding in the effects of spaced repetition on Recall: Sufficient but not necessary. Journal of Experimental Psychology. 40, 94-105

Wambugu, A. Barmao, A. and Ng'eno, J. (2014). Student Teachers Perceptions of Teaching Practice Assessment in Egerton University, Kenya. *Education Journal*, Vol. 2, No. 4.

Yusuf, A. & Ajidagba, U.A. (2010). Stakeholders' assessment of Millennium Development Goals (MDGs) capacity building of basic school teachers for the implementation of universal basic education in Nigeria. African Journal of Historical Sciences in Education.

APPENDICES

Appendix 1: Introductory Letter to Sampled Universities to Collect Data

P.O. Box 190, Kakamega

Date: _____

The Registrar, Academic Affairs _____

Dear Sir/Madam

Re: Data Collection for Research Purposes

I am a student of Masinde Muliro University of Science and Technology undertaking a Doctorate degree. I am carrying out a study on **"School Attachment Practices and Student Teacher Performance in Teaching Practice in Kenyan Public Universities"** This study involves student teachers on teaching practice in western region and heads of school attachment units in public universities. A questionnaire will be administered to student teachers on teaching practice while the heads of school attachment units will be interviewed. Document analysis will be done on student teacher posting lists, student teachers marks in teaching practice and list of university supervisors posted in western region.

Therefore, the purpose of this letter is to request you to allow the sampled respondents to participate in this study at an agreed date. The information gathered will solely be used for this study and will be confidential. Attached is a research permit from National Commission for Science, Technology and Innovations (NACOSTI).

Thank you.

Yours Faithfully,

Wanyonyi Annette.

Appendix 2: Student Teacher Questionnaire (STQ)

Dear respondent,

The aim of this questionnaire is to gather information on school attachment practices and student teacher performance in teaching practice in Western region. **The information you provide is completely confidential,** will only be used for statistical purposes and will not be released or reported to any other body. Please read each question carefully and **answer by TICKING the appropriate box or FILLING in the blank space.** If you have any problems completing the questionnaire, please ask for assistance. I appreciate you for taking your precious time to complete the questionnaire.

1. Supervision Frequency Data

1.1 Kindly indicate the number of times you were supervised during classroom instruction by the following categories of individuals in your teaching subjects. If not indicate zero.

S/N	Individuals	Number of Supervisions	
		Subject 1	Subject 2
1.1.1	University Supervisor		
1.1.2	Cooperating Teacher		
1.1.3	Peer Student Teacher		

2. Supervisor Qualification Data

2.1 Kindly indicate the total number of university lecturers who supervised you during classroom instruction with the following qualifications in your teaching subjects. If not indicate zero.

S/N	University Supervisor	Number	
		Subject 1	Subject 2
2.1.1	Doctor		
2.1.2	Masters		
2.1.3	Bachelors		

3. Span and Period of Supervision Data

3.1 Kindly indicate the dates when you were supervised in the following subjects

	Supervision	Date	
		Subject 1	Subject 2
3.1.1	1st		
3.1.2	2nd		
3.1.3	3rd		
3.1.4	4th		
3.1.5	5th		
3.1.6	6th		
3.1.7	7th		
3.1.8	8th		

3.2 Kindly indicate the number of times you were supervised by university supervisors in the following months of the term for the two teaching subjects

	1st Month	2nd Month	3rd Month	4th Month
Subject 1				
Subject 2				

3.3 When is your school attachment scheduled? Term 1[ ] Term 2 [ ] Term 3 [ ]

3.4 Which year of study are you? Third year [ ] Fourth Year [ ]

4. Supervisor Gender Data

Kindly indicate the total number of supervisors by designation and gender who supervised you in each of your teaching subjects, if not; indicate zero.

S/N	Supervisor	Subject 1		Subject 2	
		Male	Female	Male	Female
1.1.1	Proffesor				
1.1.1	Doctor				
1.1.2	Masters				
1.1.3	Bachelors				

5. School Characteristics Data

5.1 Which of the following describes the school type you are currently posted?

Boys [ ] Girls' [ ] Mixed [ ]

5.2 Which of the following describes the school category you are currently posted?

Day [ ] Boarding [ ] Day/Boarding [ ]

5.3 Which of the following describes the school status you are currently posted?

National [ ] Extra-County [ ] County [ ] Sub-County [ ]

6. Student Teacher Characteristics

6.1 What is your gender? Male [ ] Female [ ]

6.2 When were you born? Date _____ Month _____ Year _____

6.3 Which university are you undertaking your studies?

Egerton [ ] Kenyatta [ ] Maseno [ ] MMUST [ ] Moi [ ]

6.4 Which program are you studying? Arts [ ] Science [ ] AGED [ ]

6.5 Kindly indicate your university registration number _____

7. Student Teacher Perception on University Supervisors

On a scale of 1 to 5 where 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree rate the following statements on school supervision

Statement	SA	A	N	D	SD
7.1 I was at ease with my supervisor	[ ]	[ ]	[ ]	[ ]	[ ]
7.2 Prepared me for the lesson	[ ]	[ ]	[ ]	[ ]	[ ]
7.3 He/she was attentive during the lesson	[ ]	[ ]	[ ]	[ ]	[ ]
7.4 Learners were free during the lesson	[ ]	[ ]	[ ]	[ ]	[ ]
7.5 He/she appreciated my lesson	[ ]	[ ]	[ ]	[ ]	[ ]
7.6 Took time to highlight my weaknesses	[ ]	[ ]	[ ]	[ ]	[ ]
7.7 Took enough time to discuss the lesson	[ ]	[ ]	[ ]	[ ]	[ ]
7.8 Supervised other activities out of class	[ ]	[ ]	[ ]	[ ]	[ ]
7.9 Supervision boosted my performance	[ ]	[ ]	[ ]	[ ]	[ ]
7.10 My supervisor is my teacher role model	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix 3: Head of School Attachment Unit Interview Guide (HSAUIG)

My name is Wanyonyi Annette. I am a Doctorate student of Masinde Muliro University of Science and Technology. I am writing a research thesis entitled: **"School Attachment Practices and Student Teacher Performance in Teaching Practice in Kenyan Public Universities"** The aim of this interview is to gather information on school attachment practices and student teacher performance in teaching practice. First, I want to thank you sir/madam for granting me this opportunity to interview you. Secondly, I want to assure you sir/madam that the information you provide is completely confidential**,** will only be used for the purpose of this study and will not be released or reported to any other third party. Thirdly, the interview will last about twenty minutes and will be recorded. Sir/Madam, I am going to ask you seven questions relating to school attachment practices and student teacher performance. Sir/Madam please let me know when you are ready for me to start.

1. What regulations and rules have the university set concerning the minimum and maximum number of frequency of supervision per subject?
2. How many times does the university send out supervisors to assess the student teachers?
3. What type of the academic qualification cadre does the university use to supervise the student teachers?
4. In which year of study do the student teachers go for school attachments?
5. In which term of the school calendar do student teachers go for school attachment?
6. How many female supervisors were used for school attachment assessment?
7. How many male supervisors were used for school attachment assessment?

Thank You

Appendix 4: Document Analysis Checklist

1. Student teacher details per university

S/N	University	Student Reg No.	County	School Type	School Status	School Category	Scores
1							
2							
3							
4							
5							

2. Lecturers details per university

S/N	University	Lecturers Name	Qualification	Gender	County	School Type	School Status	School Category	Student Reg	Subject 1 Score	Subject 1 Score
1											
2											
3											
4											
5											

Appendix 5: Outputs for Objective One

Table 5.1: Correlation matrix between the outcome variable and its Correlates for Objective 1

Variable		b82	b1111	b1112	b1121	b1122	b1141	b1142
b82		1						
b1111	a	-0.428	1					
	b	0.000						
b1112	a	-0.438	0.984	1				
	b	0.000	0.000					
b1121	a	0.238	-0.790	-0.810	1			
	b	0.000	0.000	0.000				
b1122	a	0.238	-0.790	-0.810	1.000	1		
	b	0.000	0.000	0.000	0.000			
b1141	a	-0.142	-0.049	-0.101	0.652	0.652	1	
	b	0.015	0.404	0.081	0.000	0.000		
b1142	a	-0.150	-0.095	-0.109	0.672	0.672	0.975	1
	b	0.010	0.102	0.061	0.000	0.000	0.000	
b115	a	-0.146	-0.072	-0.106	0.666	0.666	0.994	0.994
	b	0.012	0.217	0.069	0.000	0.000	0.000	0.000
b116	a	0.238	-0.790	-0.810	1.000	1.000	0.652	0.672
	b	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: a=Pearson correlation coefficient; b=p-values (α=0.05); Pair-wise correlation: ≤0.35 = Weak correlation; 0.36-0.67 = Moderate correlation; 0.68-0.89=Strong correlation; ≥0.90 = Very strong correlation; Adapted from "Interpretation of correlation coefficient, " by R. Taylor, 1990, Journal of Diagnostic Medical Sonography, 6(1), p. 37

Source: Stata output, 2016

Table 5.2: Multicollinearity test for the Explanatory Variables under Objective 1

Var.	Variable label	VIF	1/VIF
b116	Assessor 1=Cooperating teacher	4.09	0.24
b795	5=Strongly Agree that assessor boosted my performance	3.73	0.27
b745	5=Strongly Agree that learners were free during the lesson	3.66	0.27
b793	3=Neutral that assessor boosted my performance	3.56	0.28
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	3.39	0.29
b794	4=Agree that assessor boosted my performance	3.22	0.31
b755	5=Strongly Agree that assessor appreciated student's lesson	2.63	0.38
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	2.62	0.38
b744	4=Agree that learners were free during the lesson	2.28	0.44
b783	3=Neutral that assessor supervised other activities out of class	2.21	0.45
b115	Total assessments	2.07	0.48
b774	4=Agree that that assessor took enough time to discuss the lesson	1.99	0.50
b714	4=Agree that student was at ease with assessor	1.88	0.53
b781	1=Strongly Disagree that assessor supervised other activities out of class	1.80	0.56
b772	2=Disagree that assessor took enough time to discuss the lesson	1.78	0.56
b715	5=Strongly Agree that student was at ease with assessor	1.57	0.64
b742	2=Disagree that learners were free during the lesson	1.54	0.65
b752	2=Disagree that assessor appreciated student's lesson	1.50	0.67
b712	2=Disagree that student was at ease with assessor	1.38	0.72
b34	Student's year of study 1=4th	1.26	0.80
b65	Students' programme 1=Arts	1.14	0.88
	Mean VIF	2.35	

Note. VIF=Variance Inflation Factor; Variables should ideally have VIF<10

Source: Stata output, 2016

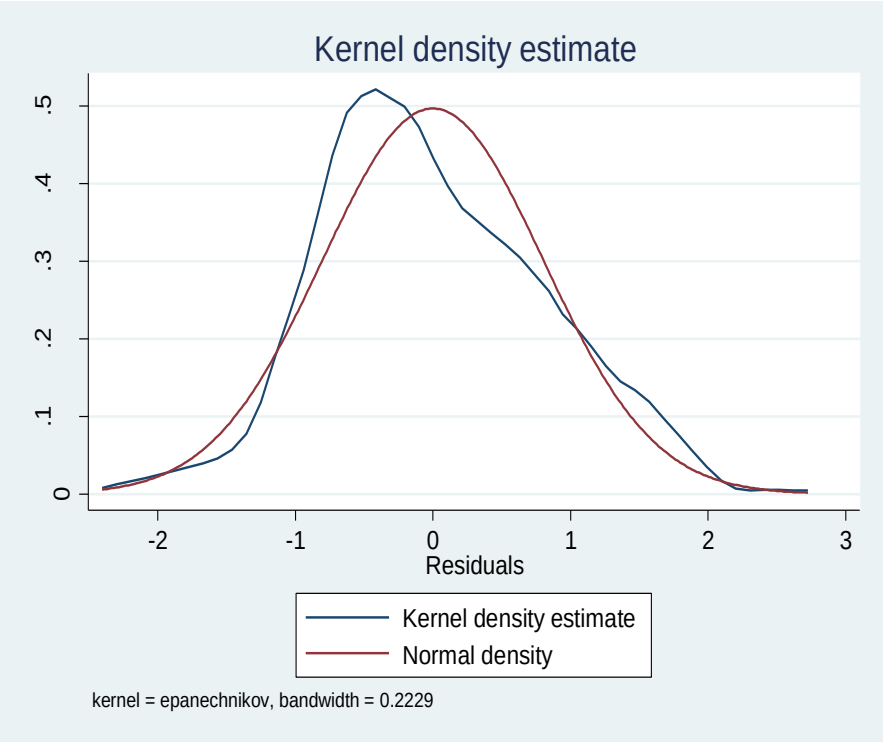

Figure 5.1: Kernel Density Estimate Testing for Normality of the Residuals after the Final Regression Model under Objective 1: Skewness-kurtosis test, p=0.1392

Source: Stata output, 2016

Appendix 6: Outputs for Objective Two

Table 5.3: Correlation Matrix between the Outcome Variable and its Correlates for Objective 2

Variable		b82	b2111	b2112	b2121	b2122	b2131	b2132
b82		1						
b2111	a	-0.016	1					
	b	0.788						
b2112	a	-0.016	1.000	1				
	b	0.788	<.001					
b2121	a	-0.485	-0.093	-0.093	1			
	b	0.000	0.112	0.112				
b2122	a	-0.485	-0.093	-0.093	1.000	1		
	b	0.000	0.112	0.112	<.001			
b2131	a	0.200	-0.106	-0.106	-0.701	-0.701	1	
	b	0.001	0.070	0.070	<.001	<.001		
b2132	a	0.200	-0.106	-0.106	-0.701	-0.701	1.000	1
	b	0.001	0.070	0.070	<.001	<.001	<.001	

Note: a=Pearson correlation coefficient; b=p-values (α=0.05); Pair-wise correlation: ≤0.35 = Weak correlation; 0.36-0.67 = Moderate correlation; 0.68-0.89=Strong correlation; ≥0.90 = Very strong correlation; Adapted from "Interpretation of correlation coefficient, " by R. Taylor, 1990, Journal of Diagnostic Medical Sonography, 6(1), p. 37

Source: Stata output, 2016

Table 5.4: Multicollinearity test for the Explanatory Variables under Objective 2

Var.	Variable label	VIF	1/VIF
b793	3=Neutral that assessor boosted my performance	3.41	0.29305
b2131	# of times for M.Ed/B.Ed holders in subject	3.34	0.29969
b2121	# of times for doctor in subject 1	3.29	0.30351
b795	5=Strongly Agree that assessor boosted my performance	3.17	0.31533
b794	4=Agree that assessor boosted my performance	3.06	0.32724
b745	5=Strongly Agree that learners were free during the lesson	3	0.33339
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	2.99	0.33404
b755	5=Strongly Agree that assessor appreciated student's lesson	2.67	0.37471
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	2.6	0.38418
b783	3=Neutral that assessor supervised other activities out of class	2.2	0.4545
b774	4=Agree that that assessor took enough time to discuss the lesson	2.07	0.48234
b744	4=Agree that learners were free during the lesson	1.98	0.50448
b781	1=Strongly Disagree that assessor supervised other activities out of class	1.83	0.54512
b772	2=Disagree that assessor took enough time to discuss the lesson	1.78	0.56312
b714	4=Agree that student was at ease with assessor	1.76	0.5693
b742	2=Disagree that learners were free during the lesson	1.53	0.6517
b752	2=Disagree that assessor appreciated student's lesson	1.52	0.6578
b715	5=Strongly Agree that student was at ease with assessor	1.41	0.70755
b712	2=Disagree that student was at ease with assessor	1.39	0.71944
b34	Student's year of study 1=4th	1.26	0.79446
b2111	# of times for professor in subject 1	1.16	0.85945
b65	Students' programme 1=Arts	1.12	0.88892
	Mean VIF	2.35	

Note. VIF=Variance Inflation Factor; Variables should ideally have VIF<10

We test the null hypothesis that the model has no specification errors. Our result for _hatsq is p= 0.086 leading to a failure to reject the null and conclude that our model is correctly specified

Source: Stata output, 2016

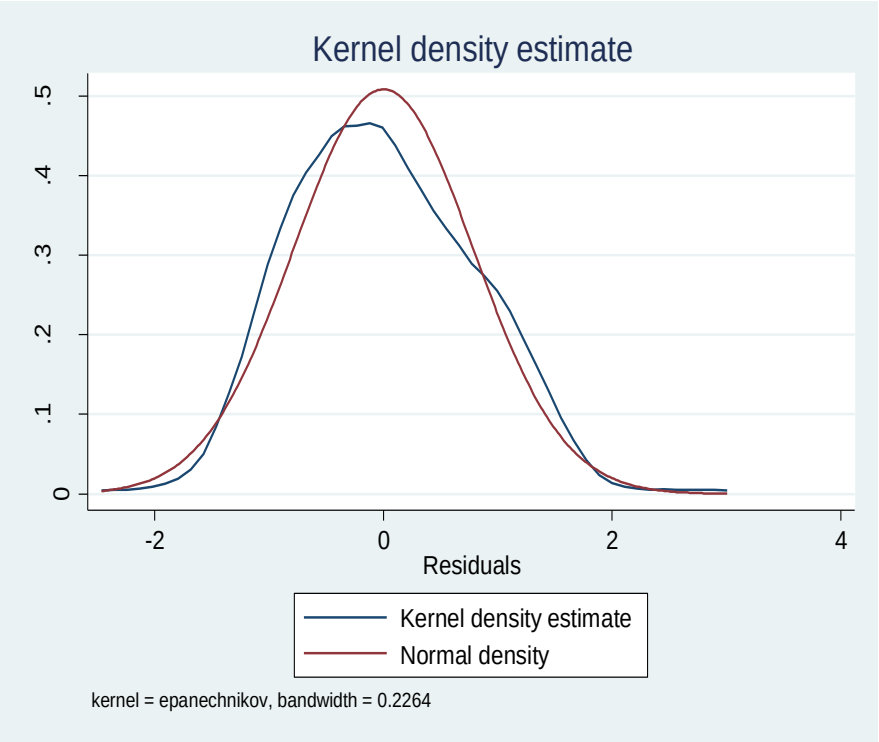

Figure 5.2 Kernel density estimate testing for normality of the residuals after the final regression model under Objective 2: skewness-kurtosis test, p=0.1330

Source: Stata output, 2016

Appendix 7: Outputs for Objective Three

Table 5.5: Correlation Matrix between the Outcome Variable and its Correlates for Objective 3

Variable		b82	b315	b316	b318	b323
b82		1				
b315	a	0.154	1			
	b	0.009				
b316	a	-0.439	0.588	1		
	b	0.000	0.000			
b318	a	-0.317	-0.149	0.501	1	
	b	0.000	0.068	0.000		
b323	a	-0.115	-0.500	-0.516	-0.414	1
	b	0.048	0.000	0.000	0.000	

Note: a=Pearson correlation coefficient; b=p-values (α=0.05)

Source: Stata output, 2016

Table 5.6: Multicollinearity test for the explanatory variables under Objective 3

Var.	Variable label	VIF	1/VIF
b793	3=Neutral that assessor boosted my performance	12.63	0.079
b794	4=Agree that assessor boosted my performance	9.00	0.111
b795	5=Strongly Agree that assessor boosted my performance	7.05	0.142
b316	# of days between 1st and 3rd assessment	6.12	0.163
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	4.59	0.218
b745	5=Strongly Agree that learners were free during the lesson	3.99	0.250
b315	# of days between 1st and 2nd assessment	3.55	0.282
b323	Total # of assessments	3.36	0.298
b318	# of days between 2nd and 3rd assessment	3.17	0.315
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	2.97	0.337
b755	5=Strongly Agree that assessor appreciated student's lesson	2.85	0.351
b744	4=Agree that learners were free during the lesson	2.43	0.412
b714	4=Agree that student was at ease with assessor	2.36	0.423
b774	4=Agree that that assessor took enough time to discuss the lesson	2.35	0.426
b772	2=Disagree that assessor took enough time to discuss the lesson	1.98	0.506
b742	2=Disagree that learners were free during the lesson	1.97	0.506
b781	1=Strongly Disagree that assessor supervised other activities out of class	1.94	0.515
b783	3=Neutral that assessor supervised other activities out of class	1.93	0.518
b752	2=Disagree that assessor appreciated student's lesson	1.82	0.548
b715	5=Strongly Agree that student was at ease with assessor	1.74	0.574
b34	Student's year of study 1=4th	1.68	0.595
b712	2=Disagree that student was at ease with assessor	1.57	0.638
b65	Students' programme 1=Arts	1.25	0.801
	Mean VIF	2.35	

Note. VIF=Variance Inflation Factor; Variables should ideally have VIF<10

We test the null hypothesis that the model has no specification errors. Our result for _hatsq is p=0.488 leading to a failure to reject the null and conclude that our model is correctly specified

Source: Stata output, 2016

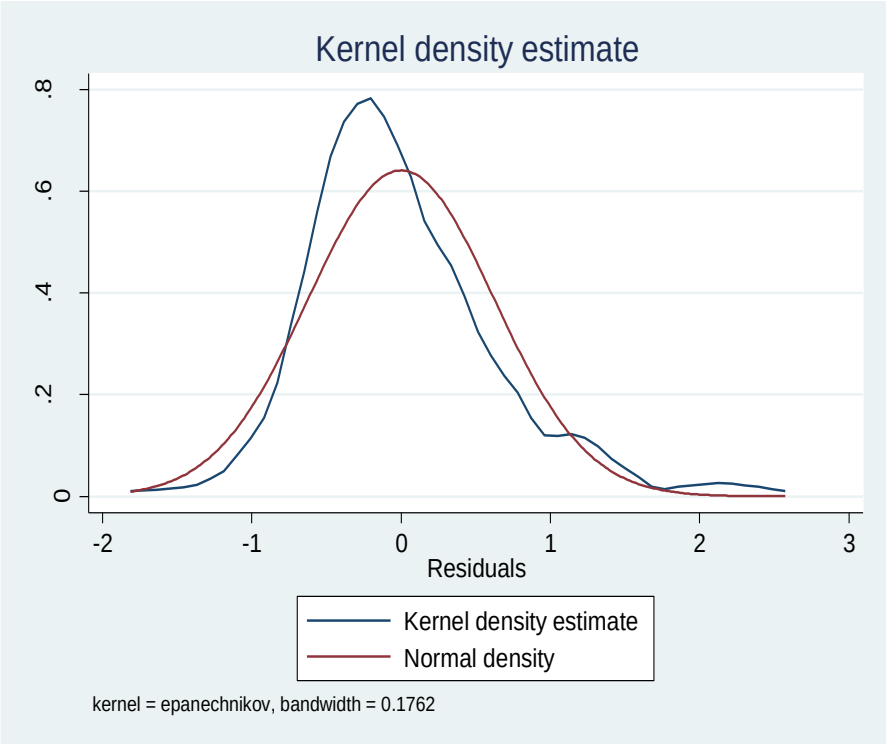

Figure 5.3: Kernel density estimate testing for normality of the residuals after the final regression model under Objective 3: skewness-kurtosis test, p<.001

Source: Stata output, 2016

Appendix 8: Outputs for Objective Four

Table 5.7: Correlation Matrix between the Outcome Variable and its correlates for Objective 4

Variable		b82	b511	b513	b521	b522	b523	b531
b82		1						
b511	a	0.372	1					
	b	0.000						
b513	a	-0.501	-0.365	1				
	b	0.000	0.000					
b521	a	-0.406	-0.238	0.490	1			
	b	0.000	0.000	0.000				
b522	a	0.610	0.394	-0.639	-0.492	1		
	b	0.000	0.000	0.000	0.000			
b523	a	-0.373	-0.259	0.340	-0.216	-0.744	1	
	b	0.000	0.000	0.000	0.000	0.000		
b531	a	0.590	0.319	-0.268	-0.191	0.388	-0.289	1
	b	0.000	0.000	0.000	0.001	0.000	0.000	
b532	a	0.275	0.188	-0.265	-0.178	0.362	-0.269	-0.270
	b	0.000	0.001	0.000	0.002	0.000	0.000	0.000
b533	a	-0.232	-0.148	-0.110	-0.274	-0.075	0.294	-0.366
	b	0.000	0.011	0.059	0.000	0.199	0.000	0.000
b534	a	-0.574	-0.324	0.642	0.668	-0.644	0.209	-0.275
	b	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: a=Pearson correlation coefficient; b=p-values (α=0.05); Pair-wise correlation: ≤0.35 = Weak correlation; 0.36-0.67 = Moderate correlation; 0.68-0.89=Strong correlation; ≥0.90 = Very strong correlation; Adapted from "Interpretation of correlation coefficient, " by R. Taylor, 1990, Journal of Diagnostic Medical Sonography, 6(1), p. 37

Source: Stata output, 2016

Table 5.8: Multicollinearity test for the Explanatory Variables under Objective 4

Var.	Variable label	VIF	1/VIF
b531	Status of school of attachment 1=National School	4.12	0.24279
b532	Status of school of attachment 2=Extra County School	3.97	0.25218
b533	Status of school of attachment 3=County School	3.63	0.27573
b793	3=Neutral that assessor boosted my performance	3.48	0.28701
b765	5=Strongly Agree that assessor took time to highlight my weaknesses	3.27	0.30607
b795	5=Strongly Agree that assessor boosted my performance	3.19	0.31309
b794	4=Agree that assessor boosted my performance	3.09	0.32402
b745	5=Strongly Agree that learners were free during the lesson	3.04	0.32867
b522	Category of school of attachment 2=Boarding School	2.78	0.35925
b775	5=Strongly Agree that assessor took enough time to discuss the lesson	2.55	0.39212
b755	5=Strongly Agree that assessor appreciated student's lesson	2.45	0.40777
b783	3=Neutral that assessor supervised other activities out of class	2.23	0.44875
b513	Type of school of attachment 3=Mixed School	2.21	0.45186
b521	Category of school of attachment 1=Day School	2.08	0.4806
b744	4=Agree that learners were free during the lesson	1.96	0.50969
b774	4=Agree that that assessor took enough time to discuss the lesson	1.90	0.52677
b772	2=Disagree that assessor took enough time to discuss the lesson	1.87	0.5361
b781	1=Strongly Disagree that assessor supervised other activities out of class	1.80	0.5567
b714	4=Agree that student was at ease with assessor	1.72	0.58229
b742	2=Disagree that learners were free during the lesson	1.57	0.63874
b752	2=Disagree that assessor appreciated student's lesson	1.57	0.63876
b712	2=Disagree that student was at ease with assessor	1.53	0.65465
b511	Type of school of attachment 1=Boys School	1.48	0.67412
b715	5=Strongly Agree that student was at ease with assessor	1.40	0.71301
b34	Student's year of study 1=4th	1.28	0.78054
b65	Students' programme 1=Arts	1.15	0.87218
	Mean VIF	2.35	

Note. VIF=Variance Inflation Factor; Variables should ideally have VIF<10

We test the null hypothesis that the model has no specification errors. Our result for _hatsq is p=0.369 leading to a failure to reject the null and conclude that our model is correctly specified

Source: Stata output, 2016

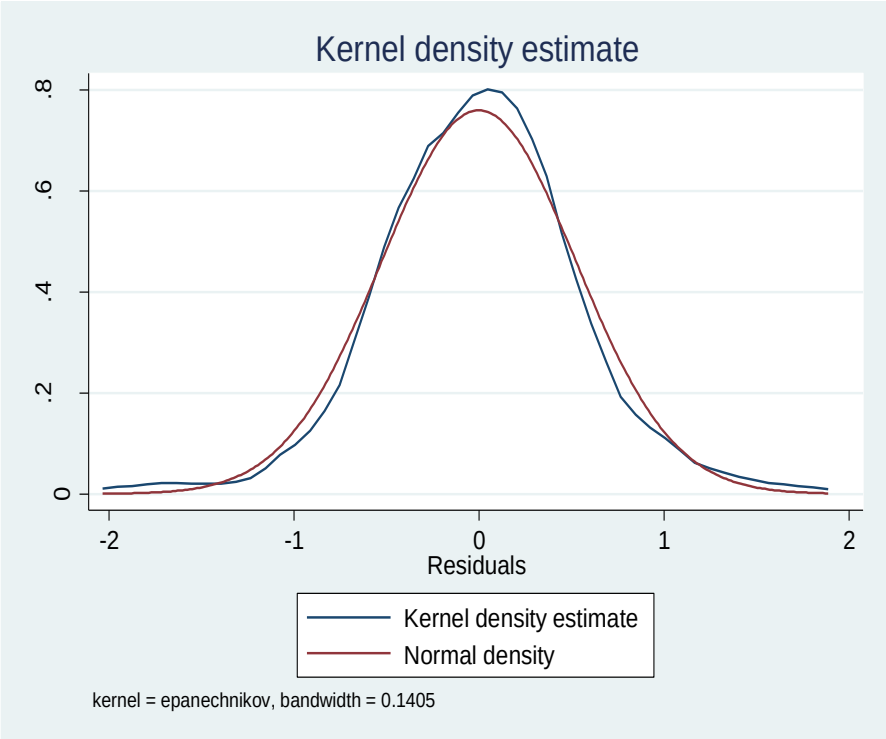

Figure 5.4 Kernel density estimate testing for normality of the residuals after the final regression model under Objective 4

Source: Stata output, 2016

Appendix 9: Approval of Proposal

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: sgs@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Office of the Dean (School of Graduate Studies)

Ref: MMU/COR: 509079

Date: 3rd February 2016

Wanyonyi Annette
EPM/H/06/13
P.O. Box 190-50100
KAKAMEGA

Dear Ms. Wanyonyi

RE: APPROVAL OF PROPOSAL

Following communication from the Departmental Graduate Studies Committee and the Faculty Graduate Studies Committee, I am pleased to inform you that the Board of the School of Graduate Studies meeting held on 22nd January 2016 considered and approved your Doctor of Philosophy proposal entitled: "***School Attachment Practices and Student Teacher Performance in Teaching Practice in Kenyan Public Universities***" and appointed the following as supervisors:

1. Dr. Geoffrey Musera - Department of Education Planning & Management - MMUST
2. Dr. Jason Nganyi - Department of Education Planning & Management - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Dean SGS. Such reports should be copied to the following: Chairman, Faculty of Education and Social Sciences Graduate Studies Committee and Chairman, Education Planning and Management. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of three years from the date of registration to complete your PhD thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

PROF. HENRY KEMONI
EXECUTIVE DEAN, SCHOOL OF GRADUATE STUDIES

Appendix 10: Research Permit

THIS IS TO CERTIFY THAT:
MS. ANNETTE B WANYONYI
of MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY, 0-50100 KAKAMEGA,has been permitted to conduct research in *All Counties*

on the topic: *SCHOOL ATTACHMENT PRACTICES AND STUDENT TEACHER PERFORMANCE IN TEACHING PRACTICE IN KENYAN PUBLIC UNIVERSITIES*

for the period ending:
26th August,2017

Permit No : NACOSTI/P/16/03098/13102
Date Of Issue : 26th August,2016
Fee Recieved :Ksh 2000

.....
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 Officer 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

HARAMBEE

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 11782

CONDITIONS: see back page

Appendix 11: Map Showing Western Region