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Teacher factors influencing integration of information communication technology in teaching of english language in secondary schools in Eldoret-East Sub-County, Kenya

Noah Kibet Tenai
School of Humanities and Social Sciences (SHSS)
Strathmore University

Teacher Factors Influencing Integration of Information Communication Technology in Teaching of English Language in Secondary Schools in Eldoret-East Sub-County, Kenya

Tenai Noah Kibet

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other university. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the thesis itself.

Name of Candidate: _____

Signature: _____

Date: _____

Approval

Thedissertation of **Noah Kibet Tenai** was reviewed and approved by the following:

Dr. Everlyne Makhanu
Senior Lecturer, School of Business
Strathmore University

Prof. Christine Gichure
The Dean, School of Humanities and Social Sciences
Strathmore University

Prof. Ruth Kiraka
The Dean, School of Graduate Studies
Strathmore University

ABSTRACT

Researchers have identified several factors influencing the integration and adoption of ICT into teaching. Personal characteristics of a teacher such as gender, educational experience, training on ICT, attitudes and perceptions can influence the adoption of a technology. The focus of this study was to investigate teacher factors that influence the integration of ICTs in teaching English language in Secondary schools in Eldoret East Sub County, Kenya. The objectives of the study were to investigate the influence of teachers' gender, teachers' attitude, ICT training and teachers' experience on ICT integration in teaching of English language in Secondary schools. The study was guided by the Diffusion of Innovations Theory and The Rand Change Agent Theory. The study adopted a descriptive survey design. The target population was 56 public secondary schools and 168 English teachers. Simple random sampling was used to select 17 public secondary schools and a sample size of 51 English language teachers purposively selected. A questionnaire was used to collect data which was analyzed using both descriptive and inferential statistics. There was a significant correlation between gender and technology literacy only. Significant relationship exists between attitude on ICT use and technology literacy. A positive and significant correlation exists between training and technology literacy, knowledge deepening and knowledge creation. The level of training affects ICT integration in the teaching of English language. Significant relationship exists between teaching experience and technology literacy. Both male and female teachers need to be encouraged to develop ICT literacy through training to enable them integrate ICT for teaching thus enhancing on students' achievement of set goals. Computer hardware should be availed to all student teachers in order to enhance its use during learning process that will empower them with skills and content to use them in actual teaching practice. Schools should ensure that they equip computer labs with adequate facilities.

Key words: Gender, Attitude, Training, Experience, ICT Integration, technology literacy, knowledge deepening and knowledge creation.

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LIST OF ABBREVIATIONS/ACR0NYMS

BOM: Board of Management

DVDs: Digital Video Disks

EFA: Education for all

EU: European Union

ICT: Information and Communication Technology

INSET: In-Service Education and Training

KCSE: Kenya Certificate of Secondary Education

KESSP: Kenya Education Sector Support Program

KICD: Kenya Institute of Curriculum Development

KNEC: Kenya National Examination Council

MDGs: Millennium Development Goals

MOE: Ministry of Education

MOEST: Ministry of Education Science and Technology

NCALT: National Centre for Applied Learning Technologies

NEPAD: New Partnership for Africa's Developments

NIIIC: National ICT Innovation and Integration Centre

PPPs: Public- Private Partnerships

QASO: Quality Assurance and Standards Officers

UNESCO: United Nations Educational, Scientific and Cultural Organization

OPERATIONAL DEFINITION OF TERMS

Attitude: In this study, attitude refers to the teachers' feelings on the impact of ICT on student learning and teachers' feelings on the use of ICT in the teaching process.

Experience: In this study, experience refers to the number of years that a teacher has been teaching English as a qualified teacher.

Gender: In this study, gender refers to the teachers of English being either male or female.

Knowledge Creation: In this study, knowledge creation refers to the ability of teachers and students to use ICT resources to create new knowledge and promote life-long learning through innovation.

Knowledge Deepening: In this study, knowledge deepening refers to the teachers' level of confidence on ICT use, the frequency of ICT use and ICT materials used in the teaching process.

Teacher Factors: In this study, teacher factors will include the gender of teachers, experience of teachers, attitude of teachers and the training level of teachers on ICT use.

Technology Literacy: In this study, technology literacy refers to the extent to which ICT is incorporated into teaching by considering ICT integration policy in the school, the duration of time a teacher has been using computers and the amount of time allocated for computer use.

Training: In this study training refers to specific education on ICT received by the teachers of English to prepare them to integrate ICT in their teaching.

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DEDICATION

This research thesis is dedicated to my family: my beloved wife Alice Chelagat Tenai and my dear children: Precious Joy Tenai, Princesse Florence Tenai and Presly Peter Tenai.

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter provides background information to the study problem and the statement of the problem. It also focuses on the objectives of the study, the research questions, and the significance of the study. It also presents assumptions, scope and limitations of the study were also presented in this chapter.

1.2 Background of the Study

1.2.1 Influence of Gender on ICT Integration

Gender difference and use of ICT has been reported in several studies. Research studies reveal that male teachers use more ICT in teaching and learning process than their female counterparts (Kay, 2006). Research conducted on teachers' integration of ICT in schools in Queensland state from 925 teachers also revealed that female teachers were integrating technology into their teaching less than the male (Watson, 2006). Wozney (2006) agrees with this that male teachers in his study used more ICT than female, citing female teachers' low levels use of ICT due to their limited technology access, skill and interest.

Additionally, Markauskaitie (2006) investigated gender difference on ICT literacy amongst first year graduate trainee teachers. The study revealed significant differences between males and females in technical ICT capabilities, and situational and longitudinal sustainability. Male scores were higher compared to females. Furthermore, Bowser-Brown argues that female students are more likely to enter programmes with few technology skills due to lack of access (Bowser-Brown, 2004). However, in a research conducted by Kay (2006) on teacher's attitudes on ICT, findings were that male teachers had relatively higher levels of ICT attitude and ability before implementation, but there was no difference between males and females regarding ICT attitude and ability after the implementation of the technology.

The situation was however different in mid-Western US basic schools where Bruiser (2006) found that female teachers' self-perception about technology competence improved while males' self-perception about technological dominance remained unchanged. The study was in

agreement with Adams (2002) that female teachers applied ICT more than the male teachers. In relation to the foregoing discussion, the influence of gender on ICT is not very clear and no such study has been conducted in Eldoret-East Sub County. None of these studies also have considered the influence of gender in the teaching of English in secondary schools. It is in the light of this that this study sought to establish whether teachers' gender influence the ICT integration in teaching of English language in public secondary schools in Eldoret East Sub County.

1.2.2 Influence of Attitude on ICT Integration

Attitude towards ICT influences teachers' acceptance of the usefulness of technology, and also influences whether teachers integrate ICT into their classroom or not (Huang, 2005). It is evident that if teachers' attitude towards ICT integration in the teaching process is positive then they can easily and willingly provide an effective integration process of the technology. On the other hand, if teacher's perception towards ICT is negative, then ICT integration in teaching process would not be utilized. The outcome of research on teaching and learning attitude of teachers towards the use of ICT may be either positive or negative.

Becta (2004) for example, reported that in teaching and learning process, the barrier towards the use of ICT is the negative attitude while Rhoda and Gerald (2000) found that positive attitude towards ICT use is widely recognized as a necessary condition for effective ICT use in teaching and learning. However, Cheng (2008) has shown that there is no significant relationship between teachers' beliefs and their actual practice while integrating ICT in the classroom teaching process. It has not been established whether the teachers' attitude influences ICT integration in public secondary schools in Eldoret East Sub-County.

1.2.3 Influence of Training on ICT Integration

Professional development of teachers sits at the heart of any successful technology and education program. Teachers' professional development is a key factor to the successful integration of computers into classroom teaching. Many school leaders perceive the lack of ICT related knowledge of teachers as one of the main impediments to the realization of their ICT related goals (Pelgrum *et al*, 2002). Training plays an important role in a teacher's readiness to use computers (Gan, 2001). With regards to the issue of having attended formal computer courses, it

was identified through numerous studies that there is a significant relationship between usage of computers and computer training (Wong *et al*., 2002; Sia, 2000).

Baylor and Ritchie (2002) carried out a quantitative study that looked at the factors facilitating teachers' skill, teacher morale, and perceived student learning in technology-using classrooms. They found out that professional development has a significant influence on how well ICT is embraced in the classroom. Sandholtz & Reilly (2004) further claim that teachers' technology skills are strong determinants of ICT integration, but they are not conditions for effective use of technology in the classroom. Research has shown that teachers require experts in technology to show them the way to integrate ICT to facilitate students' learning (Plair, 2008). Further, ICT related training programs develop teachers' competences in computer use (Bauer &Kenton, 2005; Franklin, 2007; Wozney *et al*., 2006).

Andoh (2012) in his research also found out that teachers' professional development is a key factor to successful integration of computers into classroom teaching. Muller and his colleagues (2008) too related technology training to successful integration of technology in the classroom. Angers and Machtmes (2005) state that teachers who receive eleven or more hours of curriculum-integration training are five times more likely to say they believe they are much better prepared to integrate technology into their classroom lessons than teachers who received no such training. Teachers receiving more training of either type, but especially of integration training, are more likely to use software to enhance instruction in their classrooms. Research studies revealed that quality professional training program helps teachers implement technology and transform teaching practices (Brinkerhoff, 2006; Diehl, 2005).

However, Sandholtz & Reilly (2004) claim that teachers' technology skills are strong determinants of ICT integration, but they are not conditions for effective use of technology in the classroom. It has also been realized that being skilled in ICT does not improve teachers' classroom teaching efficiency (Yuen & Ma, 2002). Cox *et al*., (1999a) showed that after teachers had attended professional development courses in ICT, they still did not know how to use ICT in their classrooms; instead they just knew how to run a computer and set up a printer. They explained that this is because the courses only focused on teachers acquiring basic ICT

skills and did not often teach teachers how to develop the pedagogical aspects of ICT. The existence of these two schools of thought informs this present study.

1.2.4 Influence of Experience on ICT Integration

Several studies have been conducted that addressed the relationships between teaching experience and usage of computer. Most researches showed that teaching experience influences the successful use of ICT in classrooms (Wong & Li, 2008; Giordano, 2007; Hernandez-Ramos, 2005). In a study of teachers' usage of computers, Martin and Lundstrom (2002) found that almost 60% of the teachers in their study who had under 10 years of teaching experience believed computers in the classroom were essential and hence they use it extensively, while only 25% of teachers with over 20 years of teaching experience shared this belief. Bhattacherjee & Prekumar (2004) demonstrated that people's experience plays a vital role in their initial acceptance towards a system in question. Research has shown that experience with the use of technology has an influence on intention to use and actual use of information technology (Thompson 2006).

Further, Gorder (2008) reported that teacher experience is significantly correlated with the actual use of technology. Baek, Jong & Kim (2008) claimed that experienced teachers are less ready to integrate ICT into their teaching. Similarly, in United States, the (U.S National Centre for Education Statistics, 2000) reported that teachers with less experience in teaching were more likely to integrate computers in their teaching than teachers with more experience in teaching. Conversely, Further, Lau &Sim (2008) conducted a study on the extent of ICT adoption among 250 secondary school teachers in Malaysia. Their findings revealed that older teachers frequently use computer technology in the classrooms more than the younger teachers. However, some research reported that teachers' experience in teaching did not influence their use of computer technology in teaching (Niederhauser & Stoddart, 2001).

One such study was by Zidon and Miller (2002) who found a weak relationship existed between years of teaching with computer usage. Meta-analysis and review of 81 research studies by Rosen and Maguire (1990) further concluded that teachers teaching experience does not eliminate computer phobias and many experienced teachers display some wariness, discomfort and/or mild anxiety in relation to computers. Additionally, according to (Niederhauser &

Stoddart, 2001) teachers' experience in teaching did not influence their use of computer technology in teaching (Niederhauser & Stoddart, 2001). However, Granger, Morbey, Lotherington, Owston and Wideman (2002) further conducted a qualitative survey on factors contributing to teacher' successful implementation of ICT in Canada. The findings found no relationship between teachers' teaching experience and experience in the use of ICT. From the previous studies, it is not clear whether teaching experience influences ICT integration. Therefore this study sought to establish the relationship between teaching experience and ICT integration.

1.2.5 Teaching of English and ICT Integration

English is the official language of communication in Kenya as well as the medium of instruction in the schools, colleges and universities. It is also the prominent language of international communication. Consequently, those who master English reap many academic, social and professional benefits. In the school setting, proficiency in English will make the learning of other subjects much easier. The importance of English cannot therefore be overemphasized. To further facilitate communication all over the world, it is therefore essential that schools and institutions of higher education teach appropriately. This situation has necessitated further developed technological approach in teaching and learning of English language KIE (2005).

Integration of ICTs in the teaching and learning of English can enable the learners interact with the computer based resources rather than the instructor who is the teacher all the time. Through the computer resources, learners are likely to interact and communicate with the teacher on the curriculum content and could even discuss assignments given to them and give immediate feedback. ICTs enable one to engage in learning activities any time, in any place and use any method to learn at any pace. The use of ICTs in teaching and learning English language could not have come at a better time. According to the report by KIE (2005), integration of ICTs in teaching and learning of English language in the country could contribute to making learners participate fully in learning activities and therefore discover and nurture their individual talents. English teachers can integrate ICTs program and facilities such as animation, digitization, video captions and voice in their teaching activities to achieve this objective.

There are many advantages of integrating ICTs in teaching and learning of a language (Leakey, 2011). First it motivates both learners and teachers making the learning process more exciting and enjoyable. Secondly, it provides a wide range of multimedia sources enabling texts, still images, combination of audio and video in exciting and stimulating ways for presentation purposes in the classroom. Thirdly, it offers opportunities for intensive one-to-one learning in a multimedia computer laboratory and lastly, offers access to a rich resource of authentic materials on the internet, CD-ROM and DVD. ICT is perceived as a means of promoting educational change, improving the students' skills of learning, preparing them for the global economy and information society and also improving delivery and access to education (Kozma 2005). Various reports show that, English as a subject at secondary level is wide in content and may not be covered adequately within the recommended timeframe (KIE 2005).

Grammar lessons in English are mainly taught without much variety. Some topics are difficult and vocabulary is taught independently lacking originality. National examination results at form four levels, which is the culmination of secondary school, Kenya Certificate of Secondary Education (KCSE), released by the national examination body Kenya National Examination Council (KNEC), continue to show poor performance of English language (KNEC 2009, 2010). The results could be as a consequence of most English language teachers using the content based instruction in their teaching and learning activities. Some of the learners cannot communicate effectively in the language after completing school (Luhombo, 2015). English Curriculum Developers feel that integrating computer assisted ICTs in the teaching and learning process could be a solution. Integration of computer assisted ICTs in teaching and learning process has a lot of variety, provides stimulus variation and diversification (Farrel, 2007).

Therefore, it is important for English language to be taught by using ICT so that it can develop and fit in the national and international scenario. This would also help the learners improve their participation in the class. Teaching objectives can be achieved if teachers and learners used a variety of instructional approaches, ICTs being among them in their teaching and learning all aspects of English language (grammar, language skills, vocabulary and literature). Through use of ICTs in teaching and learning of English language, students could develop skills such as problem solving and critical thinking. According to the KNEC report of 2010, one of the reasons why English results continue deteriorating is because some of the teachers continue using

teacher-centered approaches in their teaching activities and do not integrate ICTs which increases students' participation and is more learner-centered. Following the significance of ICT integration in teaching of English, the researcher found it important to conduct a research on the same.

1.3 Statement of the Problem

Several factors influencing the adoption and integration of ICT into teaching have been identified by researchers. According to Schiller (2003), personal characteristics of a teacher such as gender, educational experience, training on ICT, attitudes and perceptions can influence the adoption of a technology. Jones (2011) asserts that teachers' training and preparedness to integrate ICT into teaching determines the effectiveness of technology. The attitudes of teachers towards technology greatly influences their adoption and integration of computers into their teaching. According to Russels & Bradley (1997), anxiety, lack of confidence and competence and fear often implies ICT takes a back seat to conventional learning mechanisms. Therefore, an understanding on the influence of these factors on ICT is of great significance.

Several studies conducted have concentrated on the influence of teacher factors on ICT integration in general. Few studies have been conducted to look into the influence of these factors on the integration of ICT in the teaching of English despite the significance attached to the English language. English is the official language of communication in Kenya as well as the medium of instruction in our schools, colleges and universities. It is also the prominent language of international communication. Consequently, those who master English reap many academic, social and professional benefits. In the school setting, proficiency in English will make the learning of other subjects much easier Kenya (MOE, National ICT Strategy for Education and Training, 2006). The importance of English cannot therefore be overemphasized. Further, there are limited studies on ICT integration in Uasin Gishu County and none has been conducted in Eldoret East Sub-county. It is in light of this that the researcher sought to conduct a study to establish the influence of teacher factors on the integration of ICT in teaching of English in secondary schools in Eldoret East Sub-county.

1.4 Purpose of Study

The purpose of this study was to investigate teacher factors influencing integration of Information Communication Technology in the teaching of English language in public secondary schools in Eldoret East sub-county, Kenya.

1.5 Objectives of the Study

The specific objectives in this study were:

i) To determine the influence of teacher's gender on integration of ICT in teaching English language in public secondary schools in Eldoret East sub-county.
ii) To establish the influence of teacher's attitudes on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.
iii) To establish the influence of teacher's ICT training on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.
iv) To establish the influence of teacher's experience on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.

1.6 Research Questions

The research questions in this study were:

i) To what extent does gender of teachers influence integration of ICT in teaching of English language in public secondary schools in Eldoret East Sub County?
ii) To what extent does attitude of teachers influence integration of ICT in teaching English language in public secondary schools in Eldoret East Sub County?
iii) To what extent does training of teachers influence integration of ICT in teaching English language in public secondary schools in Eldoret East Sub County?
iv) To what extent does experience of teachers influence integration of ICT in teaching English language in public secondary schools in Eldoret East Sub County?

1.7 Significance of the Study

English is the official language of communication in Kenya as well as the medium of instruction in our schools, colleges and universities. It is also the prominent language of international communication. Consequently, those who master English reap many academic, social and professional benefits. In the school setting, proficiency in English will make the learning of other subjects much easier. The importance of English cannot therefore be overemphasized. All efforts therefore must be put in place to ensure good performance in the subject. One of such means is through integration of ICT. Although many public schools have ICT equipment in one form or the other, their use in the classroom level is limited due to issues affecting integration (Yusuf & Yusuf, 2009).

The findings of this study will have both practical and theoretical influence on the future of integrating ICT in teaching English language in the Kenyan secondary schools. Practically, the study may result to proper integration of ICT in teaching of English by teachers of English. Consequently, this may result in better learning experiences and learning outcomes**.** KICD may also use the findings to monitor and evaluate the use of their multimedia resources for future renovation and innovation. The MoE may also use the findings to carry out advisory exercises aimed at quality determination on ICT integration by teachers. The BOMs may also use the findings to make informed decisions on hiring of teachers with adequate knowledge in ICT. Theoretically, the study is expected to contribute to the body of knowledge on the learning methodology of English language. It outlines teacher factors influencing ICT integration relation in teaching of English language. Finally, the study may provide a base on which other researchers can develop their studies

1.8 Assumptions of the Study

The researcher made the following assumptions:

i) Secondary schools in Eldoret East have ICT infrastructure.

ii) Respondents in the study were willing to participate in the study and willing to give honest responses.

1.9 Delimitations of the Study

Limitations of a study refer to the constraints that a researcher has little or no control over. The study was limited to the use of self-assessment of respondents using questionnaires in collecting the data. The findings are not going to be generalized to all the public secondary school stakeholders. The study was limited to 17 public secondary schools in Eldoret East and left out private secondary schools. This was because public schools are managed by government and are open for public utility. The findings of the study therefore will not be generalized to the status of integration of ICT in the instruction of English in all secondary schools in Kenya. There are other factors influencing integration of ICT in teaching English language, but this study was only limited to four factors namely: gender, training, experience and attitude. Other studies can therefore consider other teacher related factors influencing ICT integration in the teaching of English.

CHAPTER TWO
LITERATURE REVIEW

2.1 Chapter Overview

This chapter presents the literature review related to the proposed study. It covers literature on evolution of information communication technology in education, concept of ICT integration in education. The chapter also covers the theoretical overview. It covers the Diffusion of Innovations Theory and the Rand Change Agent Theory. The literature also covers the concept of ICT integration in teaching and ICT policy in schools, teachers' gender and integration of ICT, teachers' ICT competency level and its integration in teaching, teachers' attitude on integration of ICT in teaching, teachers' training and integration of ICT into teaching and teachers' experience and ICT integration into teaching. It also presents research gaps and the conceptual framework on which the study will be based.

2. 1.1 Evolution of Information Communication Technology in Education

Information and Communication Technology (ICT) has the potential to transform teaching and learning processes. Information technologies have always held great promise for transforming our teaching, thinking and learning. The computer's capacity to construct symbolic representations for any given domain has already transformed how we think about knowledge work. In the Mind's New Science, Howard Gardner (1985) suggested that the emergence of the computer was at the heart of the cognitive revolution in psychology. Psychologists in the 1950s used massive, card-processing computers to create interactive symbolic simulations to develop and test hypotheses about complex cognitive processes. Research by computing has since been applied across the social sciences to create new avenues for investigation from economics to sociology and from meteorology to virology.

Enthusiasts such as Seymour Papert (1980) predicted that computers would allow learners to construct and test hypotheses about complex systems. Introducing computers into schools, Papert argued, would radically change the relationship between teacher and student. Teachers would need to become interdisciplinary facilitators of student creativity, readily able to guide learning toward intended outcomes while creating legitimate space for experimentation. Computing

would allow students to create and test knowledge claims. Computing would extend communication networks, provide immediate access to information, and facilitate new forms of creative expression.

The production and introduction of calculators and computers in education system worldwide has helped in simplifying teaching in schools. This has led to promotion of national stability and economic survival (Nukwe, 2006). The advantage of computer technology as a means of ICT integrated in classroom teaching and learning include: its ability to grab students' attention, focuses and retains students' concentration, does generate interest in class work, creates a sense of anticipation, energizes students for a learning exercise, also draws students' imagination improving attitude towards content and learning process. Mutuma (2005) argues that integration of ICT in teaching and learning results in raised quality of education. He further asserts that interactive radio instruction project has been found to be the most comprehensive, saves time and money used on excursions and promoting a lifelong learning experience for both the teachers and the learners.

2.1.2 Concept of ICT Integration in Education

Education systems in the world are under pressure to integrate Information and Communication Technologies (ICTs) in teaching and learning various subjects in the school curriculum and Kenya is no exception (Murithi, 2005). Kenya as a country has emphasized the importance of integrating ICTs in the teaching and learning activities through its Education Sector Support Program (KESSP). This is evidenced through the introduction of the National ICT Strategy for Education and Training (MOE, 2005). The document outlines various domains on ICTs. Some of the areas in the document include: ICT in education policy, connectivity and networks infrastructure, digital equipment, access and equity, maintenance and technical support, harnessing emerging technologies, digitized content, ICT integration in education, research development and training. This enables the country to achieve global goals like Education for All (EFA).

In general, the main goal is to facilitate Public-Private Partnerships (PPPs) that will mobilize and offer ICT resources to public schools, community resources and learning centers in Kenya (ROK, 2006). Education has been identified as one of the public sectors most influenced by

technological development (Kozma, 2005). There is a growing demand on educational institutions to use Information Communication Technology (ICT) to teach skills and knowledge students in the 21st century. Today's educational institutions try to restructure their education curricula and classroom facilities, in order to bridge the existing technology gap. This restructuring requires effective adoption and integration of technology in order to provide learners with knowledge of specific subject area as well as professional meaningful productivity (Tomei, 2005).

Worldwide, countries are highly investing their resources in education for establishment of technology-based instruction. In most developed countries, schools have integrated ICT into the curriculum and demonstrated high level of effective use in support of teaching and learning activities. For instance, in the United Kingdom, the government spending on ICT in 2000-2009 was £2.5 billion (Nut, 2010). In Africa, many counties have integrated ICT into their education systems. The Nigerian Ministry of Education (2006) reports that the use of ICTs in achievement of education goals has led to rapid expansion of knowledge, improved examination outcomes, and technical efficiency. Rwanda's integration of e-learning has highly succeeded. Its lap top program has seen even primary school pupils' access computers (MOE, 2010).

Kenya ICT Trust Fund, formed in 2004 to initiate ICT in education has led to an average of six public secondary schools, from every sub-county in Kenya acquiring computers for integration of ICT in their operations including teaching (Luhombo,2015). The concept of ICT integration in education provides a fundamental theoretical basis for research and practice in teaching and learning. Richey defines educational technology as the study and ethical practice of facilitating learning and improving performance by creating; using and managing appropriate technological processes and resources (Richey *et al.*, 2008). The 21st century classroom is networked, adequately provided with a rich internet connection to support media streams, personal Skype and group/video conferencing communications. It is able to upload and download students work and research to suitable structures to support 'anywhere anytime' learning and collaboration.

For effective ICT integration, facilities need be in place to enable media production, using projectors that have the facility to support wireless networking enabling the users (teachers and students) to easily connect and then switch between users (Anderson, 2004). Through ICT,

learning can occur anytime and anywhere. Online course materials, for example, can be accessible 24 hours a day, seven days a week. Current research has it that ICT assists in transforming a teaching environment into a learner-centered one (Castro Sanchez & Aleman, 2011). Further, Jacob (2015) observes that Information and communication technology (ICT) has the potential to transform teaching and learning processes.

Language teaching is one area in which the application of multimedia technology has been encouraged. Integrating technology as a meaningful learning tool involves much more than simply providing equipment. ICT provides a good opportunity to develop and create different enjoyable tasks (Usun & Komur, 2009). Multimedia technological equipment such as digital video discs, radio, television, audio-visual cassettes, projectors, smart phones, and communicative tools such as e-mails, Skype, chat rooms, discussion boards, and internet conferences are being used in language classes by instructors using computers (Sara, Brown,Kiforo &Wamakote, 2010). Several factors influencing the adoption and integration of ICT into teaching have been identified by researchers.

Teachers are considered to be important for effective curriculum change and innovation in the education sector. That any curriculum innovation requires change agents, key among them being the teacher (Orsten and Hunkins, 2004). The use of technology as a tool to develop the different language skills has received great attention. Teachers of English are frequently exposed to new practices (Melor and Yunus, 2008). Conlon (2005), however, is somewhat pessimistic about the potential for ICT to transform learning and teaching. He questions whether the introduction of broadband connectivity will lead to the developments in online discussion and web browsing. According to Moseti (2007), the effectiveness of any curriculum depends on the quality of teachers that are there to translate the syllabus to practical instructional material in class. Bishop (1986) agrees with Moseti (2007) that for a teacher to be able to educate others, he must himself be educated. This competence according to Farrant (2004) is built upon mastery of subject content, pedagogical training, attitudes and teaching experience.

2.1.3 ICT Integration in the Classroom

Integration of ICT in learning should be encouraged as part of good teaching. This motivates learners since many concepts and cognitions are abstract thus difficult to express verbally. In relation to this, Pierson (2001) suggests that integration of computers in learning is an inseparable part of good teaching. He further suggests that educators at all levels should engage their students in appropriate and purposeful computer learning process that transform learning opportunities geared towards the needs of the 21st century. Language teaching is one area in which application of technology has been encouraged. Technologies such as digital video discs, radio, television, audiovisual cassettes, CD ROMS, projectors, smart phones, and communicative tools such as e-mails, chat rooms, discussion boards and internet conferences are being used in language classes (Kozma, 2005). These technological devices help instructors in language classes by providing them with a good opportunity to develop and create different, enjoyable tasks (Usun & Komur, 2009).

Teachers are considered to be important for effective curriculum change and innovation in the education sector. According to Orsten and Hunkins (2004), any curriculum innovation requires change agents, key among them being the teacher. According to UNESCO (2011), the use of new technologies in education implies new teacher roles, new pedagogies and new approaches to teacher education. The successful integration of ICT into the classroom will depend on the ability of teachers to structure the learning environment in new ways, to merge new technology with a new pedagogy, to develop socially active classrooms, encouraging co-operative interaction, collaborative learning and group work. This requires a different set of classroom management skills. The teaching skills of the future will include the ability to develop innovative ways of using technology to enhance the learning environment, and to encourage technology literacy, knowledge deepening and knowledge creation.

Integration of ICT in teaching and learning improves the quality of education (Gomes, 2005). Integration aims at the use of ICT to support teaching and learning in the delivery of the various curricula to achieve improved education outcomes. Because ICT is interactive media, it facilitates students to develop diversified skills needed for industrialization and a knowledge-based economy (Luhombo, 2015). It also allows teachers and learners to proceed at different

paces depending on the prevailing circumstances. Whereas the impact of ICTs on the education goals is still inconclusive, reported observations include rapid expansion of knowledge, improved examination outcomes, enhanced communication and technical efficiency, as well as greater decentralization in the delivery of education services.

ICT has the potential to play a more powerful role in increasing resources and improving the environment for learning. ICTs can also play a role in preparing students to acquire skills, competencies and social skills that are fundamental for competing in the emerging global "knowledge" economy (Luhombo, 2015). Teacher professional learning will be a crucial component of this educational improvement. However, professional learning has an impact only if it is focused on specific changes in teaching. English language positions itself as a key medium of instruction in curriculum matters in most countries in the world. It is used as second language in many countries. For example, in India, English language enjoys high prestige while in Kenya, it is the official language of communication as well as the main medium of instruction in schools, colleges and universities (The Constitution of Kenya, 2010).

It is also one of the compulsory subjects in determination of university admission and job placement in commercial sectors. Teachers' skills and attitude count a great deal more in curriculum renewal than do changes in content and methods (Law, 2008). It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate technology into teaching process (Hew & Brush, 2007; Keengwa & Onchwari, 2008). It is noted that teachers' qualification tends to influence ICT integration. One study in Britain found out that people with more education have higher ICT skills (NCALT, 2005).

2.1.4 ICT and Learning Outcomes

Computers provide an opportunity to real time feedback for learning. Research emphasizes that providing this type of timely focused feedback has significant impact on student learning and achievement, improving assessment results by an average of 28percent (Dean *et al.,* 2012). Students are also reflecting on debrief questions and listening that encourage them to self-assess and make adjustments in their thinking. Students who receive this opportunity have been shown

to outperform students who only receive results (Dean *et al.,* 2012). Computers provide an important opportunity for teachers to model; teach; practice and assess students' use of active learning strategies. In this case, teachers provide a satisfying response and therefore engagement and achievement to students increase.

This confirms the fact that a learner's positive emotional reaction to information they consider relevant increases the probability that the information will sink in (Immordino, Yang & Faeth, 2010). Computer based technology is perceived as a very powerful tool that extends educational chances and facilitate acquisition of knowledge (Conlon & Simpson, 2003) and redefine the instructor who is the classroom teacher and learners' roles and attitude concerning teaching and learning (Guha, 2003). Various reports show that, English as a subject at secondary level is wide in content and may not be covered adequately within the recommended timeframe (KIE 2005).

Grammar lessons in English are mainly taught without much variety, some topics are difficult and vocabulary is taught independently lacking originality. National examination results at form four levels, which is the culmination of secondary school Kenya Certificate of Secondary Education (KCSE), released by the national examination body Kenya National Examination Council (KNEC), continue to show poor performance of English language (KNEC 2009, 2010). The results could be as a consequence of most English language teachers using the content based instruction in their teaching and learning activities. Some of the learners cannot communicate effectively in the language after completing school (Luhombo, 2015).

English Curriculum Developers feel that integrating computer assisted ICTs in the teaching and learning process could be a solution. Integration of computer assisted ICTs in teaching and learning process has a lot of variety, provides stimulus variation and diversification (Farrel, 2007). Therefore, it is important for English language to be taught by using ICT so that it can develop and fit in the national and international scenario. This would also help the learners improve their participation in the class. Teaching objectives can be achieved if teachers and learners used a variety of instructional approaches, ICTs being among them in their teaching and learning all aspects of English language (grammar, language skills, vocabulary and literature). Through use of ICTs in teaching and learning of English language, students could develop skills such as problem solving and critical thinking.

According to the KNEC report of 2010, one of the reasons why English results continue deteriorating is because some of the teachers continue using teacher-centered approaches in their teaching activities and do not integrate ICTs which increases students' participation and is more learner-centered. KIE has since developed ICT programs/platform for Sciences, Agriculture, English and Kiswahili languages. This platform has gone through various steps in ensuring that the teaching objectives of those subjects are considered. According to KIE (2008) report to schools in all counties, integration of ICT in teaching and learning activities should assist the teacher to expose content or develop the theme. This enables the English language teachers to focus on the basics of the topic, methodologies and presentation.

At this stage, the teacher preparation is very important because he/she is expected to incorporate ICT and other teaching aids in the execution of his/her subject. KICD has so far transferred the English curriculum to CDs and distributed to all schools in Kenya (KIE, 2008). English was accorded the official language status in Kenya because its importance to the country was envisaged. One of the major reasons why English language enjoys this new status is due to the fact that it is used in many parts of the world in nurturing and developing various spheres of life like: culture, economy, and politics among others. English is the official language of communication in Kenya as well as the medium of instruction in our schools, colleges and universities. It is also the prominent language of international communication.

Consequently, those who master English reap many academic, social and professional benefits. In the school setting, proficiency in English will make the learning of other subjects much easier. The importance of English cannot therefore be overemphasized. It is therefore important that, it is taught appropriately in schools and institutions of higher learning, so as to further facilitate communication all over the world. This situation has necessitated further developed technological approach in teaching and learning of English language. Integration of ICTs in teaching and learning of English can enable the learners interact with the computer based resources rather than the instructor who is the teacher all the time.

Through the computer resources, learners are likely to interact and communicate with the teacher on the curriculum content and could even discuss assignments given to them and give immediate feedback. ICTs enable one to engage in learning activities any time, in any place and use any

method to learn at any pace. The use of ICTs in teaching and learning English language could not have come at a better time. Proficiency in English will make the learning of other subjects much easier. English is the official language of communication in Kenya as well as the medium of instruction in our schools, colleges and universities. It is also the prominent language of international communication. Consequently, those who master English reap many academic, social and professional benefits.

2.1.5 Kenya ICT Policy

The Kenyan government has taken steps to support and implement the strategy with an aim of enhancing the quality of teaching and learning to enhance students' participation in the emerging knowledge economy and information based society. Some of the government's initiative is seen in the vision 2030 which seeks to reform curricula and modernize teacher training to establish a computer supply program that will equip students with modern ICT skills. This will transform the curriculum and ensure that usage of ICT knowledge becomes part of formal instruction (MOE, 2004). English language is a compulsory subject in the Kenya school education system (KIE, 2002).

Teachers teach English like any other language using both traditional and modern approaches of teaching. Old classroom and instructional technologies include use of chalk and writing board, text books, charts, radio and television. According to Look (2005), new technology refers to using computer programs and facilities to teach. These programs and facilities include power point, CDs, DVD, You tube, Internet, SMART boards, smart pens among others, depending on the level of technological development and use in the region. Kenya disseminated its ICT policy in 2006 with its vision to become a prosperous ICT-driven society and its aim is to better the welfare of the citizens by ensuring accessibility, efficiency, reliability and affordability of ICT services. The policy spells out the goals, aspirations and strategies of integrating ICT in education.

The Kenyan government has the task and responsibility of encouraging adoption and use of ICT in all the schools and other institutions of learning in order to better the quality of teaching and learning (National ICT Policy, 2006). The policy is divided into several sections: Broadcasting, Information technology, Postal services and Telecommunications. The section in the policy on

information technology highlights the objectives and strategies of ICT and its integration in education sector. The related strategy under ICT includes: E-learning to promote the development of e-learning resources; facilitate public-private partnerships to mobilize resources in order to support e-learning activities; Promote the development of an integrated e-learning curriculum to support education; Promote the establishment of a national ICT center of excellence; Provide affordable infrastructure to facilitate dissemination of knowledge and skill through e-learning platforms; Create awareness of opportunities offered by ICT as an educational tool to education sector; Facilitate sharing of e-learning resources between institutions; and Integrate resources with existing resources.

In general, the aim is to facilitate Public-Private Partnerships (PPPs) that will mobilize and provide ICT infrastructure to all public schools, community and other learning institutions in Kenya (ROK, 2006). In Kenya, teachers at various levels are prepared and encouraged to integrate new technology in their teaching and learning activities in order to achieve their objectives and improve the quality of education. Computers and the related infrastructure like Internet can be used to provide information that could improve the efficiency and effectiveness of the teaching and learning process (Guha, 2003). Since 1963, the education system in Kenya has been undergoing curriculum changes through different commissions and committees appointed by the Government of Kenya. The main aim of curriculum review by these commissions is to identify ways of improving the education system and teaching methodology in Kenya (Republic of Kenya, 2005).

Currently, the Kenyan government is keen on ensuring that strategies used in teaching various subjects are tailored to achieving the latest strategic plan of vision 2030 initiative. The government has commitment to invest in training, research and development, and offer incentives to boost application of ICT in all operations in order to meet the needs of the society (Republic of Kenya, 2005; World Bank, 2003). The Sessional Paper No. 1 of 2005 which is the current education policy captures stakeholders' recommendations on how education needs to be transformed to be responsive for the 21st century needs for education and training. The English curriculum has undergone revision by the curriculum center in Kenya (KICD) for a number of years, the latest being in 2002; and some of the changes being implemented include integration of ICTs in teaching and learning of English language (KIE, 2008).

The Kenya Institute of Curriculum Development (KICD), the curriculum centre in Kenya plays an important role of reviewing curriculum and foreseeing implementation of National Goals of Education in Kenya. According to the report by KIE (2005), integration of ICTs in teaching and learning of English language in the country could contribute to making learners participate fully in learning activities and therefore discover and nurture their individual talents. English teachers can integrate ICTs program and facilities such as animation, digitization, video captions and voice in their teaching activities to achieve this objective. There are various ways in which English language teachers and learners can integrate ICTs in a language classroom in order to assist the development of the content and four key language skills: listening, speaking, reading and writing.

Power point presentations, web downloads of audio and video recordings, commercially produced Compact Disks (CDs) and Digital Video Disks (DVDs), animated graphics, mixing media and electronic communication can enhance teaching and learning English subject. There are many advantages of integrating ICTs in teaching and learning of a language, (Leakey, 2011). First it motivates both learners and teachers making the learning process more exciting and enjoyable. Secondly, it provides a wide range of multimedia sources enabling texts, still images, combination of audio and video in exciting and stimulating ways for presentation purposes in the classroom. Thirdly, it offers opportunities for intensive one-to-one learning in a multimedia computer laboratory and lastly, offers access to a rich resource of authentic materials on the internet, CD-ROM and DVD. ICT is perceived as a means of promoting educational change, improving the students' skills of learning, preparing them for the global economy and information society and also improving delivery and access to education (Kozma 2005).

2.2 Theoretical Review

Various models and theories have been used to explain ICT adoption in schools. Kerlinger (2002) defined a theory as a set of interrelated constructs, definitions and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena. This study adopted the Diffusion of Innovations Theory and the Rand Change Agent Theory. The two theories complemented each other with regard to the study variables.

2.2.1 The diffusion of Innovations theory

Rodgers (2003) conceptualized an innovation as an idea, practice or an object perceived as new by an individual. He further argues that adoption is preceded by the diffusion of an innovation. He defines diffusion as a process in which an innovation is communicated through certain channels over time among members of a social system (Rodgers 2003, 2005). According to Rodgers, a 'social system' is a set of interrelated units that are engaged in joint problem solving to accomplish a given goal. The social systems may be individuals, informal groups, organizations and/or sub-systems (Rodgers 2003).

According to Rodgers, diffusion is a special type of communication in which messages are about a new idea (Rodgers in Bakkabulindi, 2014). He further stresses that diffusion is a kind of 'social change' by which alteration occurs in the structure and function of a social system. Social change occurs when new ideas are invented, diffused and adopted or rejected leading to certain consequences. Diffusion and or adoption of innovations is a slow process. There is, therefore, need to try and expedite the process. One way of doing this is to try identify the factors (correlates) affecting it and which can be manipulated to so as to positively influence the diffusion and/or adoption of the innovation in question (Rodgers, 2003).

Taken in this context, ICT is our innovation. Integration of it into teaching and learning process would suffice as adoption. For the diffusion and/or adoption to occur, it must diffuse through a 'social system'. The units or members of a social system in this case would be the teachers who act as a channel through which the diffusion and/or adoption occurs. The teacher factors affecting the integration of ICT into the teaching process are the factors that Rodgers said are worth investigating. In this study, the factors some of which Rodgers identified are gender, teaching experience, training on ICT, and attitude. Rodgers (2003), identified three categories of correlates namely: the characteristics of the potential adopter, how the adopter perceives the innovation and the characteristics of the social system or the organization where the potential adopter is.

The adopter characteristics include the extent to which that person interacts with the change agents relevant to the innovation in question; the level of training of relevance to the innovation

the person has received, age of the person, gender, and location of the person and income level (Bakkabulinde, 2014). If the person has high levels of training of relevance to the innovation, the person will have a high propensity to adopt the innovation. If the person interacts much with the change agents of relevance to the innovation, then that person will have a high propensity to adopt the innovation. Age is also a factor. According to Rodgers, the older a person becomes the lesser the propensity to adopt an innovation.

On the question of gender, Rodgers concluded that males have a higher propensity to adopt innovations compared to females (Rodgers 2003 in Bakkalabulinde, 2004). Other perceived characteristics that Rodgers considered include; the innovations relative advantage, compatibility, user friendliness and observability of the innovation. The adopter takes these factors into consideration before choosing to adopt an innovation. This theory therefore was considered relevant to the study in that the variables of the study are adequately canvassed in the theory. The study sought to investigate whether the stated variables influenced integration of ICT in the teaching of English in public secondary schools in Eldoret East Sub County.

2.2.2 The Rand Change Agent Theory

The study will also be guided by the Rand Change Agent Theory (Berman & Mclaughlin, 1978). The Theory is founded on the principle that effective projects are characterized by a process of mutual adaptation rather than uniform implementation, and that local factors dominate project outcomes. This principle underscores the essential contribution of teacher's perspectives as informant and guide to policy. It suggests that the challenge lies in understanding how policy can enable and facilitate effective practice (Milbrey, 1990). Rand found that federal change agent policies had a major role in promoting local school districts to undertake projects that were strictly laid down by federal categorical guidelines.

Local initiatives were generally consistent with what policy makers had in mind in framing broad program objectives. However, Rand's analysis found that 'adoption' was only the beginning of the story; that adoption of a project consistent with federal goals did not ensure successful implementation. Further, Rand found that even successful implementation of project did not predict long-run continuation of projects initiated with federal funds. Rand concluded that the

consequences of the various federal policies examined primarily depend on local factors, not federal guidelines of funding levels. There was need for change agents to put the project into sustainable practice. Teachers are viewed to be change agents in school matters because they are compatible with the aspects of district realities. The Rand Change Agent Theory correctly stresses the significance of the actions and choices of teachers in the implementation process of educational programs. The theory puts emphasis that any curriculum innovation requires change agents, key among them being the teacher (Orstein and Hunkins, 2004). Teachers are agents of change; they enable implementation of the entire curriculum process. The adoption of ICT in teaching therefore relies on teachers as change agents. The study therefore adopted this theory because the teacher factors such as gender, attitude, ICT training, teaching and experience are important towards effective integration of ICT in teaching of English language.

2.3 Conceptual Framework

The conceptual framework is a diagrammatic presentation of the independent and dependent variables of the research study. The conceptual framework for a study forms the basis for the research package and provides conceptual tools to critically analyze and promote realistic approaches to the given variables. The independent variables in the study were gender, attitude, ICT training and teaching experience as indicated in Figure 2.1.

The teachers' gender was categorized as male and female. The teachers' attitude was measured by looking at anxiety or avoidance- negative attitude and self-efficacy or confidence- positive attitude portrayed by the teachers of English. Teaching experience was measured by looking at the number of years one has been in service as a qualified teacher. Training was established by looking at whether or not the teachers had gone through professional ICT training. The dependent variable in this study was ICT integration. ICT integration was measured by looking at competencies as stipulated in the UNESCO ICT competency framework for teachers. These competencies included technology literacy, knowledge deepening and knowledge creation. The study sought to establish the extent to which the independent variable influenced the dependent variables.

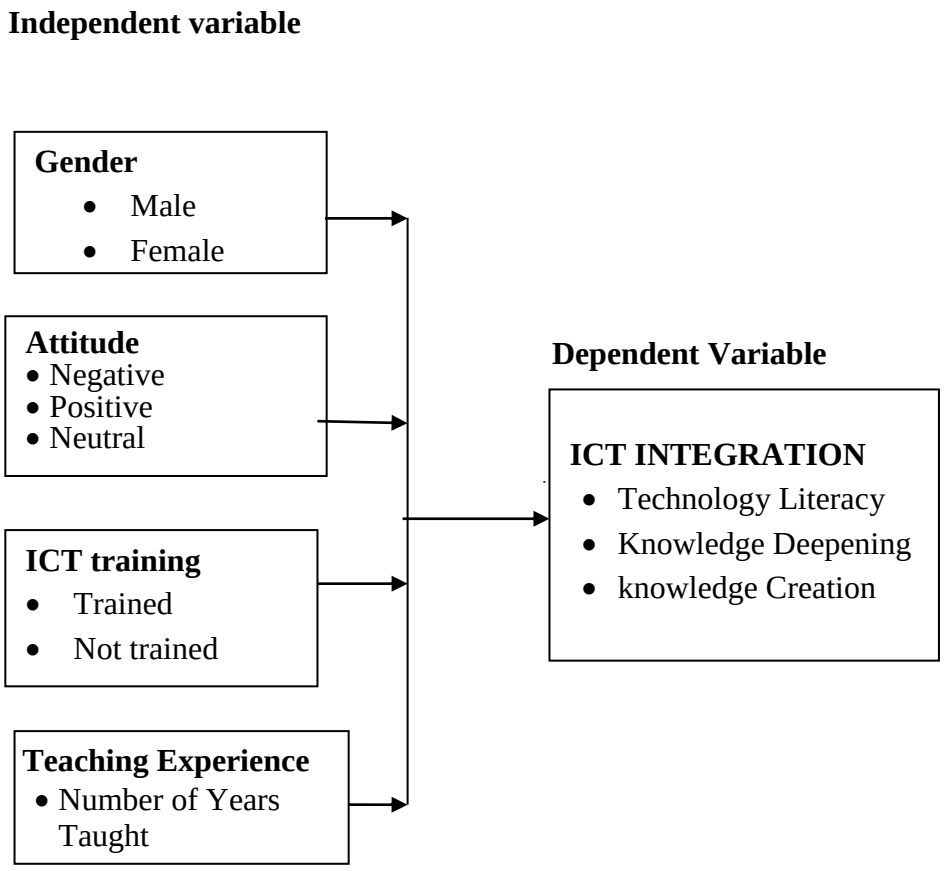

Figure 2.1: Relationship between Independent and dependent variables

2. 4 Empirical Review

2. 4.1 The Influence of Teachers' Gender on ICT Integration in Teaching

Gender is an important cross-cutting theme that needs to be addressed in all teacher policy areas including training, teaching and usage. In Africa, the Research ICT Africa (RIA) Household and Individual Access and Usage Survey reveals that very little ICT data is disaggregated on gender lines (Gillwald *et al.*, 2010). Indicators related to teacher training can demonstrate persistent inequalities. Based on analysis of twelve different countries in Africa, male and female teachers are not equally likely to be trained to use ICTs in classrooms; moreover, male teachers are more likely to be trained to teach basic computer skills and computing (Mwebaze, 2011).

Furthermore, Bowser-Brown argues that female students are more likely to enter programmes with few technology skills due to lack of access (Bowser-Brown, 2004). There is evidence to show that this disparity continues at the tertiary level in Africa. For example, a study undertaken under the Pan African Research Agenda on the Pedagogical Integration of ICT in Africa showed that females had lower rates of ICT usage than males. As a reaction to this, Derbyshire argues for policy initiatives that encourage recruiting female computer-related staff and technicians to ensure female staffs have equitable access to computer-related training and support (Derbyshire, 2003).

Kay (2006) further indicates that the traditional manners of teaching, till to date are proving to be useful also. This means teachers need to use ICT in more creative and productive ways in order to create more engaging and rewarding activities resulting to more effective lessons (Birch & Irvine, 2009). In a research conducted by Kay (2006) on teacher's attitudes on ICT, findings were that male teachers had relatively higher levels of ICT attitude and ability before implementation, but there was no difference between males and females regarding ICT attitude and ability after the implementation of the technology. He observes that quality preparation on technology can help lessen gender inequalities. Markauskaitie (2006) investigated gender difference on ICT literacy amongst first year graduate trainee teachers. The study revealed significant differences between males and females in technical ICT capabilities, and situational and longitudinal sustainability.

Male scores were higher compared to females. However, the situation was different in mid-Western US basic schools where Bruiser (2006) found that female teachers' self-perception about technology competence improved while males' self-perception about technological dominance remained unchanged. The study was in agreement with Adams (2002) that female teachers applied ICT more than the male teachers. This study confirms report by Yukselturk and Bulut (2009) that gender gap has reduced over the past years, presently, a greater number of females than males have used internet and web technologies. These revelations according to some studies conclude that gender variable was not a predictor of ICT integration into teaching (Norris, Sullivan, Poirot &Soloway, 2003). In relation to the afore discussion the study therefore

sought to establish whether teachers' gender influence integration of ICT in teaching of English language in public secondary schools in Eldoret East Sub County.

2.4.2 The Influence of Teachers' Attitude on Integration of ICT in Teaching

Attitude is an important concept in social judgments and behaviours and thus, is one of the most important concepts in decision making (Venkatesh *et al*, 2003). Teachers are perceived to be active agents in the process of change and implementation of new ideas as their beliefs and attitudes may support or impede the success of any education reform such as utilization of a new technology (Levin & Wadmany, 2006). Teachers' skills and attitude count for a great deal more in curriculum renewal than do changes in content and method (Law, 2008).

Attitude towards ICT influences teachers' acceptance of the usefulness of technology, and also influence whether teachers integrate ICT into their classroom (Huang, 2005). Research on the attitude of both teachers and students towards the use of ICT in teaching and learning has been done with outcome being either positive or negative. A research carried out by Ng'onga (2002) revealed that Kenyan students continue to perform poorly due to poor teaching methods adopted by teachers. This is because as Andrew (2007) noted, instructors develop a teaching style based on their perceived beliefs about what constitutes good teaching, personal preferences, their abilities, and the names of their particular discipline. This is practiced by teachers at the expense of the learners' need. MOEST (2006) notes that a skilled teacher of English should willingly and creatively use a variety of learner centered teaching styles like group animation where ICT is applicable, discussion, role-play, simulation debate, hot seating, flow chart technique and brainstorming. These styles are task oriented and participatory on the part of the learner and if well used then they facilitate understanding leading to a better outcome.

Palak and Walls (2009) conducted a mixed research to investigate whether teachers who frequently integrated technology and work at technology-rich schools shift their beliefs and practices towards a student-centered paradigm. The result showed that their practices did not change: neither student-centered nor teacher-centered beliefs are powerful predictors of practices. However, it was noted that teachers' attitude toward technology significantly predict teacher and student technology use, as well as the use of a variety of instructional strategies.

Similarly, Sang *et al* (2010) conducted a research focusing on the impact of Chinese student teachers' gender, constructivist teaching beliefs, teaching self-efficacy, computer self-efficacy, and computer attitudes on their prospective ICT use.

The findings confirmed the results of the study by Palak and Walls (2009) that the strongest predictor of future ICT use were teachers' attitudes towards it. In addition to teachers' attitude influence, Sang *et al.,* (2010) further indicate that pre-service teachers with highly constructivist teaching beliefs, have stronger intentions to integrate technology into their future teaching practices. However, Cheng (2008) has shown that there is no resonance between teachers' beliefs and their actual practice while integrating ICT in the classroom teaching process. It is evident that if teachers' attitude towards ICT integration in teaching process is positive then they can easily and willingly provide an effective integration process of the technology. On the other hand, if teacher's perception towards ICT is negative, then ICT integration in teaching process would be not utilized. The study established the influence of teachers' attitude on ICT integration in public secondary schools in Eldoret East sub-county.

2.4.3 Influence of Teaching Experience on ICT Integration

Several studies have been conducted that addressed the relationships between selected demographic variables such as teaching experience and usage of computer. One such study was Zidon and Miller (2002) who found weak relationship existed between years of teaching with computer usage. Conversely, in a study of teachers' usage of computers, Martin and Lundstrom (2002) found that almost 60% of the teachers in their study who had under 10 years of teaching experience believed computers in the classroom were essential and hence they use it extensively, while only 25% of teachers with over 20 years of teaching experience shared this belief. Bhattacherjee & Prekumar (2004) demonstrated that people's experience plays a vital role in their initial acceptance towards a system in question. Research has shown that experience with the use of technology has an influence on intention to use and actual use of information technology (Thompson 2006).

However, Niederhauser & Stoddart, (2001), reported that teachers' experience in teaching did not influence their use of computer technology in teaching. Gorder (2008) reported that teacher

experience is significantly correlated with the actual use of technology. In her study, she revealed that effective use of computer was related to technological comfort levels and the liberty to shape instruction to teacher-perceived student needs. Meta-analysis and review of 81 research studies by Rosen and Maguire (1990) concluded that teachers teaching experience does not eliminate computer phobias and many experienced teachers display some wariness, discomfort and/or mild anxiety in relation to computers.

Over the years, computer usage issues related to various subjects taught have been debated in the literature. Though some research reported that teachers' experience in teaching did not influence their use of computer technology in teaching (Niederhauser & Stoddart, 2001), most research showed that teaching experience influences the successful use of ICT in classrooms (Wong & Li, 2008; Giordano, 2007; Hernandez-Ramos, 2005). Nevertheless, Baek, Jong & Kim (2008) claimed that experienced teachers are less ready to integrate ICT into their teaching.

Similarly, in United States, the (U.S National Centre for Education Statistics, 2000) reported that teachers with less experience in teaching were more likely to integrate computers in their teaching than teachers with more experience in teaching. According to the report, teachers with up to three years teaching experience reported spending 48% of their time utilizing computers, teachers with teaching experience between 4 and 9 years, spend 45% of their time utilizing computers, teachers with experience between 10 and 19 years spend 47% of the time, and finally teachers with more than 20 years teaching experience utilize computers 33% of their time. The reason to this disparity may be that fresh teachers are more experienced in using the technology.
Further, Lau & Sim (2008) conducted a study on the extent of ICT adoption among 250secondary school teachers in Malaysia. Their findings revealed that older teachers frequently use computer technology in the classrooms more than the younger teachers. The result is in agreement with Russell, Bebell, ODwyer, & OConnor, (2003) who found that new teachers who were highly skilled with technology more than older teachers did not incorporate ICT in their teaching. The researchers cited two reasons: new teachers focus could be on how to use ICT instead of how to incorporate ICT in their teaching. Secondly, new teachers could experience some challenges in their first few years of teaching and spend most of their time in familiarizing themselves with school's curriculum and classroom management. But in a survey of almost 3000

teachers, Russell, O'Dwyer, Bebell and Tao (2007) argued that the quality of ICT integration was related to the years of teacher service.

However, Granger, Morbey, Lotherington, Owston and Wideman (2002) conducted a qualitative survey on factors contributing to teacher' successful implementation of ICT in Canada. They interviewed 60respondents from 12 schools. The findings found no relationship between teachers' teaching experience and experience in the use of ICT implying that teachers' ICT skills and successful implementation is complex and not a clear predictor of ICT integration. Several studies have been conducted that addressed the relationships between selected demographic variables such as teaching experience and subjects taught and usage of computer. The results obtained above showed that there were mixed results on the relationship between teachers' experience and ICT implementation. Some studies showed that there was significant difference between ICT implementation and teachers' experience while other studies showed the opposite.

2.4.4 Influence of Training on ICT Integration

Professional development of teachers sits at the heart of any successful technology and education program. Teachers' professional development is a key factor to successful integration of computers into classroom teaching. Teachers' professional development is a key factor to successful integration of computers into classroom teaching. ICT related training programs develop teachers' competences in computer use (Bauer & Kenton, 2005). Many school leaders perceive the lack of ICT related knowledge of teachers as one of the main impediments to the realization of their ICT related goals (Pelgrum *et al*, 2002). One of the pertinent factors contributing to the usage of computers is that teachers need to be computer literate and thus be given appropriate training in computer usage (Ropp, 1999).

Different people hold different views about computer literacy. They are those who take a literal interpretation of computer literacy. They regard writing and reading computer programs as the basic skill of a computer-literate person. Training too plays an important role in a teacher's readiness to use computers (Gan, 2001). With regards to the issue of having attended formal computer courses, it was identified through numerous studies that there is a significant

relationship between usage of computers and computer training (Wong *et al.,* 2002; Sia, 2000). Venezky (2004) found out that professional development was one of the most important supports in most schools for ICT integration into teaching as it has the greatest impact on the beliefs and practice of teachers and yet professional development time was not budgeted for in many schools in the study.

Baylor and Ritchie (2002) carried out a quantitative study that looked at the factors facilitating teachers' skill, teacher morale, and perceived student learning in technology-using classrooms. They found that professional development has a significant influence on how well ICT is embraced in the classroom. Ghodke (2012) found that as compared to mathematics teachers, science teachers perceived professional development needs of ICT use in context to teaching and learning is significantly higher. But both mathematics and science teachers ranked professional development needs at the second place. Sandholtz& Reilly (2004) claim that teachers' technology skills are strong determinant of ICT integration, but they are not conditions for effective use of technology in the classroom. They argue that training programs that concentrate on ICT pedagogical training instead of technical issues and effective technical support, help teachers apply technologies in teaching and learning.

According to Schaffer and Richardson (2004), when technology is introduced into teacher education programs, the emphasis is often on teaching about technology instead of teaching with technology. Hence, inadequate preparation to use technology is one of the reasons that teachers do not systematically use computers in their classes. Teachers need to be given opportunities to practice using technology during their teacher training programs so that they can see ways in which technology can be used to augment their classroom activities. Teachers are more likely to integrate ICT in their courses, when professional training in the use of ICT provides them time to practice with the technology and to learn, share and collaborate with colleagues similarly, research has shown that teachers require expert in technology to show them the way to integrate ICT to facilitate students' learning (Plair, 2008).

Teachers' understanding of content knowledge and how to apply technology to support students' learning and attainment are joined to their increase in knowledge level, confidence and attitudes

towards technology. Educators who integrate technology with new teaching practices gained through professional training can transform the performance of the students (Lawless & Pellegrino, 2007). According to (Chen,2008), professional training courses must be designed to identify beliefs about successful teaching policies for enhanced teaching and learning and syllabus design for teaching purposes. Teachers who are committed to professional development activities gain knowledge of ICT integration and classroom technology organization (Wepner, Tao & Ziomek, 2006). Clearly, it is imperative to allow teacher trainees to apply ICT in their programs when in school in order to be able to use the technology to supplement their teaching activities.

When teachers are given time to practice with the technology, learn, share and collaborate with peers, it is likely that they will integrate the technology into their teaching. Training programs for teachers that embrace educational practices and strategies to address beliefs, skills and knowledge improve teachers' awareness and insights in advance, in relation to transformations in classroom activities should be encouraged (Levin & Wadmany, 2008). Training makes a positive difference to those who receive it. Angers and Machtmes (2005) state that teachers who receive eleven or more hours of curriculum-integration training are five times more likely to say they believe they are much better prepared to integrate technology into their classroom lessons than teachers who received no such training.

Teachers receiving more training of either type, but especially of integration training, are more likely to use software to enhance instruction in their classrooms. The empirical findings provide an insight that the variable training in ICT has a positive impact on Actual Usage of Computer (AUC). The number of computer skills acquired by teachers, its being current, and the number of hours of formal training play an important role in positioning the AUC of teachers in a higher level. When teachers are trained, the expertise expected increases in competence. It was realized that being skilled in ICT does not improve teachers' classroom teaching efficiency (Yuen & Ma, 2002). Teachers' professional development is a key factor to successful integration of computers into classroom teaching.

Several studies have revealed that whether beginner or experienced, ICT related training programs develop teachers' competences in computer use (Bauer &Kenton,2005; Franklin, 2007; Wozney *et al.*, 2006), influence teachers' attitudes towards computers (Hew and Brush, 2007; Keengwe and Onchwari, 2008) as well as assisting teachers reorganize the task of technology and how new technology tools are significant in student learning (Plair, 2008).Muller and his colleagues (2008) related technology training to successful integration of technology in the classroom. In a study of 400 pre-tertiary teachers, they showed that professional development and the continuing support of good practice are among the greatest determinants of successful ICT integration.

Sandholtz & Reilly (2004) claim that teachers' technology skills are strong determinant of ICT integration, but they are not conditions for effective use of technology in the classroom. They argue that training programs that concentrate on ICT pedagogical training instead of technical issues and effective technical support, help teachers apply technologies in teaching and learning. Research studies revealed that quality professional training program helps teachers implement technology and transform teaching practices (Brinkerhoff, 2006; Diehl, 2005). Lawless and Pellegrino (2007) claim that if training program is of high quality, the period for training lasts longer, new technologies for teaching and learning are offered, educators are eagerly involved unimportant context activities, teamwork among colleagues is improved and has clear vision for student attainment.

Teachers may adopt and integrate ICT into their teaching when training programs concentrate on subject matter, values and the technology. Similarly, research has shown that teachers require expert in technology to show them the way to integrate ICT to facilitate students' learning (Plair, 2008). Teachers' understanding of content knowledge and how to apply technology to support students' learning and attainment are joined to their increase in knowledge level, confidence and attitudes towards technology. Educators who integrate technology with new teaching practices gained through professional training can transform the performance of the students (Lawless & Pellegrino, 2007).

Andoh (2012) in his research found out that teachers' professional development is a key factor to successful integration of computers into classroom teaching. The barrier to ICT integration most frequently referred to in the literature is lack of effective training (Albirini, 2006; Balanskat *et al.,* 2006; Beggs, 2000; Ozden, 2007; Schoepp, 2005; Sicilia, 2005; Toprakci, 2006). One finding of Pelgrum's (2001) study was that there were not enough training opportunities for teachers in the use of ICTs in a classroom environment. Similarly, Beggs (2000) found that one of the top three barriers to teachers' use of ICT in teaching students was the lack of training. Recent research in Turkey found that the main problem with the implementation of new ICT in science was the insufficient amount of in-service training programs for science teachers (Ozden, 2007), and Toprakci (2006) concluded that limited teacher training in the use of ICT in Turkish schools is an obstacle.

According to Becta (2004), the issue of training is certainly complex because it is important to consider several components to ensure the effectiveness of the training. These were time for training, pedagogical training, skills training, and an ICT use in initial teacher training. Correspondingly, recent research by Gomes (2005) relating to science education concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom, and lack of training concerning the use of technologies in science specific areas were obstacles to using new technologies in classroom practice. Some of the Saudi Arabian studies reported similar reasons for failures in using educational technologies: the weakness of teacher training in the use of computers, the use of a "delivery" teaching style instead of investment in modern technology (Alhamd, Alotaibi, Motwaly, & Zyadah, 2004), as well as the shortage of teachers who are qualified to use the technology confidently (Sager,2002).

Providing pedagogical training for teachers, rather than simply training them to use ICT tools, is an important issue (Becta, 2004). Cox *et al* (1999a) argue that if teachers are to be convinced of the value of using ICT in their teaching, their training should focus on the pedagogical issues. The results of the research by Cox *et al* (1999a) showed that after teachers had attended professional development courses in ICT, they still did not know how to use ICT in their classrooms; instead they just knew how to run a computer and set up a printer. They explained that this is because the courses only focused on teachers acquiring basic ICT skills and did not

often teach teachers how to develop the pedagogical aspects of ICT. In line with the research by Cox *et al*. (1999a), Balanskat *et al*. (2006) indicated that inappropriate teacher training is not helping teachers to use ICT in their classrooms and in preparing lessons. They assert that this is because training programmes do not focus on teachers' pedagogical practices in relation to ICT but on the development of ICT skills.

Schoepp (2005) asserts that when new technologies are integrated in the classroom, teachers have to be trained in their use. According to Newhouse (2002), some initial training is needed for teachers to develop appropriate skills, knowledge, and attitudes regarding the effective use of computers to support learning by their students. He argued that this also requires continuing provision of professional development to maintain appropriate skills and knowledge. Fundamentally, when there are new tools and approaches to teaching, teacher training is essential (Osborne & Hennessy, 2003) if they are to integrate these into their teaching. Balanskat *et al*. (2006) found out that teachers being neither sufficiently confident nor sufficiently prepared in classrooms to carry out full integration of ICT are as a result of inappropriate and inadequate training. According to Newhouse (2002), "teachers not only need be computer literate but also to develop skills in integrating computer use in their teaching/learning programmes. Newhouse (2002), states that 'teachers need to not only be computer literate but they also need to develop skills in integrating computer use into their teaching/learning programmes.'

Similarly, Sicilia (2005) found that teachers want to learn how to use new technologies in their classrooms but the lack of opportunities for professional development obstructed them from integrating technology in certain subjects such as science or math. Other problematic issues related to professional development in ICT are that training courses are not differentiated to meet the specific learning needs of teachers and the sessions are not regularly updated (Balanskat *et al*. 2006). Pre-service teacher education can also play a significant role in providing opportunities for experimentation with ICT before using it in classroom teaching (Albirini, 2006).

2. 5 Research Gaps

The concept of ICT integration in education has gained currency. Several studies have been done to investigate factors influencing integration of ICT into teaching and learning. Rodgers (2003) identified five technological characteristics or attributes that influence the decision to adopt and

integrate an innovation. These were user characteristics (teachers and students) content characteristics, technological considerations and organizational capacity. Luhombo (2015) conducted a study on ICT integration in teaching English language in Mumias Sub-county. She considered teacher demographics, attitude, and teacher training and teacher workload as factors that could affect ICT integration in English. She made a recommendation that a similar study be conducted elsewhere since her findings could not be generalized. Kariuki (2012) recommended a subject specific study since her study which was done in Kikuyu Constituency on ICT integration in teaching was not subject specific. Therefore, there was need to carry out a subject specific study on teacher factors that influence the integration of ICT. It is in light of this that the researcher sought to establish teacher-related factors influencing ICT in the teaching of English in Eldoret East Sub-County, Uasin Gishu County.

2.6 Summary

This chapter has presented the literature review related to the proposed study i.e. literature related to ICT in education and the variables to be studied-gender, attitude, training and experience. It has also covered the theoretical framework upon which the study was founded on and finally the conceptual framework of the study and the operationalized variables.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Chapter Overview

This chapter describes the methodology the researcher used to carry out the study. The chapter describes the research design, the target population, sample size and sampling procedures. It also presents the research instruments, instrument validity and the reliability. Further, it discusses the data collection procedures, data analysis techniques and ethical considerations.

3.2 Research Design

A research design is a plan for conducting a research. The study made use of descriptive survey design. Descriptive survey design was used to gather information on the influence of teacher factors on the integration of ICT in teaching of English language in public secondary schools in Eldoret East Sub County. According to Kothari (2004), the major purpose of descriptive survey design is to describe the state of affairs as it exists at present, using descriptive statistics appropriately to explain population parameters. The design was based on the assumption that the sample collected and studied shares characteristics with the whole population from where it is drawn.

3.3 Target Population

Target population refers to the specific group relevant to a particular case (Sapsford, 2007). The sub-county has 56 public secondary schools and 168 TSC Teachers of English language (Eldoret East sub-county Education office, 2016). Therefore, the target population was 56 schools and 168 teachers.

3.4 Sample Size and Sampling Procedure

Sampling procedure makes it possible to draw valid inferences on the basis of careful observation of variables with a relatively small proportion of the population (Best & Khan, 2008). Gay (2003) recommended that when the target population is small (less than 1000 members), a minimum sample of 20% was adequate for educational research. Simple random sampling technique was used to obtain 30% of the 56 public secondary schools. The sample size was drawn from 17 public secondary schools within Eldoret East sub-county. Simple random

sampling was appropriate because they gave each element in the population an equal probability of getting into the sample. This technique was appropriate for the study as it is cost effective and efficient in administration. Purposive sampling was used to select 3 teachers of English teachers from each of the 17 public secondary schools. The technique was appropriate since teachers had similar characteristics, therefore more homogeneous to be included as part of the sample. The sample size for the study therefore comprised of 51 Teachers of English language from 17 public secondary schools in Eldoret East sub-county.

3.5 Research Instrument for Data Collection

Research instruments are the methods used in conducting research. The research instrument that was used in this study was a questionnaire which was developed by the researcher. This instrument is suitable for descriptive survey design (Orodho, 2003). Kombo and Tromp (2006) state that a questionnaire is an instrument that gathers data over a large sample, saves time, upholds confidentiality and seals any interviewer bias.

A questionnaire is the most appropriate research tool as it allows the researcher to collect information from a large sample with diverse background the findings remained confidential, saves time and since they are presented in paper format, there is no opportunity for bias. The study to establish teacher-related factors influencing ICT in the teaching of English in Eldoret East Sub-County provided data that was easy to describe the findings easily using the questionnaire. The questionnaire for English teachers was developed according to the research objectives.

3.6 Validity of Instrument

Validity refers to the extent to which the data collected constitute accurate measurements of what is supposed to be measured (Sapsford, 2007). This study relied on face and content validity procedures to establish that the instrument measured what it was supposed to measure. To check on face and content validity, the researcher sought expert assistance from his supervisor at Strathmore University.

3.7 Reliability of the Instrument

Reliability of an instrument is the degree of consistency that the instrument or procedure used for data collection demonstrates consistent results (Best & Khan, 2003). For this study, test-retest method was used to test the reliability of the questionnaires. The questionnaire was administered by the researcher to 5 teachers from public secondary schools selected from the neighboring Wareng Sub County. The 5 teachers were used to test the reliability of the instrument before carrying out the study. The same questionnaire was re-administered after two weeks and responses recorded.

After the administration, Cronbach's Coefficient Alpha was computed for the questionnaire to determine the reliability of the research instrument. A reliability coefficient of 0.7 or over was assumed to reflect the internal reliability of the instruments (Fraenkel & Wallen, 2000). This is because likert type questions are best tested for reliability using Cronbach's Coefficient Alpha which combines all the items and advises on which item to discard if it does not capture what it is intended to capture (Neuman, 2000). From the results, the Cronbach's Coefficient Alpha was found to be 0.78 and showed that the research instrument was reliable.

3.8 Data Collection Procedures

Before actual data collection exercise took place, a preliminary survey was undertaken in the selected schools in Eldoret East Sub County. This was important because it enabled the familiarization with the study area, appointments with the identified persons were made and their contacts were also sought. Initial authorization was obtained from the School of Humanities and Social Sciences at Strathmore University and this was used for applying the research permit from the National commission for Science and Technology and Innovation (NACOSTI). After completion of the pilot study the researcher then embarked on the administering of questionnaires for the main study. The researcher paid a visit to the schools with an introduction letter to the Principals seeking their consent to undertake the intended study in the sampled schools. Thereafter, the researcher organized with the respective respondents when to administer the questionnaire. The questionnaires were self-administered using drop and pick method. The researcher personally administered the questionnaire to the English teachers. The respondents were assured that strict confidentiality would be maintained in dealing with the responses.

3.9 Data Analysis Techniques

Data analysis techniques deal with the process of coding, data entry and data analysis (Mugenda, & Mugenda, 2003). Quantitative data was collected. The questionnaires were then coded and data entered into a computer for analysis using the Statistical Package for Social Sciences (SPSS). This data was analyzed using both descriptive and inferential statistics. Quantitative data was analyzed by entering information from respondents and arranging them in themes related to research objectives and then finally analyzed using descriptive statistics using frequencies, percentages, ratios and means. The inferential statistics used Spearman Rank Correlation analysis to find nature and direction of relationships between the independent and dependent variables. This helped evaluate the teacher-related factors influencing ICT in the teaching of English in Eldoret East Sub-County. After analysis, data was presented in tabular form using frequencies and percentages, pie charts and bar graphs.

The Spearman's rank-order correlation is the nonparametric version of the Pearson product-moment correlation. Spearman's correlation coefficient, (ρ, also signified by r_s) measures the strength of association between two ranked variables. The Spearman correlation was used because of the following assumptions; the variables were either ordinal or interval and there was a monotonic relationship between the variables. Spearman Rho Correlation qualified for use because the instruments were of interval scaled variables. The Spearman correlation can be used when the assumptions of the Pearson correlation are markedly violated. A monotonic relationship is a relationship that does one of the following: (1) as the value of one variable increases, so does the value of the other variable; or (2) as the value of one variable increases, the other variable value decreases.

A monotonic relationship is an important underlying assumption of the Spearman rank-order correlation. It is also important to recognize the assumption of a monotonic relationship is less restrictive than a linear relationship (an assumption that has to be met by the Pearson product-moment correlation). The middle image above illustrates this point well: Non-linear relationship exists, but the relationship is monotonic and is suitable for analysis by Spearman's correlation, but not by Pearson's correlation.

It is important to realize that statistical significance does not indicate the strength of the Spearman rank-order correlation. In fact, the statistical significance testing of the Spearman correlation does not provide you with *any* information about the strength of the relationship. Thus, achieving a value of $p = 0.001$, for example, does not mean that the relationship is stronger than if you achieved a value of $p = 0.04$. This is because the significance test is investigating whether you can accept or reject the null hypothesis. If you set $\alpha = 0.05$, achieving a statistically significant Spearman rank-order correlation means that you can be sure that there is less than a 5% chance that the strength of the relationship you found (the rho coefficient) happened by chance if the null hypothesis were true.

3.10 Ethical Considerations

The study ensured that an approval to carry out the research was obtained from NACOSTI after obtaining an introductory letter from Strathmore University. The purpose of the study was exp1ained to the respondents; their informed consent was also obtained before the commencement of the study. The respondents were not required to write their names or the names of the schools anywhere in the questionnaire. The researcher assured the respondents of utmost confidentiality. The participation of respondents was voluntary with no benefits attached. The respondents were assured of feedback upon request after the study as this aimed at securing cooperation from them.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Chapter Overview

This chapter presents the results of data analysis on teacher-related factors influencing integration of Information Communication Technology in the teaching of English language in public secondary schools in Eldoret East sub-county, Kenya. The chapter is divided into five sections with section one covering the demographic description of the respondents involved in the study while section two to five covers the four objectives of the study. Data was collected using questionnaires and analyzed using descriptive and inferential statistics. The analyzed data was presented using tables and figures. The chapter opens with the demographic information of the respondents and then followed by objectives of the study.

The return rate for questionnaires used for data analysis was 90.2% which was considered adequate to provide sufficient information on factors influencing integration of Information Communication Technology in the teaching of English language in public secondary schools. From a total 51, 46 teachers fully filled and returned the questionnaires. It has been argued that potential bias could result from low response rate (Brick & Williams, 2013) and therefore in this study, the response rate was high.

4.2 Demographic Information of Teachers

The demographic information sought from participants was gender, age, experience and education of respondents.

4.2.1 Gender of Teachers

The respondents were asked to indicate their gender in the questionnaire. The results are presented in Figure 4.1.

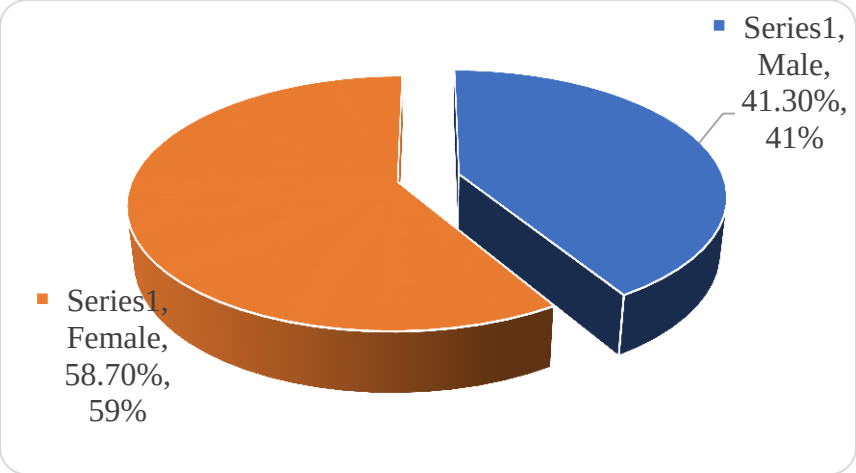

Figure 4.1: Gender of the Respondents

Figure 4.1 shows that 58.7% Teachers of English were female as compared to 41.3% who were male. The study findings showed that a majority 58.7% of the teachers of English in Eldoret East sub-county were female. This implies that there were more female teachers inclined to the teaching of English language than their male counterparts in Eldoret East sub-county secondary schools. This is consistent with the findings of Bernat and Lloyd (2007) who found out in the study that women were more interested in multilingualism than men. This was further supported by Zuzovsky (2003) who reported in her study in Israel, students taught by female teachers achieved more than those taught by male teachers.

4.2.2 Age of the Respondents

Teachers of English were asked to indicate their age bracket. Their responses were tabulated and the results are provided in Figure 4.2. The findings showed that 28.3% of the teachers were aged between 36 and 40 years, 34.8% teachers were aged 30 below years and 17.4% teachers were aged 31-35 years, while 8.7% teacher was aged between 41 and 45 years.

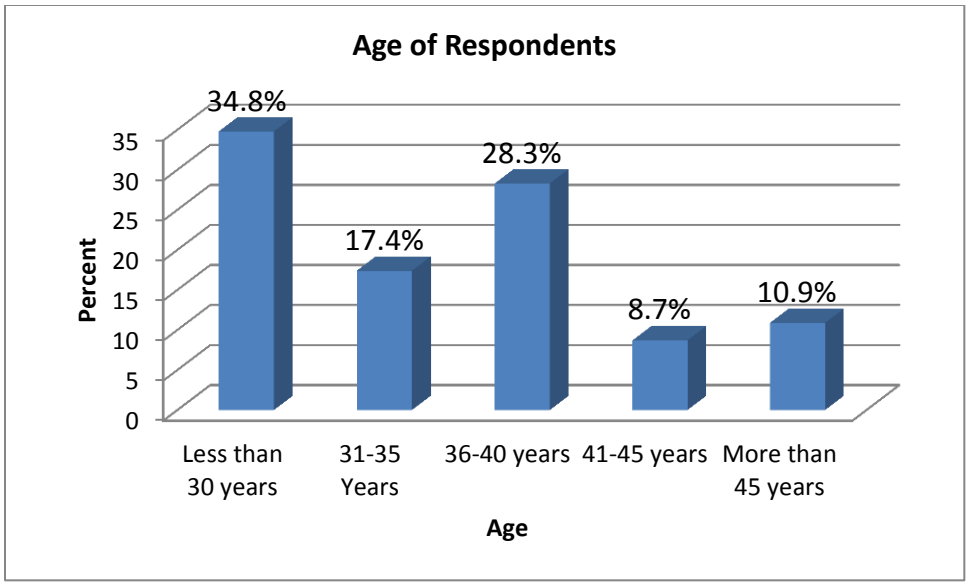

Figure 4.2: Age of the Respondents

From the responses, most of the teachers of English in public secondary schools in Eldoret East Sub-County were aged below 40 years. This agrees with Alufohai and Ibhafidon (2015) that students taught by teachers between 21 and 34 years performed better than those taught by 49 years and above. However, students taught by teachers aged between 35 and 48 years performed better than those of aged 21 and 34 years. This showed that age of teachers could influence significantly the students' achievement in English.

4.2.3 Level of Teaching Experience

The respondents were asked to indicate their level of teaching experience in the questionnaire. The results are presented in Figure 4.7.

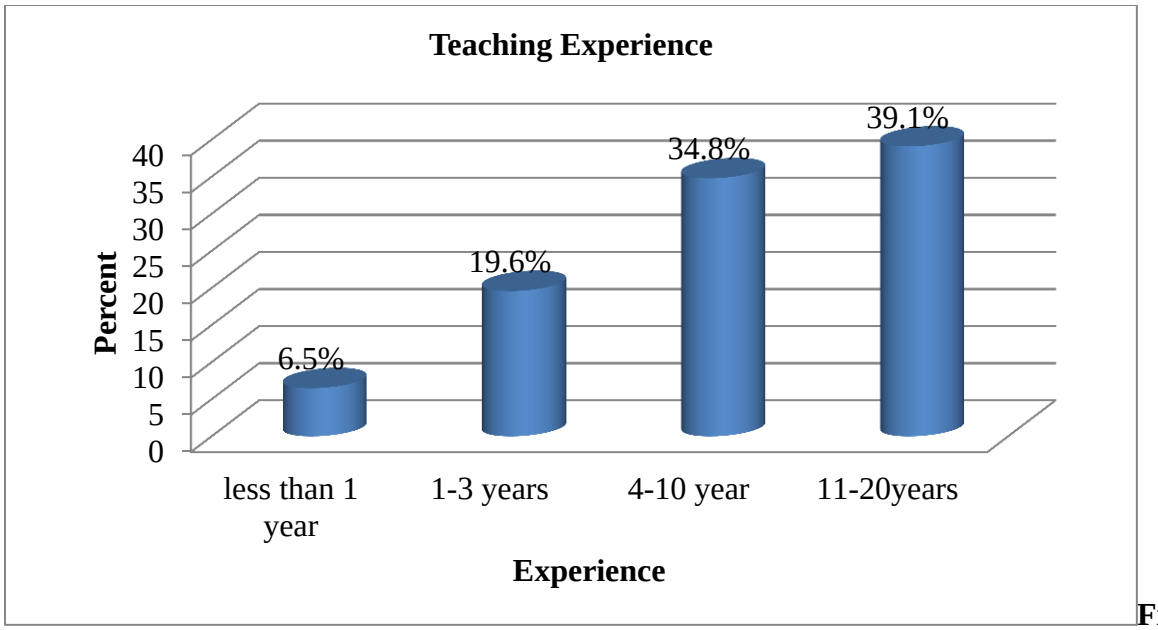

Figure 4.3: Teachers' Teaching Experience

Figure 4.3 shows that 39.1% of the teachers of English in public secondary schools in Eldoret East Sub-County had a teaching experience of 11 and 20 years, 34.8% teachers had a teaching experience of 4-10 years and 19.6% teachers had a teaching experience of between 1 and 3 years, while 6.5% of the teachers had a teaching experience of less than 1 year. From the responses, it emerged that most of the teachers of English in the study area had a teaching experience of over 4 years showing that they have been in the teaching profession for a long time.

4.3 ICT Integration in the Teaching of English

The dependent variable in the study was ICT integration in the teaching of English. In order to understand ICT integration in the teaching of English, the study sought to establish the technology literacy, knowledge deepening and knowledge creation constructs as postulated by UNESCO (2011) as indicators of the three levels of ICT integration in the teaching and learning process.

4.3.1 Technology Literacy

The respondents were required to respond to various indicators of technology literacy, which included the ICT integration as a teaching policy in school, years of experience using computers in school, time spend in using computers and extent of confidence in Computer use in Particular areas.

The respondents were asked to indicate whether ICT integration was part of the teaching policy in their schools. The results of data analysis are presented in Figure 4.4.

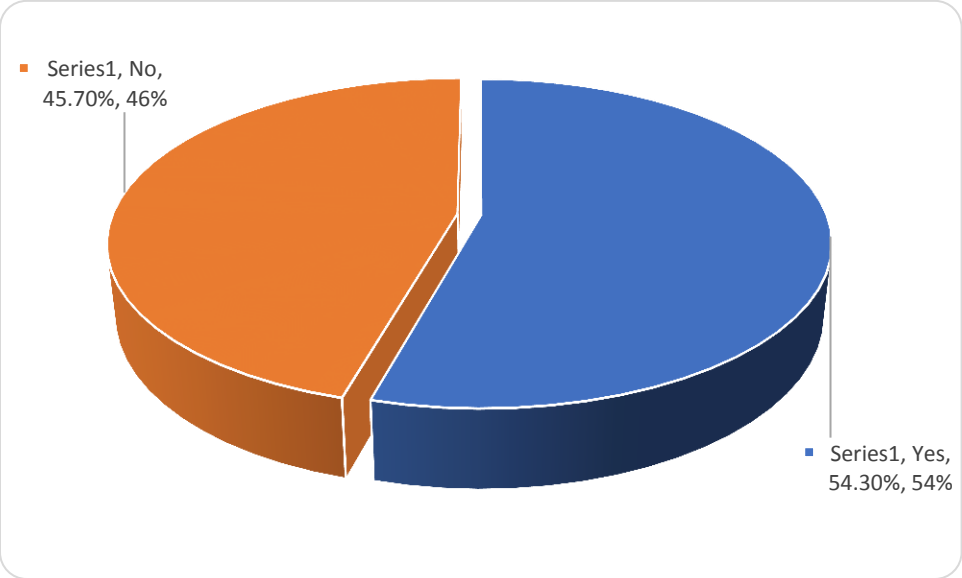

Figure 4.4: ICT Integration as a Teaching Policy in School

Figure 4.4 showed that 54.3% of the teachers agreed with the statement that ICT integration was part of the teaching policy in their schools, while 45.7% of the teachers disagreed with the statement. From the responses, it showed that majority 54.7% of the teachers believed that ICT integration was part of the teaching policy in their schools. This implies that the teaching and learning process in schools was dependent of ICT integration. This agreed with Odera (2011) that the recent past has witnessed a huge investment in computer education in schools, colleges and universities around the world. This was a result of ICT policy in Kenya which came into force in 2005 through the Sessional Paper No 1 of 2005.

In addition, the respondents were asked to indicate the number of years they have been using computers and/or the internet in any school. The responses are presented in Figure 4.5.

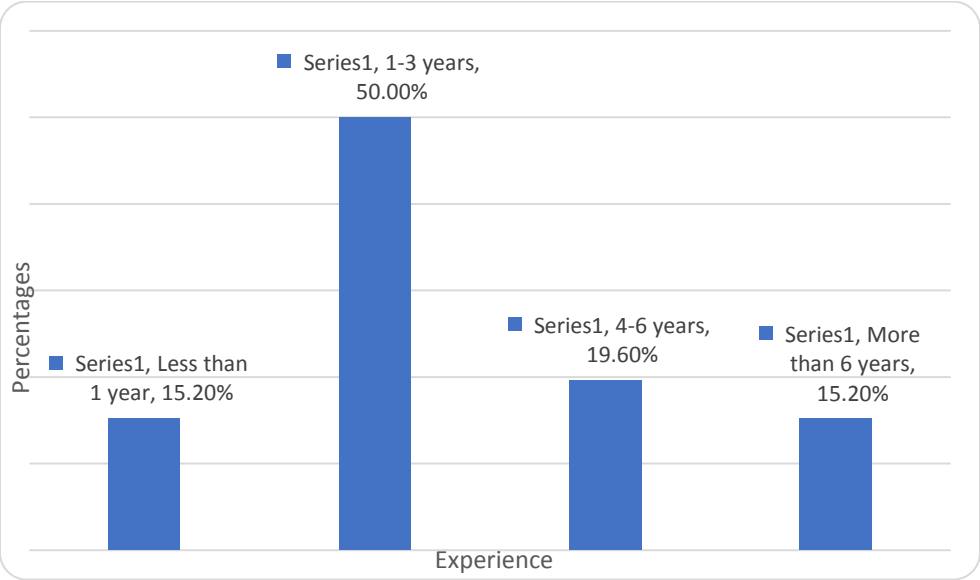

Figure 4.5: Years of experience using computers in school

Figure 4.5 shows that 50.0% of the teachers had used computers for a period of 1-3 years, 19.6% of the teachers had used computers for 4-6 years and 7(15.2%) teachers had used computers for less than one year while 15.2% of the teachers had used computers for a period of more than 6 years. From the responses, most of the teachers in secondary schools in Eldoret East sub-county had used computers for a period of between 1 and 3 years. This showed that integration of ICT in teaching English in schools was still new. This supports the work of Mikre (2011) that in recent years there has been a growing interest to know how computers and internet can best be utilized to improve effectiveness and efficiency of education at all levels in formal and non-formal settings.

Similarly, teachers were asked to rate the percentage of time they have used computers and/or internet in the class in the past. The results of data analysis are presented in Table 4.1. From the findings, most 34.8% of the teachers in secondary schools in Eldoret East sub-county used computers and/or internet in class for less than 1% of all lessons. However, 17.4% of the

teachers have used it for between 6 to 10% of all lessons and 10.9% have used it for 25 to 50% of all lessons, 11 to 24% of all lessons, as well as 1 to 5% of all lessons.

Table 4.1: Responses on Percentage of Time Spend in Using Computers

Percentages of Use	Frequency	Percent
More than 75% of all lessons	4	8.7
51 to 75% of all lessons	1	2.2
25 to 50% of all lessons	5	10.9
11 to 24% of all lessons	5	10.9
6 to 10% of all lessons	8	17.4
1 to 5% of all lessons	5	10.9
Less than 1% of all lessons	16	34.8
Don't Know	2	4.3
Total	46	100.0

This implies that the integration of ICT for teaching and learning process in secondary schools in the sub-county was very low. This could be attributed to several factors among which Becta (2003) identified as ICT resourcing, ICT leadership, ICT teaching, school leadership, teacher competencies, infrastructure amongst other factors.

Further, the teachers were asked to indicate the extent of confidence of using computers in some specific areas. The results of data analysis are presented in Table 4.2. The findings showed that 65.2% of the teachers were confident of using computers and/or internet to edit questionnaires online and 19.2% of the teachers were very confident while 4.3% of the teachers were not confident of using computers and/or internet to edit questionnaires online. The study findings showed that majority of the secondary school teachers in Eldoret East Sub-county were confident in using computers and/or internet to edit questionnaires online. In addition, 52.2% of the teachers were confident of using computers and/or internet for teaching using power point presentation, 28.3% of the teachers were very confident and 5(10.9%) teachers were slightly confident while 6.5% of the teachers were not confident in using computers for teaching using

power point presentation. From the responses, it emerged that majority 52.2% of the teachers of English in public secondary schools in Eldoret East were confident while teaching using power point presentation. This implies that that most of the teachers of English could easily use power point presentation for teaching. According to Akinyi (2010), power point presentations facilitate and support communication during the teaching and learning process.

Table 4.2: Extent of confidence in Computer use in Particular areas

Statement	Very Confident		Confident		Slightly confident		Not Confident	
	F	%	F	%	F	%	F	%
Edit questionnaire online	9	19.6	30	65.2	5	10.9	2	4.3
Teaching using power point presentation	13	28.3	24	52.2	5	10.9	3	6.5
Organize computer files in folders and subfolders	18	39.1	12	26.1	10	21.7	6	13.0
Use a spreadsheet	10	21.7	11	23.9	12	26.1	13	28.3
Produce a text using a word processing programme	19	41.3	14	30.4	9	19.6	4	8.7
Use emails to communicate with others	22	47.8	19	41.3	4	8.7	1	2.2
Create a presentation with simple animation functions	8	17.4	8	17.4	24	52.2	6	13.0
Create a presentation with video or audio clips	6	13.0	12	26.1	14	30.4	14	30.4
Participate in a discussion forum on the internet	17	37.0	15	32.6	6	13.0	8	17.4
Create and maintain blogs or web sites	5	10.9	11	23.9	11	23.9	19	41.3
Participate in social networks	30	65.2	10	21.7	5	10.9	1	2.2
Download and install software on a computer	16	34.8	12	26.1	8	17.4	10	21.7
Download or upload curriculum resources from/to websites or learning platforms for students to use	15	32.6	12	26.1	14	30.4	5	10.9

Further, 39.1% of the teachers were very confident in using computers to organize computer files in folders and subfolders, 26.1% teachers were confident in using computers to organize computer files in folders and subfolders, 21.7% of the teachers were slightly confident while 13.0% of the teachers were not confident in using computers to organize computer files in

folders and subfolders. From the responses, it can be shown that most of the teachers in secondary schools in the study area were confident in using computers to organize computer files in folders and sub-folders. It can therefore be shown that teachers could easily store students' information in sub-folders as per events occurring in schools. In addition, 28.3% of the teachers were not confident in the use of spreadsheets, 26.1% of the teachers were slightly confident in the use of spreadsheets and 23.9% of the teachers were confident in the use of spreadsheets while 21.75% of the teachers were very confident in the use of spreadsheets. From the responses, it can be inferred that most of the secondary school teachers of English are not confident while using spreadsheet. This implies that the use of spreadsheets like excel is limited in secondary schools.

Furthermore, 41.3% of the teachers were very confident in use of computers to produce a text using a word processing programme, 30.4% of the respondents were confident and 19.6% of the teachers were slightly confident while 8.7% teachers were not confident in the use of computers to produce a text using a word processing programme. The study findings showed that most of the teachers of English in secondary schools in Eldoret East sub-county were very confident in the use of computers to produce a text using a word processing programme. This implies that most teachers were knowledgeable on word processing in computers and therefore were able to use computer word processing for teaching.

Similarly, 47.8% of the teachers were very confident in the use of emails to communicate with others, 41.3% of the teachers were confident and 8.7% of the teachers were slightly confident while 2.2% of the teachers were not confident in use of emails to communicate with others. The study findings suggested that majority of the teachers of English in public secondary schools in Eldoret East sub-county were able to use emails to communicate with others. Yusuf, (2005) pointed out that use of ICT materials such as emails provide opportunities for teachers and students to communicate with one another more effectively during formal and informal teaching and learning.

Further, 52.2% of the teachers were slightly confident in the use of computers to create a presentation with simple animation functions, 17.4% of the teachers were confident and another 17.4% of the teachers were very confident while 13.0% of the teachers were not confident in the

use of computers for creation of a presentation with a simple animation function. The results showed that majority of the teachers of English in public secondary schools in Eldoret East sub-county were slightly confident in the use of computers to create a presentation with simple animation functions. This shows that teachers of English need training on animation technologies so as to be able to integrate fully ICT in the teaching process.

Moreover, 30.4% of the teachers were not confident in use of computers to create a presentation with video or audio clips. 30.4% of the teachers were slightly confident, 26.1% of the teachers were confident while 13.0% of the teachers were very confident in the use of computers to create a presentation with video or audio clips. From the responses, it can be argued that a higher percentage of teachers were not confident in the use of computers to create a presentation with video or audio clips. This implies that use of computers for teaching through video or audio clips is slightly difficult for teachers of English. This therefore calls for teachers to have more skills in ICT allowing for effective integration in the teaching process. Furthermore, 37.0% of the teachers were very confident in the use of computers and or internet during participation in discussion forums on the internet, 32.6% of the teachers were confident and 17.4% of the teachers were not confident while 13.0% of the teachers were slightly confident. The study findings showed that a majority of the teachers of English in public secondary schools in Eldoret East Sub-County had confidence in the use of internet to participate in a discussion forum. From the responses, it can be seen that teachers had confidence in the use of internet services for discussions. In addition, 41.3% of the teachers were not confident in the use of internet to create and maintain blogs or websites, 23.9% of the teachers were slightly confident and another 23.9% of them were confident while 10.9% were very confident in the use of internet to create and maintain blogs or websites. From the responses, it emerged that most of teachers of English were not confident in the use of internet to create and maintain blogs or websites. It seems therefore that most of the teachers of English in in public secondary schools were not in a position to create and maintain websites or blogs.

Similarly, 65.2% of the teachers were very confident in the use of internet to participate in social networks, 21.7% were confident and 10.9% of the teachers were slightly confident while 2.2% were not confident on the use of the internet to participate in social networks. The study findings

showed that majority of the teachers in public secondary schools in Eldoret East Sub-County were able and had confidence in the use of internet for social networks. Sheldon (2008) showed that More than 50% of college students go on a social networking site several times a day and therefore the participation of teachers in social networks could be advantageous to students. Further, 34.8% of the teachers were very confident in the use of internet to download and install software on a computer, 26.1% of the respondents were confident and 21.7% of the teachers were not confident while 17.4% were slightly confident on the use of the internet to download and install software on a computer. The study findings showed that majority of the teachers of English in secondary schools in Eldoret East Sub-County were able to use the internet to download and install software in computers. In addition, 32.6% of the teachers were very confident on the use of internet to download or upload curriculum resources from/to websites or learning platforms for students to use. 30.4% of the teachers were slightly confident and 26.1% of the teachers were confident while 10.9% of the teachers were not confident. From the responses, it can be shown that most of the teachers of English in public secondary schools in Eldoret East Sub-County were confident on the use of the internet to download or upload curriculum resources from/to websites or learning platforms for students to use.

4.3.2 Knowledge Deepening

It was further necessary to understand knowledge deepening of teachers in ICT integration for teaching. The respondents were therefore asked to rate the frequency of use of certain activities related to knowledge deepening. Their responses were tabulated and the results are presented in Table 4.3.

Table 4.3: Teachers' Responses on Knowledge Deepening

Activity	Never or Almost Never		Several Times a month		At least once a week		Every day or almost every day	
	F	%	F	%	F	%	F	%
Browse / search the internet to collect information to prepare lessons	12	26.1	10	21.7	16	34.8	8	17.4
Browse or search the internet to collect learning material or resources to be used by students during lessons	12	26.1	13	28.3	16	34.8	5	10.9
Use applications to prepare presentations for lessons	28	60.9	10	21.7	6	13.0	2	4.3
Create your own digital learning materials for students	31	67.4	11	23.9	2	4.3	2	4.3
Use ICT to prepare exercises and tasks for students	29	63.0	8	17.4	7	15.2	2	4.3
Post home work for students on the school website	42	91.3	1	2.2	3	6.5	0	0.0
Use ICT to provide feedback and/or assess students' learning	38	82.6	6	13.0	2	4.3	0	0.0
Evaluate digital learning resources in the subject you teach	31	67.4	11	23.9	4	8.7	0	0.0
Communicate online with parents	24	52.2	18	39.1	4	8.7	0	0.0
Download/upload/browse material from the school's website or virtual learning environment / learning platform	29	63.0	14	30.4	1	2.2	2	4.3
Look for online professional development opportunities	14	30.4	14	30.4	11	23.9	7	15.2

Table 4.3 shows that 34.8% of the teachers searched the internet to collect information to prepare lessons at least once a week. 26.1% teachers never searched the internet to collect information to prepare lessons, 21.7% searched the internet to collect information to prepare lessons several times a month while 17.4% searched the internet to collect information to prepare lessons every day or almost every day. The study findings showed that most of the teachers searched the internet to collect information to prepare lessons at least once a week. This implies that most teachers use the internet to collect information to prepare lessons but not on a

regular basis. This could be attributed to the unavailability of internet facilities in most schools in the study area.

Similarly, 34.8% of the teachers searched the internet to collect learning material or resources to be used by students during lessons at least once a week, 28.3% of the teachers searched the internet to collect learning material or resources to be used by students during lessons several times a month, 26.1% never searched the internet to collect learning material or resources to be used by students during lessons while 10.9% searched the internet to collect learning material or resources to be used by students during lessons almost every day. From the responses, it can be inferred that most of the teachers of English in public secondary schools in Eldoret East Sub-County searched the internet to collect learning material or resources to be used by students during lessons but not on regular basis.

Furthermore, 60.9% of the teachers never or almost never used computer applications to prepare presentations for lessons, 21.7% used computer applications several times a month to prepare presentations for lessons and 13.0% of the teachers used computer applications at least once a week to prepare presentations for lessons while 4.3% teachers used computer applications every day to prepare presentations for lessons. From the responses, it emerged that a majority, 60.9%, of the teachers of English in public secondary schools in Eldoret East sub-county never used computer applications to prepare presentations for lessons. This implies that teachers are not in a position to fully integrate ICT in the teaching of English language in secondary schools.
Similarly, 67.4% of the teachers never created their own digital learning materials for students, 23.9% prepared their own digital learning materials several times a month while 4.3% of the teachers prepared their own digital learning materials for students at least once a week. The study findings suggested that majority,67.4%, of the teachers never prepared their own digital learning materials for students. This is an indication that majority of the teachers of English in secondary schools are not able to prepare their own digital materials for students to learn. This could be attributed to lack of adequate ICT techniques and skills amongst teachers of English.

Moreover, 63.0% of the teachers never used ICT to prepare exercises and tasks for students, 17.4% of the teachers used ICT to prepare exercises and tasks for students several times a month

while 15.2% used ICT to prepare exercises and tasks for students at least once a week. From the responses, it emerged that majority of the teachers of English in public secondary schools in Eldoret East sub-county never used ICT to prepare exercises and tasks for students. OECD (2014) pointed out that ICTs are used by teachers for various purposes to enhance teaching and learning and therefore in this study teachers were not able to integrate ICT in preparation of exercises for students. This illustrates that there is still untapped potential for ICT use for teaching and learning as pointed by (Bransford *et al.*, 2000).

In addition, 91.3% of the teachers never used ICT materials to post home work for students on the school website while 6.5% of the teachers used ICT materials to post home work for students on the school website. The study findings showed that majority (91.3%) of the teachers of English in Eldoret East Sub-County never used ICT materials for posting of students' homework. This shows that teachers have limited skills on ICT integration for teaching which is consistent with the arguments of Cole (1996) which pointed out that when teachers have limited use of ICT in their subject disciplines their digital competence development will be limited. This argument shows that teachers need to always integrate ICT materials during the teaching process including the posting of students' homework.

Further, 82.6% of the teachers never used ICT to provide feedback and/or assess students' learning and 13.0% used ICT to provide feedback and/or assess students' learning several times a month while 4.3% of them used ICT to provide feedback and/or assess students' learning at least once a week. The responses showed that majority (82.6%) of the teachers never used ICT to provide feedback and/or assess students' learning. Researchers including Felix, (2005), Stockwell, (2007) and Zhao, (2003) have shown that ICT can help teachers reach pedagogical goals and positively influence students' language learning by affording access and individualized feedback, and classroom integration. This implies that teachers and students need have access to ICT materials for effective integration of ICT in teaching and learning process.

Further, 67.4% of the teachers never evaluated digital learning resources in the subject they teach and 23.9% evaluated several times a month digital learning resources in the subject they teach while 8.7% evaluated digital learning resources in the subject they teach at least once a week.

From the responses, it emerged that majority (67.4%) of the teachers of English never evaluated digital learning resources in their subject. Evaluation according to Erstad, (2010) is an important component which enhances movement from mastering technical skills towards appropriating critical reflection regarding the role and function of media in schools and can be related to effective learning. This shows that teachers need to evaluate their digital learning resources to be in line with the current curriculum needs and thus enabling effective learning.

Moreover, 52.2% of the teachers of English never communicated online with parents and 39.1% communicated with parents online several times a month while 8.7% communicated online with parents at least once a week. From the responses, it emerged that majority (52.2%) of the teachers of English never communicated online with parents. Communication is considered by Erstad (2010) as a core component of digital competence in school, which can be used to assess learners. In addition, 63.0% of the teachers never downloaded/uploaded/browsed material from the school's website or virtual learning environment/learning platform, 30.4% downloaded/uploaded/browsed material from the school's website or virtual learning environment/learning platform several times a month while 4.3% downloaded/uploaded/browsed material from the school's website or virtual learning environment / learning platform every day. This finding shows that majority (63.0%) of the teachers never updated their online teaching materials and this could affect the efficiency of teaching and learning. This shows that teachers could be lacking ICT competencies required for effective teaching which as per Krumsvik, (2011) and Lund *et al.*, (2014) need to be part of teachers' professional competence, where the use of ICT in teaching needs to become an important aspect of teachers' work.

4.3.3 Knowledge Creation

The study further sought to understand knowledge creation by knowing the extent where specific aspects of teaching and learning with ICT feature when teachers were teaching. Teachers' responses were tabulated and the results are presented in Table 4.4. At least 41.3% of the teachers reported that they sometimes present, demonstrated and explained to the whole class while 21.7% of the teachers presented, demonstrated and explained a lot to the whole class while teaching using ICT. From the Responses, it can be shown that most of the teachers may not be presenting, demonstrating and explaining using ICT when teaching. This implies that teachers of

English in public secondary schools could be lacking adequate knowledge for integration of ICT during the teaching of English.

In addition, 30.45% of the teachers sometimes supported and explained things to individual students during the learning process, 28.3% of them supported and explained a little to individual students during the learning process while 23.9% of the teachers never supported and explained things to individual students during the learning process. From the responses, it can be shown that teachers did little to support and explain learning activities during the teaching process. This implies that little effort is made to support student with ICT content during the learning process hampering the effective integration of ICT in teaching.

Table 4.4: Teachers' Responses on Aspects of knowledge Creation

Learning Activity	A lot		Sometimes		A little		None	
	F	%	F	%	F	%	F	%
I present, demonstrate and explain to the whole class	10	21.7	19	41.3	9	19.6	8	17.4
I support and explain things to individual students	8	17.4	14	30.4	13	28.3	11	23.9
Students work on exercises or tasks individually at the same time	7	15.2	21	45.7	3	6.5	15	32.6
Students give presentations to the whole class	8	17.4	12	26.1	6	13.0	20	43.5
Students take tests and assessments	7	15.2	10	21.7	5	10.9	24	52.2
Students are engaged in enquiry-based activities	6	13.0	15	32.6	6	13.0	19	41.3
Students discuss ideas with other students and the teacher	11	23.9	14	30.4	6	13.0	15	32.6
Students reflect on their learning	8	17.4	11	23.9	9	19.6	18	39.1
Students participate in assessing their work	9	19.6	9	19.6	6	13.0	22	47.8

Further, 45.7% of the teachers reported that students sometimes work on exercises or tasks individually at the same time, 32.6% of the teachers noted that students never worked on exercises or tasks individually at the same time while 15.2% of the teachers reported that students work a lot on exercises or tasks individually at the same time. From the responses, it can be shown that most of the teachers believed that students sometimes or never work on exercises or tasks individually at the same time. This implies that students need to be supported in order to work individually on their tasks. Similarly, 43.5% of the teachers reported that students never gave presentations to the whole class while 26.1% of the teachers noted that students sometimes gave presentations to the whole class. The study findings showed that most of the teachers of English believed that their students were not able to give presentations to the whole class using ICT equipment.

Further, 52.2% of the teachers pointed out that students never took tests and assignments using computers, 21.9% of the teachers reported that sometimes students took tests and assignments using computers while 15.2% of the teachers believed that students most of the times took tests and assignment using computers. From the responses, it can be argued that little or no tests and assignments are taken by students using computers. Furthermore, it emerged from the table that most of the teachers believed that students are engaged a little or never in inquiry based activities, discussing ideas with other students and teachers, reflecting on their learning and participating in assessing their work. The responses showed that although teachers might be confident in elementary and basic digital skills, they seem to lack knowledge and awareness of how to use ICT didactically to support students' learning in the subject discipline, and how to develop students' digital learning strategies as pointed by (Rokenes, 2016).

4.4 The influence of the gender of teachers on integration of ICT in teaching English language in public secondary schools in Eldoret East sub-county.

The first objective of this study was to determine the influence of the gender of teachers on integration of ICT in teaching English language in public secondary schools in Eldoret East sub-county, Kenya. To achieve this objective, descriptive and Spearman Correlation analysis was used to determine whether there was significant relationship between gender and the three determinants of ICT integration (technology literacy, knowledge deepening and knowledge creation). This was achieved by looking whether the Correlation Coefficient was significant at 0.05 and 0.01 level of significance (2-tailed).

4.4.1 Relationship between Gender and Technology Literacy

The study sought to determine the influence of the gender of teachers and Technology Literacy in teaching English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.5.

Table 4.5 Spearman's rho correlation between Gender and Technology Literacy

		Technology Literacy	Gender of respondent
Technology Literacy	Correlation Coefficient	1.000	.316*
	Sig. (2-tailed)	.	.033
Gender of respondent	Correlation Coefficient	.316*	1.000
	Sig. (2-tailed)	.033	.

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

b. Listwise N = 46

There was a significant correlation between gender and technology literacy (r=.316, *n*=46, p<.05]). From the results, it was found that gender influences technology literacy among teachers of English in public secondary schools. This agrees with Mwebaze (2010) that male and female teachers in Africa, are not equally likely to be trained to use ICTs in classrooms; moreover, male teachers are more likely to be trained to teach basic computer skills and computing.

4.4.2 Relationship between Gender and Knowledge Deepening

The influence of Gender and Knowledge Deepening was investigated using Spearman's rho correlation as summarized in Table 4.6.

Table 4.6 Spearman's rho correlation between Gender and Knowledge Deepening

			Knowledge Deepening	Gender of respondent
Spearman's rho	Knowledge Deepening	Correlation Coefficient	1.000	.082
		Sig. (2-tailed)	.	.588
	Gender of respondent	Correlation Coefficient	.082	1.000
		Sig. (2-tailed)	.588	.

a. Listwise N = 46

This showed that there was no significant relationship between gender and knowledge deepening [r=.082, *n*=46, p>.05]. This indicated no relationship exist between gender and knowledge deepening during the ICT integration. Thus, the gender of the teacher does not affect the integration of the ICT in teaching English.

4.4.3 Relationship between Gender and Knowledge Creation

The influence of Gender and Knowledge Creation was investigated using Spearman's rho correlation as summarized in Table 4.7.

Table 4.7 Spearman's rho correlation between Gender and Knowledge Creation

			Creation	Gender of respondent
Spearman's rho	Creation	Correlation Coefficient	1.000	-.032
		Sig. (2-tailed)	.	.834
	Gender of respondent	Correlation Coefficient	-.032	1.000
		Sig. (2-tailed)	.834	.

a. Listwise N = 46

There was no significant relationship between gender and knowledge creation (r= -.032, n=74, p>.05). The gender of the teacher does not influence the knowledge creation in integration of ICT in teaching of English. From the study, there was a significant relationship between gender of the teacher and technology literacy. However no significant relationship exists between gender and knowledge deepening as well as knowledge creation. This indicated that the integration of ICT in the teaching of English from the perspective of technology literacy was dependent on gender of the teacher. This agrees with Bowser-Brown that female students are more likely to enter programmes with few technology skills due to lack of access (Bowser-Brown, 2004). There is evidence to show that this disparity continues at the tertiary level in Africa. For example, a study undertaken under the Pan African Research Agenda on the Pedagogical Integration of ICT in Africa showed that females had lower rates of ICT usage than males.

4.5 Influence of attitudes of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.

The second objective of this study was to establish the influence of attitudes of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. To achieve this objective, teachers' attitude was sub-divided into two constructs; teachers' attitude on impact of ICT on students' learning and teachers' attitude towards use of ICT in schools. This was achieved by looking whether the Correlation Coefficient was significant at 0.05 and 0.01 level of significance (2-tailed).

4.5.1 Teachers' attitude on Impact of ICT on Students' Learning

In this study, teachers of English were requested to rate their views on the statements representing the impact of using ICT during lessons on students' learning. Their responses were tabulated and the results are presented in Table 4.8.

Table 4.8: Responses on Teachers Attitude towards ICT use and Students' Learning

Attitude	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
Students concentrate more on their learning	14	30.4	29	63.0	3	6.5	0	0.0
Students try harder in what they are learning	9	19.6	30	65.2	7	15.2	0	0.0
Students feel more autonomous in their learning (They can repeat exercises if needed, explore in more detail topics that they are interested in, etc.)	22	47.8	19	41.3	5	10.9	0	0.0
Students understand more easily what they learn	19	41.3	26	56.5	1	2.2	0	0.0
Students remember more easily what they've learnt	17	37.0	28	60.9	1	2.2	0	0.0
ICT facilitates collaborative work between students	14	30.4	29	63.0	1	2.2	2	4.3
ICT improves the class climate (students more engaged, less disturbing)	22	47.8	20	43.5	4	8.7	0	0.0

From the findings 63.0% of the teachers agreed with the statement that students concentrated more on their learning when ICT is integrated during teaching and 30.4% of the teachers strongly agreed with the statement while 6.5% of them were in disagreement with the statement. The

study findings showed that majority 93.4% of the teachers of English in public secondary schools in Eldoret East Sub-County believed that students concentrated more on their learning when ICT was integrated during the teaching process. Further, 65.2% of the teachers agreed with the statement that students try harder in what they are learning when ICT is integrated in teaching, 19.6% of the teachers strongly agreed with the statement while 15.2% of them were in disagreement with the statement.

The study findings showed that majority 84.8% of the teachers in secondary schools in Eldoret East Sub-County believed that students tried harder in what they were doing when ICT is integrated in learning. This shows that students enjoy learning when ICT is integrated and this could have positive impacts on their learning outcomes. This was found to support the findings of others researchers such as Bocconi, Balanskat, Kampylis and Punie, (2013) and Eurydice, (2011) who believed that the use of ICTs in education can benefit the education system at different levels through improving learning outcomes.

In addition, 47.8% of the teachers strongly agreed with the statement that students feel more autonomous in their learning (They can repeat exercises if needed, explore in more detail topics that they are interested in, etc), 41.3% of the teachers strongly agreed with the statement while 10.9% of them were in disagreement with the statement. From the responses, it can be inferred that majority 89.1% of them were of the view that students felt autonomous in their learning when ICT is integrated. This shows that students developed more confidence in their work when ICT is integrated in the teaching/learning process. This supports the work of Argentin & Gui (2011). who noted that digital competence arises when students have awareness that are required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, collaborate, create and share content effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, and socializing. In this study, integration of ICT could result to students exploring more details in particular topics or problems.

Furthermore, 56.5% of the teachers agreed with the statement that students understand more easily what they learn when ICT is integrated, 41.3% of them strongly agreed with the statement

while 2.2% was in disagreement with the statement. The study findings suggested that majority 97.8% of the teachers of English in public secondary schools in Eldoret East Sub-County were of the view that students understand more easily what they learn when ICT is integrated. ICT integration enhances performance since students are eager and curious to learn.

Similarly, 60.8% of the teachers agreed with the statement that **s**tudents remember more easily what they've learnt when ICT is integrated in teaching, 37.0% of the teachers strongly agreed with the statement while 2.2% was in disagreement with the statement. From the responses, it emerged that majority 97.8% of the teachers of English in public secondary schools in Eldoret East Sub-County believed that students easily memorized what they learned when ICT is integrated in teaching. Moreover, 63.0% of the teachers agreed with the statement that ICT facilitates collaborative work between students, 30.4% of them strongly agreed with the statement while 6.5% of the teachers were in disagreement with the statement. The study finding suggested that majority 93.4% of the teachers of English reported that ICT facilitated collaborative work between students. This is in agreement with UNESCO (2011) which pointed out that collaboration is an important element for ICT integration in schools.

Furthermore, 47.8% of the teachers strongly agreed with the statement that ICT improves the class climate (students more engaged, less disturbing), 43.5% of the teachers agreed with the statement while 8.7% of the teachers were in disagreement with the statement. The responses showed that majority 91.3% of the teachers of English in public secondary schools in the study area believed that ICT improves the class climate thus enabling the achievement of the desired goals by the students and teachers.

4.5.2 Teachers' Attitude on Use of ICT at School

In addition, the teachers of English were asked to further rate their level of agreement on uses of ICT at school and the results are presented in Table 4.9.

Table 4.9: Responses on Teachers' Attitude towards use of ICT at School

Attitude	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
ICT integration in teaching should be made compulsory	8	17.4	23	50.0	14	30.4	1	2.2
ICT can improve a teachers' efficiency	23	50.0	21	45.7	2	4.3	0	0.0
ICT use in teaching and learning positively impacts on students' motivation	35	76.1	11	23.9	0	0.0	0	0.0
ICT use in teaching and learning positively impacts on students' achievement	11	23.9	30	65.2	3	6.5	2	4.3
ICT use in teaching and learning positively impacts on students' higher order thinking skills (critical thinking)	15	32.6	22	47.8	6	13.0	3	6.5
ICT use in teaching and learning positively impacts on students' analysis (problem solving)	19	41.3	18	39.1	9	19.6	0	0.0
ICT use in teaching and learning is essential to prepare students to live and work in the 21st century	34	73.9	12	26.1	0	0.0	0	0.0

From the study, at least 50.0% of the teachers agreed with the statement that ICT integration in teaching should be made compulsory, 17.4% of the teachers strongly agreed with the statement while 32.6% of the teachers were in disagreement with the statement. The study findings showed that majority 67.4% of the teachers in public secondary schools in Eldoret East Sub-County believed that ICT integration in teaching should be made compulsory. This is in line with European Commission, (2013) report which pointed out that all teachers needed to participate compulsorily in ICT training in order to be allowed to teach in Europe.

Similarly, 50.0% of the teachers strongly agreed with the statement that ICT can improve a teachers' efficiency, 45.7% of the teachers agreed with the statement while 4.3% of the teachers were in disagreement with the statement. From the responses, it can be shown that majority 95.7% of them believed that ICT can improve a teachers' efficiency. This is in agreement with

the work of Bell, (2004) who noted that detailed strategic planning on ICT in schools reduces uncertainty and increases efficiency in work performance.

In addition, 76.1% of the teachers strongly agreed with the statement that ICT use in teaching and learning positively impacts on students' motivation while 23.9% of the teachers agreed with the statement. It seems therefore that all the teachers of English in secondary schools in Eldoret East Sub-County were of the view that ICT use in teaching and learning positively impacts on students' motivation. This implies that ICT integration enhances students' learning outcomes. This is in agreement with the work of Leakey, (2011) who pointed out that ICT use motivates both learners and teachers making the learning process more exciting and enjoyable.

Moreover, 65.2% of the teachers agreed with the statement that ICT use in teaching and learning positively impacts on students' achievement, 23.9% of the teachers agreed with the statement while 10.8% of the teachers were in disagreement with the statement. From the responses, it emerged that majority 89.2% of the teachers of English in the study area believed that ICT use in teaching and learning positively impacts on students' achievement.

Further, 47.8% of the teachers agreed with the statement that ICT use in teaching and learning positively impacts on students' higher order thinking skills (critical thinking), 32.6% of the teachers strongly agreed with the statement while 19.5% of the teachers were in disagreement with the statement. From the responses, it can be pointed out that ICT use in teaching and learning positively impacts on students' critical thinking skills. Research has pointed out that through use of ICTs in teaching and learning of English language, students could develop skills such as problem solving and critical thinking (Farrel, 2007).

In addition, 41.3% of the teachers strongly agreed with the statement that ICT use in teaching and learning positively impacts on students' analysis (problem solving), 39.15% of the teachers agreed with the statement while 19.6% of the teachers were in disagreement. From the study, it emerged that majority 89.4% of the teachers believed that ICT use in teaching and learning positively impacted on students' problem solving. This is supported by an earlier research by

Rodgers (2003) who pointed out that ICT enhance problem solving skills which leads to accomplishment of specific goals in time.

Similarly, 73.9% of the teachers strongly agreed with the statement that ICT use in teaching and learning is essential to prepare students to live and work in the 21st century while 26.1% of the teachers agreed with the statement. From the responses, it emerged that all the teachers of English in public secondary schools in Eldoret East Sub-county believed that ICT use in teaching and learning is essential to prepare students to live and work in the 21st century. This supports UNESCO, (2003) report which pointed out that educational organization made students to develop understandings and proficiencies in using ICT in appropriate ways to support learning and to develop appropriate technology knowledge, skills, and dispositions for the 21st century.

4.5.3 Influence of teachers' attitudes on Technology Literacy

The study sought to establish the influence of attitudes of teachers on the impact and use on Technology Literacy in teaching of English language in public secondary schools in Eldoret East sub-county. To achieve, this objective, Spearman's rho correlation was used to establish the relationship. The results are presented in Table 4.10.

Table 4.10 Spearman's rho correlation between attitudes of teachers and impact and use on Technology Literacy

			Technology Literacy	Impact	ICT Use
Spearman's rho	Technology Literacy	Correlation Coefficient	1.000		
		Sig. (2-tailed)	.		
	Impact	Correlation Coefficient	.227	1.000	
		Sig. (2-tailed)	.129	.	
	ICTUSE	Correlation Coefficient	.372*	.225	1.000
		Sig. (2-tailed)	.011	.132	.

*. Correlation is significant at the 0.05 level (2-tailed).
b. Listwise N = 46

There was a significant correlation between teachers' attitude on ICT use and technology literacy (r=.372, *n*=46, p<.05]). This indicated that teacher's attitude on ICT use influences technology literacy among teachers of English in public secondary schools. This is consistent with the findings of Tamim *et al.,* (2011) that ICT can have a positive impact when technology is being used in traditional teacher-centered ways for content delivery and instruction to support students' efforts to achieve. There was no significant correlation between teachers' attitude on ICT impact on technology literacy (r=.227, *n*=46, p>.05]). This indicated that teacher's attitude on ICT impact does not influence technology literacy in teaching of English in public secondary schools.

4.5.4 Influence of teachers' attitudes on Knowledge Deepening

The study sought to establish the influence of attitudes of teachers on the impact and use on knowledge deepening in teaching of English language in public secondary schools in Eldoret East sub-county. To achieve this, Spearman's rho correlation was used to establish the relationship. The results are presented in Table 4.11.

Table 4.11 Spearman's rho correlation between attitudes of teachers and impact and use on Knowledge Deepening

			Knowledge Deepening	Impact	ICT USE
Spearman's rho	Knowledge Deepening	Correlation Coefficient	1.000	.094	.063
		Sig. (2-tailed)	.	.534	.680
	Impact	Correlation Coefficient	.094	1.000	.225
		Sig. (2-tailed)	.534	.	.132
	ICTUSE	Correlation Coefficient	.063	.225	1.000
		Sig. (2-tailed)	.680	.132	.

a. Listwise N = 46

There was no significant correlation between teachers attitude on ICT use and knowledge deepening (r=.094, n=46, p>.05]). This indicated that teacher's attitude on ICT use does not influence knowledge deepening among teachers of English in public secondary schools. Furthermore, no significant correlation between teachers' attitude on ICT impact on knowledge deepening (r=.063, n=46, p>.05]). This indicated that teacher's attitude on ICT impact does not influence knowledge deepening in teaching of English in public secondary schools.

4.5.5 Influence of teachers' attitudes on Knowledge Creation

The study sought to establish the influence of attitudes of teachers on the impact and use on knowledge creation in teaching of English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.12. No significant correlation exists between teachers' attitude and ICT use and knowledge creation (r=.094, n=46, p>.05]). This indicated that teacher's attitude on ICT use does not influence knowledge creation among teachers of English in public secondary schools.

Table 4.12 Spearman's rho Correlation between Attitudes of teachers and Impact and use on Knowledge Creation

			Creation	Impact	ICTUSE
Spearman's rho	Creation	Correlation Coefficient	1.000	.119	.137
		Sig. (2-tailed)	.	.431	.363
	Impact	Correlation Coefficient	.119	1.000	.225
		Sig. (2-tailed)	.431	.	.132
	ICTUSE	Correlation Coefficient	.137	.225	1.000
		Sig. (2-tailed)	.363	.132	.

a. Listwise N = 46

Additionally, no significant correlation exists between teachers' attitude on ICT impact on knowledge creation (r=.063, n=46, p>.05]). This indicated that teacher's attitude on ICT impact does not influence knowledge creation in teaching of English in public secondary schools. The attitude on ICT use influences technology literacy among teachers of English in public secondary schools in Eldoret East Sub-county. This is consistent with the work of Pandolfini (2016) who reported that more than 90% of teachers in Italy believed that ICTs had a positive impact on student attendance, behavior, motivation, attitude and engagement in classroom activities; ICTs also improved collaborative learning.

Teacher attitude is an important aspect in determining how teachers will use ICTs in the classroom (Ertmer, 2005; Evoh, 2007; Davis *et al.*, 2009; Naicker, 2010; Martinovic & Zhang, 2012). Training should therefore challenge teachers' attitudes regarding teaching and learning and address teacher attitudes towards ICT use and integration in education. This supports the work of Krumsvik *et al.*, (2014) who pointed out in their study that a significant relationship exists between ICT integration and students' general achievements in schools.

4.6 Influence of ICT training of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.

The third objective of this was to establish the influence of ICT training of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county, Kenya. To achieve this objective, descriptive and Spearman Correlation analysis was used to determine whether the ICT Training of Teachers influences the ICT integration in terms of technology literacy, knowledge deepening and knowledge creation. This was achieved by looking whether the Correlation Coefficient was significant at 0.05 and 0.01 level of significance (2-tailed).

4.6.1 Availability of ICT Training Programmes in Schools

The respondents were requested to indicate whether their schools had ICT training programme for their teachers. The results are presented in Figure 4.6. Majority 73.9% of teachers reported that their schools did not have ICT training programmes for their teachers while 26.1% of the teachers reported that their schools had ICT training programmes. From the responses, it emerged that majority of the schools in the study area did not have ICT training programmes for their teachers. This implies that teachers may not be having access to school sponsored programmes on ICT use and implementation but it only depends on an individual teachers' effort. This hampers the integration of ICT in teaching and learning process.

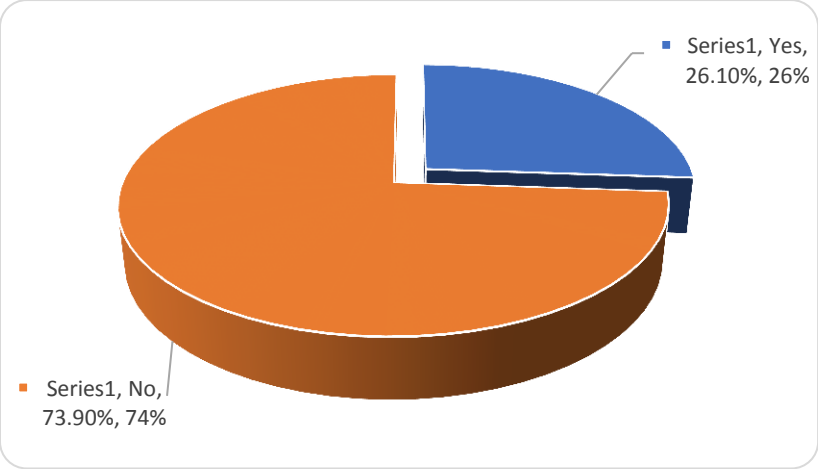

Figure 4.6: Availability of ICT Training Programmes in Schools

Similarly, teachers were asked to indicate whether or not ICT integration was part of their pedagogical training as teachers. Their responses showed that 50.0% of the teachers agreed that ICT integration was part of their pedagogical training as teachers while 50.0% of the teachers disagreed with the statement.

4.6.2 Time Involved in Training

Teachers of English were asked to indicate the total time they have been involved during the past two school years in ICT training as part of professional development opportunities. Their responses were tabulated and the results are presented in Figure 4.7.

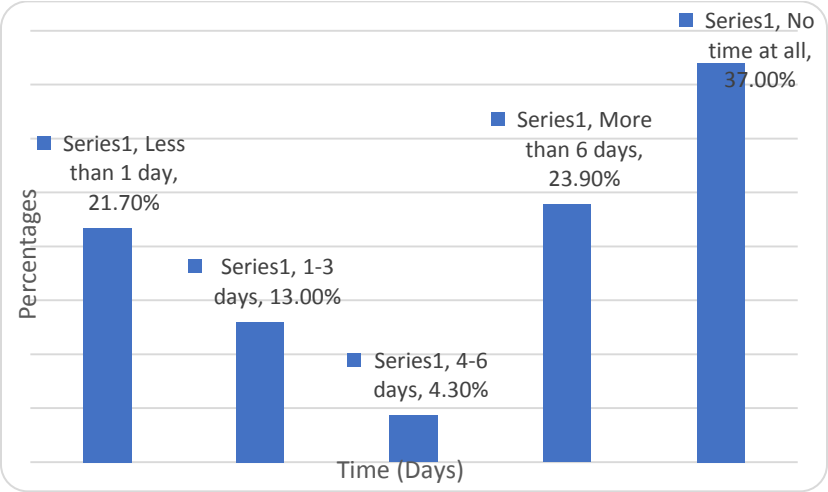

Figure 4.7: Time Involved in Training

The findings showed that 37.0% of the teachers of English had not been involved in ICT training, 23.9% teachers had been involved in ICT training for more than 6 days, and 21.7% teachers had been involved in ICT training for less than 1 day, while 13.0% teachers had been involved in ICT training for a period of 1-3 days. From the responses, it emerged that most the teachers of English had not undergone any ICT training for the past two years in their schools. This hampers the integration of ICT in the teaching of English language in public secondary schools.

4.6.3 Areas of ICT Training among Teachers'

Teachers were requested to indicate whether or not they had undergone any ICT training in some specific areas. Their responses were tabulated and results presented in Table 4.13.

Table 4.13: Responses on Teachers' ICT Training on Specific Areas

Area of training	Yes		No	
	F	%	F	%
Introductory courses on internet use and general applications (basic Word-processing, spreadsheets, presentations, databases, etc.)	21	45.7	25	54.3
Advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment etc.)	8	17.4	38	82.6
Advanced courses on internet use (creating websites/home page, video conferencing, etc.)	2	4.4	44	95.7
Courses on the pedagogical use of ICT in teaching and learning	12	26.1	34	73.9
Subject-specific training on learning applications (tutorials, simulations, etc.)	9	19.6	37	80.4
Course on multimedia (using digital video, audio equipment, etc.)	15	32.6	31	67.4
Participate in online communities (e.g. face book, mailing lists, twitter, blogs) for professional discussions with other teachers	29	63.0	17	37.0
ICT training provided by school staff	9	19.6	37	80.4

Majority of the teachers had not undergone any training on Introductory courses on internet use and general applications (basic Word-processing, spreadsheets, presentations, databases, etc.), advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment etc.), advanced courses on internet use (creating websites/home page, video conferencing, etc.), courses on the pedagogical use of ICT in teaching and learning and subject-specific training on learning applications (tutorials, simulations, etc.).

Majority (63.0%) of the teachers had undergone training on participation in online communities (e.g. face book, mailing lists, twitter, blogs) for professional discussions with other teachers.

From the responses, therefore, it can be shown that teachers of English lack training on basic ICT skills and this has an effect on integration of ICT in teaching English language. Training programs should prepare and provide support for the teachers and challenge their pedagogical beliefs regarding the way they teach and how they can use ICTs to enhance and support the way students teaching (Cox & Marshall, 2007 cited in Naicker, 2010).

4.6.4 Relationship between Teachers' ICT training and Technology Literacy

To understand the influence of ICT training of teachers on Technology Literacy during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county, Spearman Correlation analysis was performed. The results are presented in Table 4.14.

Table 4.14 Spearman's rho Correlation between Teachers' ICT training and Technology Literacy

			Technology Literacy	Train-ing
Spearman's rho	Technology Literacy	Correlation Coefficient	1.000	.399**
		Sig. (2-tailed)	.	.006
	Training	Correlation Coefficient	.399**	1.000
		Sig. (2-tailed)	.006	.

**. Correlation is significant at the 0.01 level (2-tailed).
b. Listwise N = 46

There was a positive significant correlation between ICT training of teachers on Technology Literacy (r=.399, *n*=46, p<.05]). This indicated that training of teachers on ICT influences technology literacy among teachers of English in public secondary schools. This implies that the level of training affects ICT integration in the teaching of English language. Researchers such as Ropp, (1999) and Gan (2001) have found out that training is one of the pertinent factors that contribute to the usage of computers. Teachers need to be computer literate and thus should be given appropriate training in computer usage. In addition, training plays an important role in a teacher's readiness to use computers.

4.6.5 Relationship between Teachers' training on ICT and knowledge deepening

Spearman Correlation analysis was performed to understand the influence of ICT training of teachers on knowledge deepening during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.15.

Table 4.15: Spearman's rho Correlation between Teachers' ICT training and knowledge deepening

			Knowledge deepening	Training
Spearman's rho	Knowledge deepening	Correlation Coefficient	1.000	-.625**
		Sig. (2-tailed)	.	.000
	Training	Correlation Coefficient	-.625**	1.000
		Sig. (2-tailed)	.000	.

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

b. Listwise N = 46

There was a negative significant correlation between training of teachers on ICT and knowledge deepening (r= -.625, *n*=46, p<.05]). This indicated that training of teachers on ICT negatively influences knowledge deepening among teachers of English in public secondary schools.

4.6.6. Relationship between Teachers' Training on ICT and Knowledge Creation

Spearman Correlation analysis was performed to understand the influence of ICT training of teachers on knowledge creation during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.16.

Table 4.16 Spearman's rho Correlation between Teachers' ICT training and knowledge creation

			Creation	Train-ing
Spearman's rho	Creation	Correlation Coefficient	1.000	.350*
		Sig. (2-tailed)	.	.017
	Training	Correlation Coefficient	.350*	1.000
		Sig. (2-tailed)	.017	.

*. Correlation is significant at the 0.05 level (2-tailed).
b. Listwise N = 46

There was a positive significant correlation between ICT training of teachers on knowledge creation (r= .350, *n*=46, p<.05]). This indicated that training of teachers on ICT influences knowledge creation of teachers of English in public secondary schools. This agrees with Naicker, (2010) that training programs prepare and provide support for the teacher's pedagogical approaches regarding the way they teach and use ICTs to enhance students teaching.

4.7 Influence of experience of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county.

The fourth objective was to establish the influence of experience of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. To achieve this objective, descriptive and Spearman Correlation analysis was used to determine whether experience of teachers influence the ICT integration in terms of technology literacy, knowledge deepening and knowledge creation. This was achieved by looking whether the Correlation Coefficient was significant at 0.05 and 0.01 level of significance (2-tailed).

4.7.2 Influence of Experience of Teachers on Technology Literacy

To understand the influence of teachers' experience on technology literacy during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county, Spearman Correlation analysis was performed. The results are presented in Table 4.17.

Table 4.17 Spearman's rho Correlation between Experience of Teachers and Technology Literacy

			Technology Literacy	Teachers experience
Spearman's rho	Technology Literacy	Correlation Coefficient	1.000	.516**
		Sig. (2-tailed)	.	.000
	Teachers experience	Correlation Coefficient	.516**	1.000
		Sig. (2-tailed)	.000	.

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

b. Listwise N = 46

There was a positive significant correlation between teachers experience and technology literacy (r=.399, *n*=46, p<.05]). Teachers experience in teaching influences technology literacy among teachers of English in public secondary schools.

4.7.3 Influence of Experience of Teachers on knowledge deepening

Spearman Correlation analysis was performed to understand the influence of ICT training of teachers on knowledge deepening during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.18.

Table 4.18 Spearman's rho Correlation between Experience of Teachers and knowledge deepening

			Knowledge Deepening	Teachers experience
Spearman's rho	Knowledge Deepening	Correlation Coefficient	1.000	-.236
		Sig. (2-tailed)	.	.115
	Teachers experience	Correlation Coefficient	-.236	1.000
		Sig. (2-tailed)	.115	.

a. Listwise N = 46

There was no significant correlation between teachers experience and knowledge deepening (r= -.236, *n*=46, p<.05]). This indicated that teachers experience does not influence knowledge deepening among teachers of English in public secondary schools.

4.7.4 Influence of Experience of Teachers on Knowledge Creation

Spearman Correlation analysis was performed to understand the influence of teachers experience on knowledge creation during ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. The results are presented in Table 4.19.

Table 4.19 Spearman's rho Correlation between Experience of Teachers and knowledge creation

			Knowledge Creation	Teachers experience
Spearman's rho	Knowledge Creation	Correlation Coefficient	1.000	.070
		Sig. (2-tailed)	.	.645
	Teachers experience	Correlation Coefficient	.070	1.000
		Sig. (2-tailed)	.645	.

a. Listwise N = 46

There was no significant correlation between teachers experience and knowledge creation (r= .070, *n*=46, p>.05]). This indicated that teachers experience does not influence knowledge creation of teachers of English in public secondary schools. From the study, teaching experience influence on technology literacy but does not influence knowledge deepening and knowledge creation. This agrees with Russell, Bebell and Tao, (2007), that the quality of ICT integration was related to the years of teacher's service. However, Baek, Jong and Kim (2008), claim that experienced teachers are less ready to integrate ICT into their teaching.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter contains a summary of the study findings, conclusions, recommendations and suggestions for further research based on the analysis of data. The chapter is divided into four sections namely: summary of research findings, conclusions, recommendations and suggestions for further research. These divisions were informed by the purpose of the study and the results.

5.2 Summary of the Study Findings

The purpose of this study was to investigate teacher-related factors influencing integration of Information Communication Technology in the teaching of English language in public secondary schools in Eldoret East sub-county, Kenya. The specific objectives were to determine the influence of gender, attitude, ICT training and experience of teachers on integration of ICT in teaching English language.

5.2.1 Influence of Teachers' Gender on Integration of ICT in Teaching English Language

The first objective of this study was to determine the influence of the gender of teachers on integration of ICT in teaching English language in public secondary schools in Eldoret East sub-county. The study findings showed that a majority 58.7% of the teachers of English in Eldoret East sub-county were female. This implies that there were more female teachers inclined to the teaching of English language than their male counterparts in Eldoret East sub-county secondary schools.

The study found out that there was a significant correlation between gender and technology literacy (r=.316; p=.033). However, there was no significant relationship between gender and knowledge deepening (r=.082; p=.588) and gender and knowledge creation (r=.032; p=.834). From the results, it seems therefore that gender influences technology literacy but it does not influence knowledge deepening and knowledge creation among teachers of English in public secondary schools.

5.2.2 Influence of Attitudes on ICT integration in Teaching of English Language

The second objective of this study was to establish the influence of attitudes of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county, Kenya. The study findings showed that majority 93.4% of the teachers of English in public secondary schools in Eldoret East Sub-County believed that students concentrated more on their learning when ICT is integrated during the teaching process. Further, 65.2% of the teachers agreed with the statement that students try harder in what they are learning when ICT is integrated in teaching, 19.6% of the teachers strongly agreed with the statement while 15.2% of the teachers were in disagreement with the statement. The study findings showed that majority 84.8% of the teachers in secondary schools in Eldoret East Sub-County believed that students tried harder in what they were doing when ICT is integrated in learning. This shows that students enjoy learning when ICT is integrated and this could have positive impact on their learning outcomes.

In addition, majority of the teachers 89.1% of the respondents were of the view that students felt autonomous in their learning when ICT is integrated. This shows that students developed more confidence in their work when ICT is integrated in the teaching/learning process. Furthermore, majority 97.8% of the teachers of English in public secondary schools in Eldoret East Sub-County were of the view that students understand more easily what they learn when ICT is integrated. Similarly, majority 97.8% of the teachers of English in public secondary schools in Eldoret East Sub-County believed that students easily memorized what they learned when ICT is integrated in teaching. Moreover, majority 93.4% of the teachers of English reported that ICT facilitated collaborative work between students. Furthermore, majority 91.3% of the teachers of English in public secondary schools in the study area believed that ICT improves the class climate thus enabling the achievement of the desired goals by the students and teachers.

The study findings showed that majority 67.4% of the teachers in public secondary schools in Eldoret East Sub-County believed that ICT integration in teaching should be made compulsory. Similarly, majority 95.7% of the teachers of English believed that ICT can improve a teachers' efficiency. Further all teachers of English in secondary schools in Eldoret East Sub-County were of the view that ICT use in teaching and learning positively impacts on students' motivation.

This implies that ICT integration enhances students' learning outcomes. Moreover, majority 89.2% of the teachers of English in the study area believed that ICT use in teaching and learning positively impacts on students' achievement.

Further, it emerged that ICT use in teaching and learning positively impacts on students' critical thinking skills. Research has pointed out that through use of ICTs in teaching and learning of English language, students could develop skills such as problem solving and critical thinking. In addition, majority 89.4% of the teachers believed that ICT use in teaching and learning positively impacted on students' problem solving. Similarly, all the teachers of English in public secondary schools in Eldoret East Sub-county believed that ICT use in teaching and learning is essential to prepare students to live and work in the 21st century.

The study further found out that there was a statistically significant relationship between attitude on ICT use and technology literacy (r=.372; p=.011). However, there was no statistically significant relationship between attitude on ICT use and knowledge deepening (r=.063; p=.680) and knowledge creation (r=.137; p=.363). In addition, there was no statistically significant relationship between attitude on ICT impact and technology literacy (r=.227; p=.129), knowledge deepening (r=.094; p=.534) and knowledge creation (r=.119; p=.431). This shows that attitude on ICT use influences technology literacy among teachers of English in public secondary schools in Eldoret East Sub-county.

5.2.3 Influence of ICT Training of Teachers on ICT Integration in Teaching of English Language

The third objective of this study was to establish the influence of ICT training of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. It emerged that majority of the schools in the study area did not have ICT training programmes for their teachers. This implies that teachers may not be having access to school sponsored programmes on ICT use and implementation but it only depends on an individual teachers' effort. This hampers the integration of ICT in teaching and learning process. Similarly, it emerged that most the teachers of English had not undergone any ICT training for the past two

years in their schools. This hampers the integration of ICT in the teaching of English language in public secondary schools. In addition, majority of the teachers had not undergone any training on introductory courses on internet use and general applications (basic Word-processing, spreadsheets, presentations, databases, etc.), advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment etc.), advanced courses on internet use (creating websites/home page, video conferencing, etc.), courses on the pedagogical use of ICT in teaching and learning and subject-specific training on learning applications (tutorials, simulations, etc.). However, majority 63.0% of the teachers had undergone training on participation in online communities (e.g. face book, mailing lists, twitter, blogs) for professional discussions with other teachers. From the responses, therefore, it can be shown that teachers of English lack training on basic ICT skills and this has an effect on integration of ICT in teaching English language.

There was a positive and significant correlation between training and technology literacy, training and knowledge deepening and training and knowledge creation. This implies that the level of training affects ICT integration in the teaching of English language.

5.2.4 The Influence of Experience of Teachers on ICT Integration in Teaching of English Language

The fourth objective of this study was to establish the influence of experience of teachers on ICT integration in teaching of English language in public secondary schools in Eldoret East sub-county. The study found out that most of the teachers of English in the study area had a teaching experience over years showing that they have been in the teaching profession for a long time. In addition, there was a significant positive correlation between teaching experience (r=.561) and technology literacy. However, there was no significant correlation between work experience and knowledge deepening and work experience and knowledge creation. This implies that teaching experience influence on technology literacy but does not influence knowledge deepening and knowledge creation.

5.3 Conclusions of the Study

The gender of teachers influences technology literacy but it does not influence knowledge deepening and knowledge creation among teachers of English in public secondary schools.

The attitude of teachers on ICT use influences technology literacy but does not influence knowledge deepening and knowledge creation among teachers of English in public secondary schools in Eldoret East Sub-county.

The level of ICT training influences positively technology literacy, training and knowledge deepening and training and knowledge creation in ICT integration for teaching of English language.

The teaching experience influences technology literacy but does not influence knowledge deepening and knowledge creation.

5.4 Recommendations from the Study

The following recommendations are made based on the study findings;

i) Both male and female teachers need to be encouraged to develop ICT literacy through training to enable them integrate ICT for teaching thus enhancing on students' achievement of set goals.

ii) Teachers did not have access to computer equipment for use in the teaching and learning process. Therefore, computer equipment need to be availed to all student teachers in order to enhance its use during learning process that will empower them with skills and content to use them in actual teaching practice. Schools should ensure that they equip computer labs with adequate facilities.

iii) The policy and decision makers in Government must implement those policies and decisions that favour literacy in the ICTs particularly provision of infrastructure and ICT components to schools.

iv) ICT has to be integrated into the teacher education programmes to ensure their preparedness to adopt its use at the classroom level.

v) A standard planned ICT practical course curriculum of one sit-in exams for teacher education programmes should be developed and maintained to ensure that graduates of teacher training programme are professionally competent on completion of the programme.

5.5 Suggestions for Further Research

i) There is need for a study on factors influencing the integration of ICT in education especially in teacher-training colleges.

ii) There is need for a study on factors influencing the integration of ICT in education in the primary schools

iii) There is need for a study of other factors affecting teachers'' integration of ICTs in teaching English in secondary schools

iv) There is need for study on influence of ICT integration on students' achievement in secondary schools.

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APPENDICES

APPENDIX A: INTRODUCTION LETTER

Dear Respondent,

I am a post graduate student at Strathmore University pursuing a Master of Science in Educational Management. The purpose of this research is to establish the influence of teacher-related factors on integration of ICT in the teaching of English Language in public secondary schools in Eldoret East Sub-County. Your school has been sampled to participate in the study. I kindly request you to provide the required information honestly. The information collected will strictly be used for academic reasons and the information provided will be treated with utmost confidentiality.

Thank you in advance.

Yours faithfully,

Noah Tenai

APPENDIX B: TEACHERS OF ENGLISH QUESTIONNAIRE

This questionnaire is for the purpose of carrying out an educational research on teacher-related factors influencing integration of ICT in the teaching of English language. You are requested to respond to the questions below honestly. Put a tick (√) against your answer where applicable. The data obtained from this questionnaire is strictly for research purpose and will be treated with utmost confidentiality.

SECTION 1: TEACHERS' DEMOGRAPHICS

1) What is your gender? Tick (√)

Male [ ]

Female [ ]

2) What is your age? Tick (√)

30 or less [ ]

31-35 [ ]

36-40 [ ]

41-45 [ ]

More than 45 [ ]

SECTION 2: TEACHER ATTITUDES

Do you consider ICT use during lessons as having an impact on the following? Tick (√) one box only (strongly agree=4, agree=3, disagree=2, strongly disagree=1)

	Attitude	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
3	Students concentrate more on their learning				
4	Students try harder in what they are learning				
5	Students feel more autonomous in their learning (They can repeat exercises if needed, explore in more detail topics that they are interested in, etc.)				

6	Students understand more easily what they learn				
7	Students remember more easily what they've learnt				
8	ICT facilitates collaborative work between students				
9	ICT improves the class climate (students more engaged, less disturbing)				

To what extent do you disagree or agree with each of the following statements about the use of ICT at school? Tick (√) one box only (strongly agree=4, agree=3, disagree=2, strongly disagree=1)

	Statement	**Strongly agree**	**Agree**	**disagree**	**Strongly disagrees**
10	ICT integration in teaching should be made compulsory				
11	ICT can improve a teachers' efficiency				
12	ICT use in teaching and learning positively impacts on students' motivation				
13	ICT use in teaching and learning positively impacts on students' achievement				
14	ICT use in teaching and learning positively impacts on students' higher order thinking skills (critical thinking)				
15	ICT use in teaching and learning positively impacts on students' analysis (problem solving)				
16	ICT use in teaching and learning is essential to prepare students to live and work in the 21st century				

SECTION 3: ICT TRAINING

17) Does your school have an ICT training programme for its teachers? (Yes=1, No=2)

Yes [ ]

No [ ]

18) Was ICT integration part of your pedagogical training as a teacher? Tick (√) (Yes=1, No=2)

Yes [ ]

No [ ]

19) In total, how much time have you been involved during the past two school years in ICT training as part of professional development opportunities? Tick (√)

Less than 1 day [ ]

1-3 days [ ]

4-6 days [ ]

More than 6 days [ ]

No time at all [ ]

20) In the past two school years, have you undertaken ICT training in the following areas? Tick (√) one box only (Yes=1, No=2)

	Area of Training	**Yes**	**No**
21	Introductory courses on internet use and general applications (basic Word-processing, spreadsheets, presentations, databases, etc.)		
22	Advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment etc.)		
23	Advanced courses on internet use (creating websites/home page, video conferencing, etc.)		
24	Courses on the pedagogical use of ICT in teaching and learning		
25	Subject-specific training on learning applications (tutorials, simulations, etc.)		
26	Course on multimedia (using digital video, audio equipment, etc.)		
27	Participate in online communities (e.g. face book, mailing lists, twitter, blogs) for professional discussions with other teachers		

28	ICT training provided by school staff		
29	Personal learning about ICT in your own time		
30	Other professional development opportunities related to ICT		

SECTION 4: TEACHING EXPERIENCE

31) Including this school year, how long have you been teaching as a qualified teacher? Tick (√)

Less than 1 year [ ]
1-3 years [ ]
4-10 years [ ]
11-20 years [ ]
21-30 years [ ]
31-40 years [ ]
More than 40 years [ ]

SECTION 5: ICT INTEGRATION (technology literacy, knowledge deepening, knowledge creation)

Technology Literacy

32) Is ICT integration part of the teaching policy in your school? (Yes=1, No=2)

Yes [ ] No [ ]

33) For how many years have you been using computers and/or the internet in any school?

Less than 1 year [ ]
Between 1 to 3 years [ ]
Between 4 to 6 years [ ]
More than 6 years [ ]
Never [ ]

34) What percentage (%) of time have you used computers and/or the internet in class in the past 12 months? Tick (√) one box only

More than 75% of all lessons [ ]
51 to 75% of all lessons [ ]

25 to 50% of all lessons [ ]

11 to 24% of all lessons [ ]

6 to 10% of all lessons [ ]

1 to 5% of all lessons [ ]

Less than 1% of all lessons [ ]

Knowledge Deepening

35) To what extent are you confident in the following statements on knowledge deepening? Tick (√) one box only (Very confident=4Confident=3, slightly confident=2 Not confident=1)

	Statement	**Very confident**	**Confident**	**Slightly confident**	**Not confident**
36	Edit a questionnaire online				
37	Teaching using power point presentation				
38	Organize computer files in folders and subfolders				
39	Use a spreadsheet				
40	Produce a text using a word processing programme				
41	Use emails to communicate with others				
42	Create a presentation with simple animation functions				
43	Create a presentation with video or audio clips				
44	Participate in a discussion forum on the internet				
45	Create and maintain blogs or web sites				
46	Participate in social networks				
47	Download and install software on a computer				
48	Download or upload curriculum resources from/to websites or learning platforms for students to use				

How often do you do the following activities? (Never or almost never=1, Several times a month=2, At least once a week=3 and every day or almost every day=4

	Activity	**Never or almost never**	**Several times a month**	**At least once a week**	**Every day or almost everyday**
50	Browse / search the internet to collect information to prepare lessons				
51	Browse or search the internet to collect learning material or resources to be used by students during lessons				
52	Use applications to prepare presentations for lessons				
53	Create your own digital learning materials for students				
54	Use ICT to prepare exercises and tasks for students				
55	Post home work for students on the school website				
56	Use ICT to provide feedback and/or assess students' learning				
57	Evaluate digital learning resources in the subject you teach				
58	Communicate online with parents				
59	Download/upload/browse material from the school's website or virtual learning environment / learning platform				
60	Look for online professional development opportunities				

61) Which of the following types of materials have you used when teaching your lessons with the aid of a computer and/or the Internet? Tick (√) one box only (Yes=1, No=2)

	Type of material	Yes	No
62	Material that you have searched the internet for		
63	Existing online material from established educational sources		
64	Material that is available on the school's computer network or database		
65	Electronic offline material (e.g. CD-ROM)		

Knowledge Creation

66) To what extent do the following aspects of teaching and learning with ICT feature when teaching your lessons? Tick (√) one box only (A lot=4 Sometimes=3 A little=2 none=1)

	Learning activity	A lot	Sometimes	A little	None
67	I present, demonstrate and explain to the whole class				
68	I support and explain things to individual students				
67	Students work alone at their own pace				
68	Students work in groups				
69	Students work on exercises or tasks individually at the same time				
70	Students give presentations to the whole class				
71	Students take tests and assessments				
72	Students are engaged in enquiry-based activities				
73	Students discuss ideas with other students and the teacher				
74	Students reflect on their learning				
75	Students participate in assessing their work				

Thank you for the responses

APPENDIX C: UNIVERSITY INTRODUCTORY LETTER

Strathmore
UNIVERSITY

1st February 2017

To whom it may concern

RE: REQUEST TO CONDUCT RESEARCH

This is to certify that Noah Kibet Tenai (Admission Nº. 088945) is a Master of Science in Education student at Strathmore University. To complete his Master's degree he is required to write a dissertation applying the knowledge and skills he has acquired.

His dissertation on *"Teacher Factors Influencing Integration of Information Communication Technology in Teaching English Language in Secondary Schools in Eldoret East Sub-County"* requires him to collect data from respondents.

We hope that his research will benefit your institution and the Sub-County.

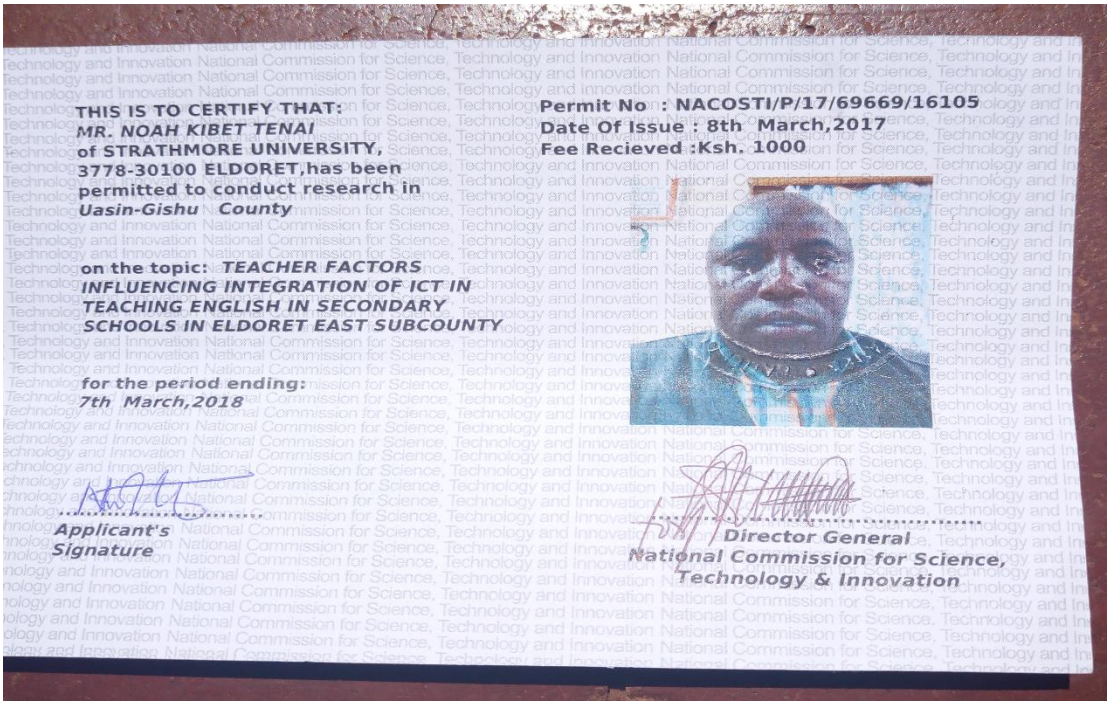
We shall appreciate any assistance given to him.

Yours sincerely,

Dr. Magdalene Dimba
Ag. Director of Research,
School of Humanities and Social Sciences

Ole Sangale Rd, Madaraka Estate P.O Box 59857-00200, Nairobi, Kenya Tel +254 (0)703 034000/200/300
Fax +254 (0)20 6007498 Email admissions@strathmore.edu www.strathmore.edu

APPENDIX D: NACOSTI RESEARCH PERMIT



THIS IS TO CERTIFY THAT:
MR. NOAH KIBET TENAI
of STRATHMORE UNIVERSITY,
3778-30100 ELDORET,has been
permitted to conduct research in
Uasin-Gishu County

on the topic: *TEACHER FACTORS INFLUENCING INTEGRATION OF ICT IN TEACHING ENGLISH IN SECONDARY SCHOOLS IN ELDORET EAST SUBCOUNTY*

for the period ending:
7th March,2018

.....
Applicant's Signature

Permit No : NACOSTI/P/17/69669/16105
Date Of Issue : 8th March,2017
Fee Recieved :Ksh. 1000

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