AVAILABILITY AND USE OF INFORMATION COMMUNICATION TECHNOLOGY IN THE TEACHING OF ENGLISH IN SECONDARY SCHOOLS IN NAKURU COUNTY, KENYA

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DECLARATION

I verify that this thesis report is my original work and has not been submitted in any other university. The project has been complemented by properly known cited works. When text, details, images, pictures, or tables are taken from other sources, such as the internet, the sources were credited with clear citations in compliance with anti-plagiarism guidelines.

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We affirm that the student completed the work outlined in this project under our guidance as university supervisors.

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TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

CAI	Computer Aided Instructions
CALL	Computer Assisted Language Learning
CD-ROM	Compact Disks – Read Only Memory
DVDs	Digital Video Disks
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
KIE	Kenya Institute of Education
MDGs	Millennium Development Goals
MOE	Ministry of Education
NEPAD	New Partnership For Africa's Development
NGO	Non-Governmental Organisation
NI3C	National ICT Innovation and Integration Centre
OECD	Organization for Economic Cooperation and Development
PPPs	Public- Private Partnerships
SPSS	Statistical Package for Social Sciences
QASO	Quality Assurance and Standards Officers
R, D & D	Research, Development & Diffusion
ROK	Republic of Kenya
UNESCO	United Educational Scientific and Cultural Organisation
VOIP	Voice Over Internet Protocol

ABSTRACT

The performance of English as a subject among learners in public secondary schools in Nakuru County had declined despite the introduction of ICT in the ministry. The goal of this research was to examine the availability and use of ICT in the teaching and learning of English in public secondary schools in Nakuru County. The study also sought to find out the challenges that teachers faced in the use of ICT in teaching and learning English. The constructivism theory associated with John Dewey was used as the study's theoretical structure. The study followed the mixed method research and the adopted descriptive survey research design. It targeted 336 secondary schools, 336 principals, 672 teachers of English and 6,800 form three (3) students in Nakuru County. A 10% percent sample was taken from this group, yielding 34 principals, 68 English teachers, and 680 students in form three (3). The information was collected from the respondents using questionnaires, interview guides, and observation schedules. In Nakuru County, a pilot study was performed in two public secondary schools with similar characteristics to the sampled schools. The feedback from the pilot was assessed for relevance, comprehensiveness, and completeness with the purpose of enhancing the validity of the instruments. The test-retest method was used to check for reliability. Having satisfied the validity and reliability requirement, the instruments were deployed for the main data collection exercise. Quantitative data was analysed using descriptive statistics with the aid of Statistical Package for Social Sciences (SPSS) version 21.0 while qualitative data was analysed using the thematic content analysis technique. The study found that there is inadequate number of ICT resources available for integration in English teaching and learning among the secondary schools in Nakuru County. Main ICT facilities used in schools included computers, televisions, radios and cell phones with the major use being setting exams and teaching listening skills. The major uses of ICT in English classes were found to be on pronunciation, sourcing of information, listening and for teaching vocabularies. The study further found that the use of ICT in English teaching had been hindered due to lack of ICT trainings, lack of enough sockets in the classroom, lack of general limited ICT resources in school and lack of software when it was required. Based on the findings, the study concluded that secondary schools in Nakuru County did not have adequate ICT resources for use in teaching and learning English. The study also concluded that existing resources were mainly used to facilitate tradition teacher-centred teaching strategies rather promoting student-centred approaches. If the ICT in Education Policy was to be successfully enforced in schools, one of the most important recommendations is for all education stakeholders to work together to assist schools in acquiring the required ICT infrastructure. Teachers should be properly educated in the use of ICT and its incorporation into teaching and learning processes. This will assist teachers in acquiring the required expertise and skills for implementing ICT into curriculum implementation. Finally, the report proposed that further research be performed. Similar research can be carried out in other Counties so that the results can be extended to a broader region. Other research in the same field could delve at the variables that were not addressed in this report, which could be classified into three categories: school-related, teacher-related, and student-related factors.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

It is widely accepted that the incorporation of ICT during studying and instructional practices is intended to enhance the effectiveness of students and teachers, thus enabling both learners and teachers to find some knowledge they require for the lessons (Kim, Raza & Seidman, 2019). ICT refers to a number of specialized media from computer hardware (digital audio, visual equipment computers, tablets projection technology, laptops, mobile phones, besides), software system applications that encompass multimedia resources, a wide range of software and to information systems such as cloud computing in addition to internet (Goldhaber, Khuan & Allysa, 2021).

Education systems all over the world are embracing the incorporation of the ICT in instruction and more so learning various subjects in the school curriculum (Murithi & Yoo, 2021). A review conducted by UNESCO in ninety countries, classified countries in regard to different levels of ICT development. These classifications include countries with integrated ICT in education system, countries with national policies and master plans formulated and various ICT being applied and tested, and countries where efforts towards ICT integration in education and these general classifications may leave out concerns of ICT integration. In Japan for example, training is offered as per collective reference frameworks, and instructors have no ability to customize the program (Teras, Suoranta, Teras & Curcher, 2020). As a result, educators are ill-equipped for any changes that technology can bring to the classroom. A survey of Science and Technology by the Ministry of Education Culture Sports showed that

fewer than 25% remained in a position to offer computer teaching while more than 33% of educators were incapable of using a computer in Japan (Nuncio, 2020). The Japanese situation is in stuck contrast as they have equipped learners with competences to face future issues as well as in promoting a philosophy of lifelong learning by success in ICT adoption in education.

Kenya as a country has emphasized the significance of integrating ICT in the learning as well as teaching activities through its well-developed Education Sector Support Program (KESSP). Additionally, this is demonstrated by the introduction of the National ICT Education and Training Strategy (Oluoch, 2016). The document outlines various domains on ICT. Some of the areas in the document include ICT in education policy, ICT integration in education, access and equity, utilizing evolving technologies, a computer system, platform for networking and communications, maintenance and assistive technology, digitized content, research development and training. The key goal is to promote public-private partnerships (PPPs) to organize and distribute public schools, community services, and learning centres in Kenya with ICT resources (Piper, Jepkemei, Kwayumba, Kibukho, 2015).

Consequently, the Kenya government has taken steps to support and implement the strategy with an aim of developing the quality of learning as well as teaching to enhance students' involvement in the emerging knowledge economy and information-based society (Kafu, 2019). Some of the government's initiative is seen in the economic blueprint titled Kenya Vision 2030, which seeks to reform curricula and revitalize classroom instruction practices to develop a computer supply system to provide modern ICT skills to learners (Murithi & Yoo, 2021). This will transform the present curriculum and ensure that utilization of ICT knowledge is incorporated into

formal education. The blueprint emphasizes the integration of ICT in teaching of all subjects. Building of the 2006 National ICT Strategy for Education and Training and Kenya Vision 2030, the National Education Sector Plan (NESP) 2013-2018 identified four pillars that will anchor the integration of ICT in Kenya (Republic of Kenya, 2014). These pillars include development of supportive policies, capacity-building, digital content development, and development of ICT infrastructure.

English is a universal language that also plays a vital role in the language situation in Kenya. In addition, English is the formal language of communication in Kenya as well as the instructional method in Kenyan primary through high school education, colleges and universities (Okwara, Shiundu & Indoshi, 2009). This means that English is as a language of instruction pervades the entire school curriculum. Moreover, the command of the language among the majority of the country's population improves the country's competitiveness as an investment destination, therefore its importance in the job market cannot be overstated (Mbithi, 2014). It is, therefore, important that it be taught appropriately in schools and institutions of higher learning so as to enhance communications with our international partners.

English language is a compulsory subject and language of instruction in the Kenya school Education System (Kurgatt & Syomwene, 2020). This situation has necessitated the revision of the English teaching curriculum to allow the incorporation of information and communications technology (ICT) in learning along with instruction of English language. The English curriculum has undergone revision by the curriculum centre in Kenya (KIE) for a number of years, the latest being in 2018; and some of the changes being implemented include incorporation of ICT in instruction and studying of English language (Spernes & Korir, 2018). These changes

include adopting new ICT based pedagogical practices with the overall aim being to enhance learning as well as teaching of English in high schools. However, the practicability of incorporation of ICT in the instruction of English has evolved slowly in high schools in Kenya (Mbithi, 2014). This is so despite the known benefits of ICT integration.

This study was motivated by the rationale that integrating ICT into English teaching and learning will improve learning outcomes (Shah, 2015). By using the computer resources, students interact and consequently communicate with the teachers on the content of curriculum and might even embark on assignments given to them and give immediate feedback (Raman & Mohamed, 2013). According to Goldhaber et al. (2021), computer systems are seen as a method that can lead in the instruction of English as a second language in a constructive way. This implies that the utilization of ICT in instructing and learning of English language cannot be overstated. Moreover, Salehi and Salehi (2015) point out that incorporation of ICT in teaching of English language makes learning meaningful, interesting and successful if properly utilized. It brings about creativity and great learning environments and it is capable to change the learning and teaching method in a technique that it offers information in a dynamic, conscience and productive manner.

The researcher envisioned that integrating ICT in the teaching and learning of English would enhance acquisition of essential skills such as speaking, writing skills, comprehension skills, evaluation skills. This improvement is consistent with Target 4.1 of Sustainable Development Goal (SDG) 4, which calls for all nations to ensure that all children not only complete primary and secondary education but acquire effective and relevant learning outcomes by the year 2030 (United Nations, 2015).

The skills enumerated above are very relevant for individual to excel both in the personal and professional sphere (Amin & Greenwood, 2018). Improving the acquisition of the enlisted skills is also consistent with Target 4.4 of SDG 4, which requires all nations to increase the number of adults and youth with relevant skills that can help them gain decent employment or venture into entrepreneurship by the year 2030. In addition, enhancing the imparting of the essential skills is congruent with Target 4.7 of SDG 4, which obligates all nations to ensure that learners gain the knowledge and skills that will enable them to among other things promote culture of peace, nurture global citizenship, and appreciate cultural development (United Nations, 2015).

Proficiency in English is also a prerequisite if a student is to perform well in other subjects in the curriculum. English, as a language, enables a student to think objectively as well as rationally, to shape right answers, and to make proper determinations in the high school learning of other subjects (Roy-Campbell, 2014). As a consequence, it is imperative for learners to have a firm command of the English language, which can be reinforced by the use of ICT and other teaching tools. Numerous research documents have also shown that integrating modern technologies into the classroom is critical for learners to understand how to work in the information age (Wawuda, 2019).

ICT can support English language learners (ELLs) including learners with limited English proficiency (LEPs) in a variety of ways. It meets their demands by integrating animation, graphics and video to illustrate various ideas in addition to simple audio to model proper pronunciation and repeat sounds and words (Mutwiri, Kafwa & Marcella, 2021). Rather than narrating phrases in front of a class until the tutor's

voice becomes hoarse, the instructor might essentially use any of the different available ICT facilities to document the pronunciation of sounds. These include devices such as radio cassettes, DVD disks, VCD discs, cell phones, and so on, and distribute the recordings to learners (Joshi, 2016). This could encourage them to heed to the sounds over and over again in the comfort of their own residences and adopt the appropriate pronunciation of phrases quite simply.

A survey by Manyasa (2021) revealed that the country had missed key milestones in all the pillars. The survey gave a 95% achievement score to the policy development pillar, 43% to the digital content development pillar, 41% to the ICT infrastructure pillar, and 35% to the capacity building pillar. The national average student to computer ratio in Kenyan secondary schools stood at 52:1 in 2015. National schools had a lower ratio of 43:1 while sub-county schools had the highest ratio of 128:1. These statistics raise questions regarding the availability and use of ICT in the Kenya secondary school set-up. It is in this regard that this study sought to examine the availability and use of ICT in teaching of English in secondary schools in Nakuru County, Kenya.

1.2 Statement of the Problem

The performance of English as a subject among learners in public secondary schools in Nakuru County had been declining. Roy-Campbell (2014) observed that many students were having difficulties in developing satisfactory English proficiency that would enable them learn content in other subjects using that language. Athiemoolam and Kibui (2013) also found that learners in Kenyan secondary schools had challenges applying and interpreting comprehension passages. English proficiency is also a key skill for all job seekers in Kenya and therefore lack of it affects the competitiveness of

Kenyan secondary school graduates in the job market. An article published in the Daily Nation in October 2020 quoted the principal secretary (PS) of the Shipping & Maritime Department, who observed that insufficient English proficiency was hampering the competitiveness of local youths at the coast in international maritime job market (Atieno, 2020). Another article published in the Standard newspaper in November 2021 reported that Kenyan nurses had missed the opportunity to work in the UK because they had failed a simple English test (Kigotho, 2021). Athiemoolam and Kibui (2013) found that the low English proficiency in a large portion of secondary school learners can be partly attributed to ineffective teaching. Previous studies suggest that integrating ICT in the teaching and learning of English can improve students' outcomes. However, there is lack of systematic information on the availability and use of ICT in the teaching and learning of English in public secondary schools in Nakuru County. The present research sought to fill this gap in research.

1.3 Purpose of the Study

The purpose of the study was to establish the availability and use of ICT resources in teaching and learning of English language in public secondary schools in Kenya focusing on public secondary schools in Nakuru County.

1.4 Objectives of the Study

The specific objectives of the study were to:

i). Find out the ICT resources available for English teaching in secondary schools in Nakuru County.

ii). Determine the ICT resources used in the teaching and learning of English in secondary schools in Nakuru County.

iii). Examine the challenges teachers face while using ICT in the teaching of English in public schools in Nakuru County.

1.5. Research Questions

The study responded to the following questions

i). What are the ICT resources available for English teaching in secondary schools in Nakuru County?

ii). What are the ICT resources used in the teaching and learning of English in public secondary schools in Nakuru County?

iii). What challenges do teachers face in the use of ICT in the teaching of English in public secondary schools in Nakuru County?

1.6 Significance of the study

The results of the present research have implications to various stakeholders in the education and information and communications technology sectors, the policy makers and the academic community. The primary beneficiaries of this study's results are the management and teaching staff of public secondary schools in Nakuru County where the research was carried out. The research has provided valuable information to teachers emphasizing the necessity for teachers of English to modify their pedagogical approaches in order for the full utilization of ICT in instruction and learning to be realized.

Furthermore, the outcomes of this investigation are also beneficial to English curriculum developers and ICT system developers together with their sponsors. In this regard, the information emerging from this study would shed light on programme implementation gaps that need to be addressed by them. This information will

motivate curriculum developers to develop better teacher preparation programmes that provide both pre-service and in-service training on ICT and instructional material development. The research findings could also be used to determine both preliminary and In-Service Education and Training (INSET) needs for tutors of English language in this 21st century.

The results of the study can also be used with findings from previous comparable surveys in informing specifically the Quality Assurance and Standards Officers (QASO) and education and training policy makers on the need to revisit the policies associated with ICT incorporation in instruction. Finally, the outcome of this research provides a base for future researchers and scholars that could result in the advancement of more innovative approaches for integration of ICT in instruction on English.

1.7 Assumptions of the study

i). Most of the teachers of English in target institutions were computer literate and used ICT in teaching English language.

ii). The Nakuru County secondary schools had ICT infrastructure and equipment that could help in instruction of English.

1.8 Scope and Limitations of the study

The current research was exclusively focused on the use of information and communication technology (ICT) in the teaching and learning English in Nakuru County public secondary schools. It made use of mixed method research approach and employed the descriptive research design. The design entailed collected data from secondary schools using questionnaires, interview guides, and direct observation. It

sought to address the problem of ineffective teaching of the English subject that has been manifested by low English proficiency among individuals who exit from Kenyan secondary schools.

The research was limited to a minor sample of schools that were chosen and form three students, teachers of English and principals from the sampled schools. This may affect the generalizability of study findings. The research was also restricted by the cross-sectional approach of data collection. This approach entails collecting data from many entities at a single point in time rather than at multiple intervals. This approach provides a picture of the study variable at a specific point in time. This design limited the study ability to trace how the availability and use of ICT in the teaching of the English language has evolved over time.

1.9 Theoretical Framework

The research was underpinned on the Constructivism Theory associated with John Dewey. Conferring to the constructivists, individuals construct their own knowledge of the universe through experiencing things and introspecting on those practices, while learning means encouraging students to utilize effective techniques such as experimentations and real-world problem applying reliable data. Moreover, constructivism transforms the instructor's responsibility to one of assisting students in the creation of information rather than creating a list of details. The instructor should have problem-solving and inquiry-based learning exercises according to constructivism, so that students can devise besides analysing their viewpoints, draw conclusions and assumptions and transmit their information in a cooperative learning environment (Ultanir, 2012).

The instructor should allow students to evaluate how the activity helps them gain comprehension. Learners become professional students as they discover how to be taught by challenging themselves and their methods. Constructivist's principles emphasize inquiry, decision making, problem solving, critical thinking and reflection. These learning techniques are assisted by computer-based applications. Students should model different scenarios and thus be imaginative in doing so. Inquiry and problem solving are aided by questions that occur when students read through materials on the internet. Information Communication Technology enhanced dynamics in the classroom. There is increased engagement in the classroom. Students learn to communicate and work together to promote their ability to act in the sense of teamwork and to strengthen their involvement in peer-support learning, which is supported for successful learning. As computer-aided instructions are used for individual learning at various levels of education, students can work at their own pace and get responses and therefore assess their accomplishment.

According to John Dewey, instruction depends on action. Information and concepts simply evolve from a circumstance in which students have to get them out of experience that has significance as well as value to them. In a social environment, such as a classroom, these circumstances must arise in which learners must engage in manipulating instructional resources and thereby forming a group of students who develop their understanding collectively. It is widely believed that learning is a complex process that necessitates a dynamic learner. The learner must take action; knowledge cannot be gained merely by embracing established knowledge; it must also include the learner interacting with the environment (Kirk, 2013).

The constructivist theory supports the integration of ICT in the teaching of English as a strategy for addressing the problem of low English proficiency in the Kenya secondary school set-up. The theory contends that integrating ICT will create a learning environment that allow students to construct own knowledge rather than wait for the teachers to transfer the knowledge to them (Masata, 2020). The theory proposes that the integration of ICT will enable students to personalize the learning of English leading to greater proficiency. Constructivism theory also provides a framework for assessing the utilization of ICT in English teaching. Based on the theory, the study contended that for ICTs to have meaningful impact on learning, their use must go beyond the mere presentation of information. They should be used to promote students' ability to analyse, evaluate, and synthesize information.

1.10 Conceptual Framework

Orodho (2004) asserts that a conceptual framework is a type of approach that depicts the existence of interactions amongst dependent and independent variables in a research. Figure 1.1 presents the conceptual framework depicting the key variables of the study and the presumed relationships between them.

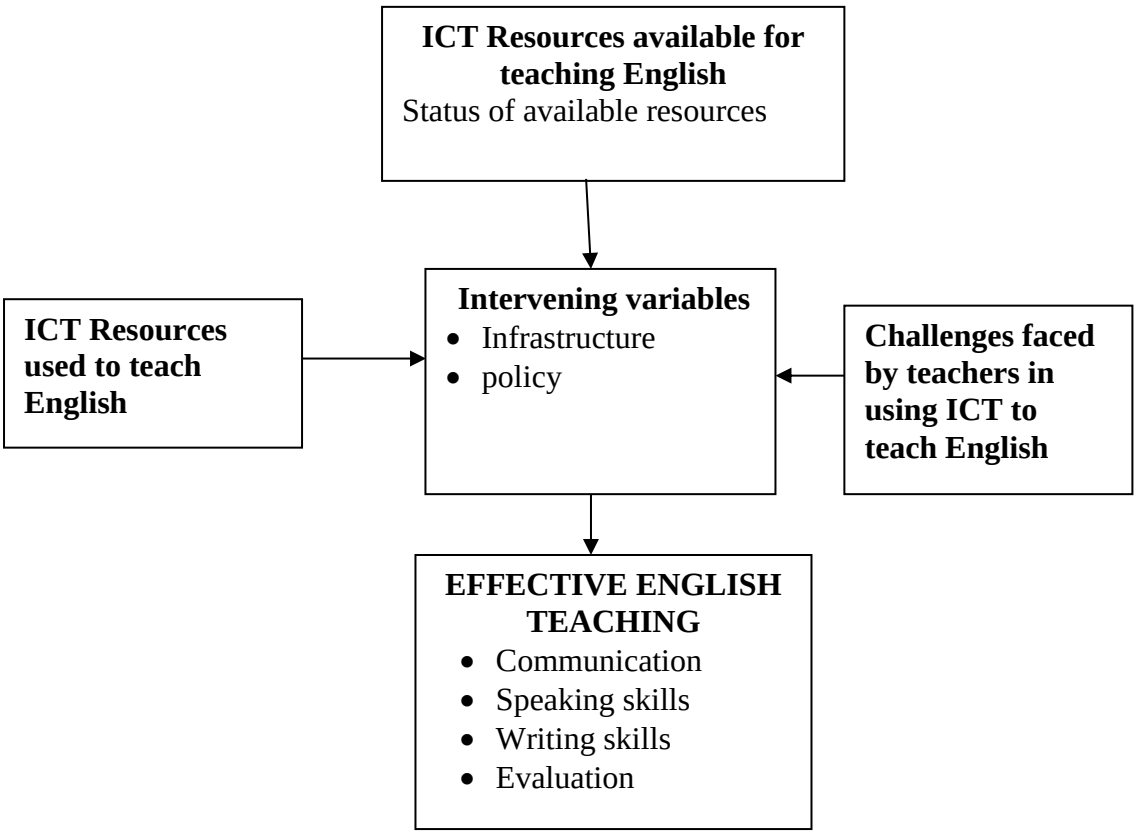

Figure 1.1: Conceptual Framework

From Figure 1.1, the independent variables of the study were ICT resources available to teach English, ICT resources used to teach English and challenges faced by teachers in the use of ICT to teach English. The dependent variable was effective English teaching that was measured in terms of communication, speaking skills, writing skills, and evaluation. There were two intervening variables namely: infrastructure and policy.

1.11 Operational Definition of Terms

Availability of ICT: Existence of information and communication technologies common used in teaching English within the secondary schools. Specifically, the study assessed the existence of computers, television, printers, internet, CR ROM, radio, cell phones, laptop, IT rooms and LCD projectors.

English language: This refer to a compulsory subject taught in primary as well as secondary schools in Kenya and examined by Kenya National Council. It is also an official and language of instruction in schools from standard four. English language will refer to both language and literature in English

Information Communication and Technology (ICT): Sharing information through the use of technology, in this case, information implies English content, information that is being shared and technology the software which includes use of CDs, DVDs, images, videos, voice, captions, power point and animation.

Learning: Denotes the acquisition of skills, knowledge and attitudes. The knowledge being acquired is the English language skills through integration of ICT resources.

Teaching: Sharing of knowledge and English language skills using a variety of instructional resource.

Use of ICT: The application of information and communication technologies to facilitate engagement with learners to enable acquisition of English language skills.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This section assessed literature associated to the study under the subsequent sub-topics: English subject teaching in secondary schools, ICT resources available in secondary schools, ICT resources used in secondary schools, challenges that teachers face in the use of ICT in secondary schools and related literature. It informs the reader about the findings of other studies that are closely related to the one being published, connects a study to a broader, on-going discussion in the literature about a subject, and fills in gaps and extends prior research. According to Creswell and Creswell (2018), this often helps to sharpen and identify awareness of current information in the problem area, provides a context for a research project, and makes the reader aware of the correct status of the question, and it also helps to narrow a problem.

2.2 English Subject Teaching in Secondary Schools

English language teaching has become a leading concern in many jurisdictions. This is because English is the most widely spoken language having over 1 billion speakers (Rahman, Islam, Karim, Chowdhury, Rahman… & Singh, 2019). Consequently, proficiency in English makes an individual compatible many other people around the globe. According to Ahmed (2019), the teaching of the English subject focuses on imparting four basic skills namely: speaking, listening, reading, and writing. These language skills are crucial in enabling individuals to express their thoughts, ideas, attitudes, and opinions. The four skills enable people to share feeling and ideas as well as convince and persuade others (Kenta & Bosha, 2019).

According to Aycicek and Yelken (2018), traditional instructional methods that make students passive learners have proven inadequate in helping students acquire English language proficiency. As a result, scholars are exploring new and more efficient approaches for teaching of English. Khotimah, Widati, Mustofa, and Ubaidillah (2019) examined the application of the concept of autonomous learning where the learners take control of their own learning. This concept encompasses attributes such learners setting their own goals, preparing study plans, and exploring opportunities for learning. On the other hand, Aycicek and Yelken (2018) explored the use of the flipped classroom model in the teaching of English. Flipped classroom is learner-centred method of teaching that entails delivering individualized instruction to students out of lesson through e-learning platforms so that to leave classroom time to interactive learning activities. For instance, teachers may prepare a video about a particular topic and ask students to watch at their own time before the next lesson. During the lesson, students undertake activities like discussion, problem solving, and brainstorming based on the video that they watched. In both the autonomous learning and the flipped classroom concept, integration of ICT is inevitable.

In Kenya, English is the official language spoken in offices (Roy-Campbell, 2014). English language is also the medium of instruction in most subjects taught in school. The English curriculum in Kenya also focuses on imparting the four language skills of listening, reading, speaking and writing. It uses an integrated approach the teaching of the four English skills is done alongside the teaching of literature. The integrated approach was introduced in 1985 with the introduction of 8-4-4 system of education (Kangai, 2019). The integration of English and literature seeks to improve both literary skills and general social science skills. In 2018, the country began

transitioning to the new Competency Based Curriculum (CBC). The CBC curriculum is organized into two years of pre-primary education, six years of primary education, three years of lower secondary education, and 3 years of senior secondary education, (Kenya Institute of Curriculum Development, 2017).

The 2-6-3-3 CBC curriculum has effectively dividing secondary schools into two levels: junior and senior secondary (Amutabi, 2019). At the junior secondary level, the English subject will be taught to all students while at the senior secondary level; it will only be taught to students who choose to pursue the Languages specialization under the Social Sciences pathway. The study by Akolom, Masibo, and Nyongesa (2021) revealed that many teachers of the English subject in Kenya use conventional teacher centred approaches of teach English. The application of innovative learner-centred strategies such as collaborative instructional strategies, inquiry-based learning, and role-play is minimal. The author pointed at the minimal penetration of ICT among schools in the region as one of the factors that hinder the application of student-centred instructional strategies. However, this study was confined to Turkana County, which is just one region in Kenya. Consequently, findings may not reflect the situation in other parts of the country such as Nakuru County.

2.3 ICT Resources Available in Secondary Schools

The world is globalizing and changing at a first rate. One of the changes that has taken place and revolutionized every aspect of life is emergence of New ICT resources. The education sector has not been left behind; educators are under increased pressure to integrate ICT resource into the learning process (Aslan & Zhu, 2015). Successful integration of ICT in schools is largely dependent on availability of ICT resources. Even when the other conditions are right, unavailability of resources

can significantly bar the integration of ICT in classroom.

Most European countries have made notable progress in integrating ICT in education because government has invested in making ICT resources available to schools. The study by Iglesia, Miranda, Healy, Heagney, Bessenyei, … and Kjaergaard (2014) found that the UK government invested GBP 1.8 billion in setting up the national grid for learning between 1998 and 2014. As a result 99% of secondary schools and 91% of primary schools have access to the internet and have a broadband connection. Secondary schools also have an average of 38 interactive whiteboards and 246 desktops computers per school. The student to computer ratio in secondary school is I computer for every 3.6 students.

Nusche and Minea (2020) also observed that in Organization for Economic Cooperation and Development (OECD) countries, more than 65% of secondary schools have digital devices that are powerful in terms of computing capacity. In Denmark, Norway, and Sweden, almost all computers that are available are portable, and thus, easy and convenient to use. About 65% of secondary schools in the OECD countries are connected to broadband internet. This proportion is higher in Slovenia, Lithuania, and Denmark at 90%. Thomson (2015) found that secondary schools in Australia have, on average, one (1) computer for every three (3) students compared to a global average of one computer for every 18 students. In many Australian schools, computers are situated in computer labs or the library but there is a growing number of students going to school with their own computers. Almost all schools have internet-related resources including access to the World Wide Web, interactive digital learning resources, and email accounts for teachers and students.

The study by Fan, Luo, Xie, Zhu, and Li (2022) revealed that almost all secondary schools are equipped with interactive white boards or equivalent touchscreen televisions that have an inbuilt computer, digital projector, and overhead. The interactive white board was the most utilized ICT device in most secondary schools with teachers using these devices in at least 50% of the lesson time for direct instruction and presentation. In terms of software, results also showed that 65.4% of the schools had dynamic geometry software/ system, 53.7% had learning resource platform and 48.9% had spreadsheets. However, these findings focused on ICT resources used to teach mathematics in Chinese secondary schools. Given that there are fundamental differences between the Mathematics and English subjects, findings of this study may not shed an accurate picture of the ICT resources applied in teaching English particularly the software resources. The contextual differences between China and Kenya also hamper the generalization of current findings to the Kenyan situation.

The situation is quite different in Malaysia, which borders the Southern parts of China. Hasin and Nasir (2021) observed that many schools have computers but which are not connected to the internet. Although lack of internet does not necessarily affect lessons, it hampers students self-learning and teachers access to information. Khalid, Nawawi, and Roslan (2019) also observed that the majority of teachers in 16 secondary schools in Malaysia were dissatisfied with the availability of ICT resources. The teachers expressed that most schools did not have adequate number of computers, internet connectivity, projectors, and other resources. The unavailability of resources hampered efforts to integrate ICT in teaching and learning. The two studies suggest that Malaysia lags behind European countries and some Asian countries such

as China when it comes to availability of ICT resources in secondary schools. The studies suggest that availability of ICT resources varies from one country to another hence the need for data that presents the specific situation in Kenya.

ICT resource availability in secondary schools is quite a challenge in Sub-Sahara Africa. A good number of schools do not have computer and the basic infrastructure needed to operate them such as electricity. The study by Ikwuanusi, Nwoke, and Uzoma (2016) showed that out of the list of 20 ICTs that were assessed, only television and manual typewriter were available in secondary schools in Owerri Municipality in Nigeria. Other technologies that were assessed include computers, projectors, smart boards, internet, CD-ROM, flash drives, phones, public address system, computer software, printers, photocopiers, projector screen, radio cassette player, electric typewriters, cable networks, and e-library. Similarly, in the study by Amenu (2019) conducted in secondary schools in Cape Coast in Ghana, 26.8% of teachers reported that there were adequate classroom computers for use by students. These results suggest that most of the secondary schools in SSA region have few ICT resources. However, these studies were conducted in West African countries where the context could be different from Kenya.

The study by Belay, Khatete, and Mugi (2020) also found that secondary schools in Australia did not have adequate ICT resources such as computers, projectors, computer laboratories, television, the internet, video players, and digital content. The study noted that even in schools where some of these resources were available, they were not adequate in number and quality. Resource inadequacy compelled teachers to book computers in advance. Sometimes, teachers forget to book or could not get bookings for several periods in a row when they wanted to work on projects with

students. However, this study focused on availability of ICT resources for teaching biology rather than English. The differences in the two subjects imply that findings of the study could not provide an accurate view of resources available for teaching English.

2.4 ICT Resources Used in Secondary Schools

The availability of ICT resources in schools is not an end in itself. For the desired outcomes to be realized, teachers must make use of the available resources to deliver instruction and facilitate learning. As quoted in Shah (2015), Alessi and Trollip (2001) claimed that it is often easier to use computers to instruct in the classroom than to use other conventional methods such as physical books. Due to this justification, when ICT tools or other similar technologies are used properly, they can foster independence and a positive attitude toward learning. As a consequence, the strength or weakness of using information and communication technologies (ICT) services in the classroom is primarily determined by the people who use them: the teachers. However, these teachers should not be pressured into using ICT resources by any way, but they ought to be motivated to be ready implementers themselves.

Availability of ICT resources does not guarantee usage and their integration in learning. Nusche and Minea (2020) noted that although most schools in OECD countries have computers, about 72% of students reported using the devices available to them at school. In Australia, Findland, and Sweden about 90% of students use the devices available to them at school while in Turkey and Poland, less than 50% of students make use of school ICT devices. These findings illustrates that it is possible for a school to have ICT devices that are not being utilized. The study by Esfijani and Zamani (2020) examined factors that shape the utilization of ICT by secondary

schools teachers. The study collected data from a sample of 180 teachers from secondary schools in Isfahan province of Iran. Results revealed that teachers had adequate access to ICT hardware both at home and in school, but access to educational programmes was not desirable. In addition, the secondary schools teachers had difficulties applying ICT tools in delivering instructions, communicating, and in research despite having received ICT training. The findings imply that there is low self-efficacy among the teachers when it comes to the application of ICT in class.

In another study, Ghavifekr and Rosdy (2015) found that inclusion of ICTs in the method of instruction and learning is primarily based on instructors' expectations, which is a vital factor on whether they accept it through their pedagogical methods or use it in the classroom. The view of teachers about an object may be independently accurate or sheer thoughts, bias or misconceptions. This might be affected by education, training and profession, gender, religious beliefs, individual's temperament, persona and even relationship with others. In order for teachers to embrace ICT, they must see them as a highly successful way of achieving pedagogical goals in their actual classroom instruction. Therefore it is important that instruction concentrates on how to integrate ICT effectively into curriculum of various subjects' English language inclusive to convince the teachers of its usefulness. Instructors' attitudes toward transition have an effect on their capability to incorporate technology into the classroom. Some teachers view computers as administrative machines while others see them as tools to use in analysing and presenting information.

ICT resources can be used in the education set-up for different purposes. Instructors especially the schoolteachers can use ICT resources to collect and learn new knowledge, find lesson plans, collaborate on projects, engage in peer discussions and

teaching forums, maintain students' records, and develop teaching aids and demonstrations (Joshi, 2016). It is a technical tool that an instructor can use at home and in the classroom. ICT resources also assist students in collecting and discovering new knowledge, participating in lessons and collaborative projects, engaging in peer discussion and real-world learning, manipulating, arranging, and analysing information, and developing projects as well as demonstrations (Mutwiri, Kafwa & Kyalo, 2021). It is a learning material that several learners may not have at home and regularly fail to gain from in many schools.

In their study, Akubuilo, Nnnam and Ugo (2021) noted that the computer is the most utilized ICT in secondary schools in Enugu State in Nigeria. The study found that most secondary schools in the state were using computer-aided instructions (CAI) to complement traditional methods of delivering instructions. For instance, teachers use computers to project presentations with sound, animation, graphs, charts, and videos. This implies that the application of the computer technology in most secondary schools goes hand-in-hand with the application of the projector. Although this study sheds light regarding the ICT used in secondary schools, it focused on the teaching of sociology rather than English. Given that there are fundamental differences between the content and instructions of English and sociology, findings of the study may not reflect the reality regarding the ICT utilized in the teaching of English.

On the other hand, the study by Maharaj-Sharma and Sharma (2017) captured the ICT-based activities that teachers in Trinidad and Tobago tend to integrate in classroom. The study observed that teachers use ICT to perform a wide variety of learning activities including researching, communicating with students, conduct simulations, displaying videos and graphics, managing data such as students'

performance data, conducting practical demonstration, and presenting information. Similarly, Iglesia et al. (2014) found that teachers in the UK use ICT for purposes of gathering information as well as, displaying and presenting information. Other uses include downloading and storing of information for use in lesson planning. An estimated 50% of secondary school teachers use self-designed digital resources for lesson planning. However, these studies were conducted in European countries whose technological, social, economic and politic context is quite different from the context in Kenya. Consequently, the studies may not provide an accurate picture of the ICT-based activities that Kenyan teachers have integrated in their classroom.

2.5 Challenges that Teachers Face in the Use of ICT in Secondary Schools

Poor supply of electricity is also a major challenge especially among schools in rural area. In his study focusing on secondary schools in Ardo-Kola and Jalingo-Taraba States in Nigeria, Austine (2015) found that one of the challenges that hamper the utilization of ICT was poor supply of electricity. The study found that most schools were not linked to the national electricity grid. It was also found that even the schools that were linked to the national electricity grid were constrained by frequent power outages occasioned by breakdowns. Other barriers that were associated with low utilization of ICT in secondary schools include lack of knowledge in ICT use, high cost of ICT equipment and accessories, inability to replace broken-down equipment, and inadequate accommodation for ICT equipment.

Emphasis on examination is another challenge that teachers encounter when using ICT in secondary schools. A study done by Buda (2019) observed that tutors were hesitant to devote class time to technology-based tasks. Teachers would rather use the time allotted to train students for high-stakes state exams and therefore many were

unwilling or unable to change their teaching approaches (teacher-centred to learner-centred). The teachers also expressed concern that ICT may overwhelm their lessons and interfere with conventional forms of teaching that are useful in assisting students to pass examination. In addition, the teachers were concerned that incorporation of ICT would diminish the importance of books and reading as student will go off books. While the study offered crucial insight for the current research, it was conducted in developed countries and on science-related topics. The goal of the current investigation was to see in what manner teachers in Kenyan secondary schools feel about incorporating ICT into English language teaching and learning.

The study by Buda (2019) also conveyed a lack of confidence by teachers regarding the capacity to apply ICT in class as well as regarding the usefulness of the ICT resources in learning. There are various reasons that could contribute to paucity of self-confidence among the tutors in incorporating ICT in learning and teaching methodology. One of the main reasons is inadequate ICT skills as observed in the study Kweka and Ndibalema (2018), which assessed the utilization of ICT in Tanzanian secondary schools. The study found that many teachers lack the skills needed to integrate ICT in learning and teaching. The study also found that most teachers had inadequate pre-service and in-service training on application of ICT in pedagogy like operating computers, using basic software and related ICT resources for instruction. Skill inadequacy made the teachers feel anxious about integrating it in their learning and teaching activities in a teaching classroom and consequently affecting their confidence to use it. In addition, the study found that application of ICT in class was hampered by inadequate ICT facilities such as computer labs.

In their study, Iglesia et al. (2014) noted that it is not possible to delink integration of ICT in classroom with teachers' confidence in the use of ICT. The authors noted that in the UK, 81% of secondary school teachers felt confident about using ICT in classroom. The issue of lack of confidence is compounded by lack of administrative support from the school. Oldfield (2010) observed that there is inadequate administrative help for educators who are not secure enough to start using ICT. He also observed that teachers receive little technical help whenever equipment breakdown or there are technical issues to be resolved. Iglesia et al. (2014) further observed that many secondary school teachers do not know how to locate quality content in the internet. Consequent, in-school ICT support and training is needed to help the teachers understand how to search and evaluate content available on the internet.

The study by Njoka, Githui, and Ndegwa (2020) found that the integration of ICT in secondary schools in CCC was hampered by poor maintenance that lead to frequent breakdown of equipment, power outages and insecurity. The author noted in most of the schools, software went for prolonged duration without upgrade leading to breakdown. Failure to conduct maintenance activities on the hardware also resulted in breakdown that hampers the integration of ICT in learning. Power outages also hinder application of ICT in classroom. Ghavifekr, Kunjappan, Ramasamy, and Anthony (2020) found that teachers in Malaysian secondary schools spend a lot of time trying to repair and fix malfunctioning computers, printers and software because their schools do not have a dedicated technical team to do maintenance and repair work.

Another challenge that teachers experience when using ICT in classroom is time limitation. Oldfield (2010) observed that schools allow teachers little time to handle

and become acquainted with ICT. Lack of time could be a challenge for instructors to incorporate ICTs in their learning as well as instructional activities. It's essential to mention that instructors need sufficient time to prepare for their classroom lessons, investigate internet sites, examine several facets of the software, and prepare power point presentations among other things. Buda (2019) also observed that many teachers may have confidence and expertise in incorporating ICT in their learning and instructional activities, nevertheless, they may not have enough time to do so since they use more time in preparing students for tests and high stakes examinations.

In the UK, Iglesia et al. (2014) further noted that even when an education system has developed high quality digital resources, these resources will not be fully utilized if teachers do not have time to develop appropriate skill, evaluate resources, discuss resources with colleagues, and develop appropriate lesson plans. In Malaysia, Hasin and Nasir (2021) found that teachers share LCD projectors and need to make reservations one week in advance to use it. As a result, a lot of time is wasted making reservations and waiting. Zeng and Jiang (2021) also found that time limitation is also a barrier to ICT integration in secondary schools in China. The author noted that many teachers lacked adequate time for preparing for class and technology learning. The author noted that student distracting behaviours were also a major challenge that comes with application of ICT in teaching. The authors noted that introduction of ICT devices into the classroom in some cases tends to distract students who pay attention to the technologies rather than the content being delivered or activities being undertaken. Some students tend to use the internet to search other things rather than learning materials. This challenge was also noted by Buda (2019), who observed that teachers were worried that students may pay too much attention to ICT devices and

expect them to work on their behalf.

2.6 Related Literature

The study by Brown (2020) examined the experience of teachers in using ICT to teach English during the Covid-19 pandemic. The study found out that teachers experience a myriad of challenges when using ICT to teach English. These challenges include difficulties in motivating students to participate and remain focused, difficulties in conveying teaching information to students, and inability to fairly assess students' work due to inability to create credible exam conditions. However, the author focused on the experiences of using ICT to teach students who are at home rather than integrating ICT in a physical classroom, which is the focus of the current study. Brown (2020) also used a qualitative approach and had a small sample size of 10 teachers, which adversely affects the generalization of his findings.

In another study, Muslem, Yusuf, and Juliana (2020) examined the barriers and perceptions on ICT use in teaching English. The study found that teachers were using a wide range of ICT resources to teach English including e-mail, educational games, online dictionaries, online libraries, online chat services, online discussion boards, and web blogs. The teachers used these resources for various activities including chatting with students and other teachers, searching for teaching materials, presentation of course materials, assigning homework, and giving feedback to students. The authors found that teachers found ICT to very useful in enhancing teaching. However, the application of ICT in teaching English is hampered by lack of knowledge and experience in ICT use, inadequate ICT training, poor internet connection, limited time, and inadequate devices. This study shed lights on some of challenges that teachers encounter when integrating ICT in teaching English. However, the

generalization of findings is hampered by the use of a small sample size of 26 teachers. The applicability of findings to the Kenyan situation is also in question given that the study was conducted in Indonesia where the technology, political, economic, and social context is different.

In Kenya, Okenyuri (2016) examined how the use of ICT shapes the learning of writing, reading, listening, and speaking skills. The study established that 58% of students in secondary schools in the study area had computer assisted lessons, but more than 50% of these schools had less than 15 computers for the entire school. This indicates that although majority of the secondary schools have access to computer, the numbers of computers is not adequate. Findings also showed that the integration of computer in the teaching of English had a positive effect on the learning of writing, reading, listening, and speaking skills. However, this study only shed lights regarding the availability of computers in schools and does not pay attention to other ICT devices such as television and internet. It was also confined to secondary schools in Marani Sub-County in Kisii County and thus, findings may not reflect the situation in other counties such as Nakuru.

On the other hand, the study by Amuko, Miheso, and Ndeuthi (2015) examined challenges and opportunities for the integration of ICT in secondary schools. Results showed that limited knowledge and capacity to integrate ICT in the classroom among teachers was a major barrier. Most teachers have little technological skills while most schools do not have programmes to build the capacity of teachers to integrate ICT in teaching. However, this study focused on challenges to the integration of ICT in teaching biology and thus, findings may not reflect the challenges experienced by teachers in integrating ICT in teaching English. The study was also conducted in

Nairobi County and therefore, it may not reflect the experiences of schools in other parts of the country such as Nakuru County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology encompassed the entire process of arriving at reliable and valid conclusions that can be applied to the study's entire population. It captured the research design and method, population, sample and sampling technique, research instrument, data collection procedure, reliability and validity of instrument, and data processing and analysis.

3.2 Research Design

The research used a descriptive survey research design. This is preferred since it seeks to answer the "what?" question according to Kothari (2008). According to Coolican (1994), a survey is a tool for collecting data from a large number of cases within a small time frame. According to Kombo and Tromp (2006), the primary aim of descriptive research is to identify the current situation. It is a data collection model that involves analysing or surveying a group of people. This approach allows the relationships between the independent and dependent variables to be examined mainly using statistical tools. These designs were used in this analysis to assess the degree to which factors exist and to try to identify connections or associations amongst them.

3.2.1 Research Approach

The current research employed both quantitative as well as qualitative research approaches. Quantitative research approaches numeric data (Creswell & Creswell, 2013). They have the advantage of high objectivity since it detaches the process of data collection and analysis from the subject judgment of the researchers. Quantitative methods also enhance the generalizability of study findings by enabling the study to

analyse a large sample. On the other hand, qualitative approaches focus on non-numeric data such as narrations, texts or images. They have the advantage of facilitating in-depth exploration of the study phenomenon (Cohen, Manion & Morrison, 2018). Combining the two-approaches of data collection enabled the study to exploit the advantages of each while countering their disadvantages. The mixed-method approach is founded on the pragmatic research philosophy, which assumes that there multiple realities that can best be studied by integrating multiple research methods.

3.3 Location of the Study

The locale of the research was Nakuru County. There are 336 public secondary schools in Nakuru County. The County is a peri-urban area and most schools were equipped with computers and accessories. The study location was selected because available data showed that students' performance in English within the county was declining. However, the literature reviewed so far had not explicitly reveal whether the schools in the area use ICT in teaching English. No research of this nature had been conducted and due to the new wave of ICT advancement in the majority of high schools, the government and many NGOs have provided schools with ICT facilities to be used in teaching and learning within the county.

3.4 Target Population

The target population is the group to which an investigator wants to generalize the results of a research sample. This study targeted 7808 individuals comprising of 336 principals, 672 teachers of English and 6800 form three (3) students from 336 public secondary schools in Nakuru County. With the nature of the problem to be investigated, that is, use of ICT in teaching and learning of English in secondary

schools, the study used teachers as units of study due to the fact that they are the point of focus and influential in facilitating the learning and teaching procedure in schools and therefore capable of effecting change. The teachers were also in close contact with the learners and they are in position to give their views about the system.

The principals of these schools were also targeted since they are in charge of curriculum supervision and implementation in secondary schools and managers. The finances used to purchase learning resources are purely under their control. It was also salutary to involve students as they are the intended beneficiaries of the new mode of instruction using ICT. However, form four students were excluded due to their exam preparations.

3.5 Sampling Procedure and Sample Size

The necessity to keep the sample size manageable was the primary concern in deciding the sample size. This helps the researcher to gain accurate information from it at a minimal cost in terms of money, time and human capital (Mugenda & Mugenda, 2012). As per Mugenda and Mugenda, 30% -10% of the entire population can give a reliable estimate of the whole population being studied. For this study, the researcher used a sample that is equivalent to 10% of the target population. Consequently, the sample comprised of 34 principals, 68 teachers, and 680 form three students. Table 3.1 provides a sampling grid for the sample.

Table 3.1: Spreading the sample Size across the Schools

Stratum	Target population	Sample size
Principals	336	34
Teachers	672	68
Students	6800	680
TOTAL	7808	782

The researcher used a multi-stage sampling approach where the sample was selected using several step. The first step entailed selection of schools where the names of the 336 schools were listed on MS Excel sheet and assigned numbers that range from 1 to number 336. Then, 34 schools were randomly selected from the list using Sarmah and Chakrabarty (2016) three-digit table of random numbers. This is a table containing a series of digits that are arranged randomly in rows and columns (see Appendix E). Without looking, the researcher picked a point to start in the table of random numbers. From that point, the researcher picked all numbers that fall between 1 and 336 until the desired sample of 34 was attained. The principals of the 34 schools were automatically included in the sample.

In each of the 34 schools, a list of all English teachers was compiled on an MS Excel sheet and teachers in the list were assigned consecutive numbers. Two teachers were randomly selected from each list also using the three digit table of random numbers to make a total sample of 68 teachers. In addition, a list of all form three students in each of 34 schools was compiled in MS Excel sheet and the students in the list were assigned consecutive numbers. Ten students were picked randomly from each list using the table of random numbers.

3.6 The Research Instruments

The subsequent research instruments were utilized in this research for collecting data: the questionnaire, interview and observation schedules.

3.6.1 Questionnaire for Teachers

The research questionnaire was used to collect data related on the objectives of the research namely: Availability of school ICT resources, Teachers' use of ICT in

instruction and the administrative support in the use of ICT in the teaching and learning of English. The questionnaire included both open-ended and closed-ended items. The reason for using the survey instruments is that it is convenient to administer when handling a large group or respondents from a wide and distant geographical area (Orodho, 2004). The survey instruments were only given to English students and teachers.

3.6.2 Interview Schedules

In this study, the interview schedule was employed to validate the data obtained from quantitative data. The interview schedules were used to support and verify the information from teachers' questionnaire. The principals of the selected schools were interviewed. The interview was based on the use of ICT in teaching as well as learning of English language and ways of enhancing it. Use of interview schedules gave the researcher an opportunity to probe the respondents for clarification and elaboration (Weirsam & Jurs, 2005).

3.6.3 Observation Schedules

Classroom observation was carried out in 5 schools. The main goal for direct observation in this study was that it is a useful means for evaluating some aspects of learning and development such as performance skills and certain aspects of personal-social development that are difficult to evaluate using paper-and-pencil methods (Gronlund, 1985 cited in Mbithi, 2014). The teachers of English were observed in the classroom performing various aspects of lesson presentation from introduction, development, use of software resources, organization of language learning activities and ICT resources and how they use it in their instruction and learning activities to conclusion of the lesson. Teachers personality in handling of ICT resources and

challenges was also observed, A Likert-type rating scale observation protocol with three rating scales: below average, average and above average were used. This provided a common frame of reference for comparing teachers integration skills based on the same set of characteristics.

3.7 Pilot Study

The pilot study was conducted in two schools in Nakuru County to determine the test instruments' reliability. The schools were not used in the research, but they shared many of the same features as the ones included in the report. Two English language teachers and 2 principals were selected for the pilot study. The researchers visited the piloting institutions and clarified to the participants the purposes of the research before allowing them to take part. The aim of the pilot testing was to establish whether the research instruments fit with the study's goals and questions, as well as to estimate the time necessary to complete questionnaires. The researcher was also able to spot anomalies, discrepancies, opacities, and misinterpretation of the test instruments thanks to the pilot analysis. The questionnaires from the pilot test were then subjected to a reliability and validity check to see if all of the respondents understood and replied to the questions. This enabled the investigator to reaffirm as well as make clear some items that proved difficult. Classroom observations also assisted the researcher to adjust the rating scale on the observation schedule guide.

3.7.1 Validity

The extent to which a test measures what it seeks to evaluate is known as validity (Orodho, 2004). The research established content validity by continuously seeking judgment from the supervisors while developing and revising the research instrument. Validity was also enhanced by evaluating the relevance and comprehensiveness of the

feedback from pilot study in addressing the research questions of the study. The researcher also paid attention to the completion rate and questions with high rate of missing response.

3.7.2 Reliability

The extent to which a testing tool generates reliable scores or data after repetitive trials is referred to as reliability (Mugenda & Mugenda, 2012). In this research, the reliability of the questionnaire was determined by the test-retest reliability method. Two teachers of English and 20 students of selected schools were asked to respond to questionnaires. Moreover, after two weeks the investigator administered the questionnaire to the same respondents. From these two sets of responses and utilizing Pearson Product Moment Correlation Coefficient, the correlation coefficient was determined. The coefficient was greater than 0.7, which according to Matheson (2019) signifies high level of reliability.

3.8 Data Collection Procedure

Before beginning the procedure for gathering data, the researcher obtained research approval from Kenyatta University's school of graduate studies and then from the National Council of Science and Technology (NACOSTI). The investigator then went to the schools that had been chosen to get permission to perform the research on their premises. Arrangements were then made with school principals and English language teachers for data collection on suitable dates that did not conflict with the school's other activities. Further to that, the researcher gave the respondents the testing instruments and gathered them on the same day, ensuring a high return rate.

3.9 Data Analysis

The data that was collected through the questionnaire survey was cleaned and edited. Before being entered into the Statistical Kit for Social Sciences (SPSS) version 21.0 computer software, the closed ended questions in the questionnaires' Likert scales were converted to numerical codes and rated on a 1-5 point scale in order of magnitude of the construct being evaluated. The data was analyzed using descriptive and inferential statistical approaches. Means were used in the descriptive analysis, and bar graphs representing percentages of responses and therefore identifying the importance of different factors in the use of ICT in the instruction of English in secondary school.

3.10 Ethical Considerations

Authorization was obtained from the appropriate agencies as well as the principals of the schools sampled. Pre-visits to the schools were made by the researcher in order to make the necessary arrangements for the research instruments and data collection. The instruments were directly administered to the respondents by the researcher. Similarly, all respondents were asked to give their informed consent so that they could participate in the study freely. A copy of the informed consent form is attached in the appendices. The respondents' privacy was guarded because the data they provided was used solely for scholarly reasons and was handled with the utmost care. The ethical principle of respect for intellectual property was upheld by ensuring ideas from other authors are acknowledged using in-text citations and the full bibliographic information of the author’s work included in the reference list. A plagiarism test was also conducted using the Turnitin software to ensure that not more than 15% of the content of this document matches other published works.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSIONS

4.0 Introduction

The findings and summary of the data in relation to the study's goals were discussed in this chapter. The presentation was given in the same order as the study's basic objectives were specified. In data presentation, tables were employed to summarize and visualize the data obtained from the survey questionnaires while quotes were used to present qualitative data from the interviews. The study sought to find out the ICT resources available for English teaching in secondary schools, determine the extent to which the ICT resources are used by teachers in English teaching in secondary schools and to examine the challenges teachers face while using ICT in the teaching and learning of English in public schools in Nakuru County.

4.1 Response Rate

The participants' response rate was presented as shown in table 4.1. It was noted that all respondents were contacted, with an 89.5 % response rate.

Table 4.1: Response Return Rate

Respondents	No of tools Administered	No of tools Returned	% return rate
Principals	34	30	88.2%
Teachers	68	60	88.2%
Students	680	610	89.7%
Total	782	700	89.5%

According to Kathuri (2007), a return rate of 55 percent is appropriate for a survey, so the total return rate of 89.5 percent respondents was seen to be sufficient for the

research. This response rate was above the average response rate for survey, which Fincham (2018) determined to be around 60%. A high response rate minimizes non-response bias, which is the error that emanate from the respondents being fundamentally different from those who fail to respond on characteristic that are important to the study (Cheung, Klooster, Smit, Vries & Pieterse, 2017). For instance, nonresponse bias would occur if it is determined that those who failed to respond were from schools with low availability and usage of ICT. However, there is no evidence to suggest that this was the case.

4.2 Demographic Characteristics of Participants

Although the research did not set out to investigate how teacher and student demographics affect the use of ICT in English language teaching and learning in public secondary schools, it was important to obtain this information in order to evaluate the respondents' reliability as well as for potential article writing and reporting.

4.2.1 Age of the Respondents

The investigator also wanted to know the relative ages of the participants were. The distribution is shown in Tables 4.2.

Table 4.2: Age bracket of the Principals and Teachers

AGE	Principals N (%)	Teachers N (%)
22 -34yrs	0 (0)	12 (20.0)
35-44years	11 (36.7)	22 (36.6)
45-54yrs	15 (50.0)	18 (30.0)
Above 55 yrs	4 (13.3)	8 (13.4)
Total	**30 (100.0)**	**60 (100.0)**

Source: Principals and Teachers Questionnaires (2018)

According to Table 4.2, the majority of head teachers (50%) were between the ages of 45 and 54. While the largest group teachers (36.6%) were within 35-44 years age brackets. The findings imply that the principal were on average older than teachers. This is consistent with the TSC guide, which stipulates that an individual must have worked a deputy principal for 3 years and a senior teacher for another 3 years for him or her to qualify for the position of school principal (Teacher Service Commission, 2018). The respondents' age affected their level of experience and ability to provide valuable information about the use of ICT and how it affects English language teaching and learning in public secondary schools.

4.2.2 Education Level of the Principals and English teachers

The research first required determining the educational levels of the principals and English teachers and the findings are as presented in the Figure 2 and 3

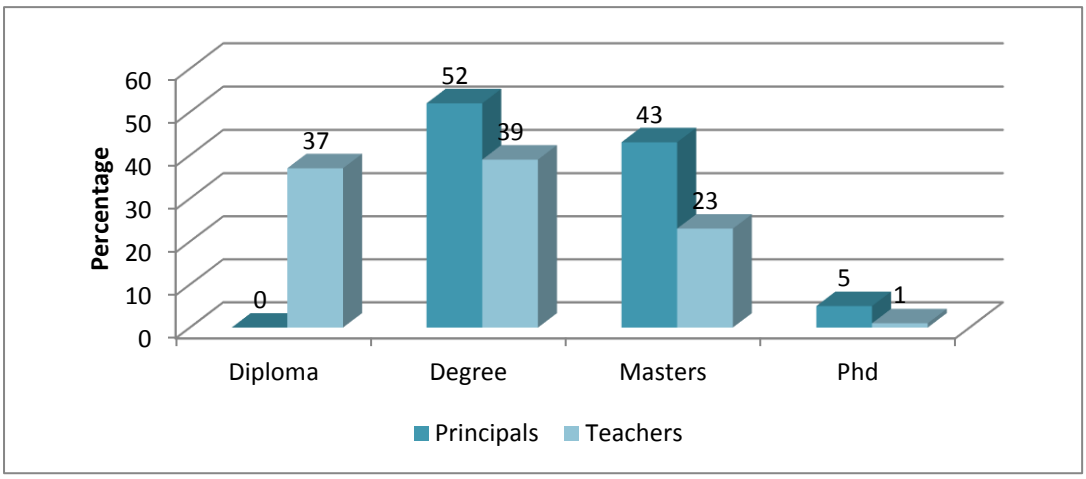

Figure 4.1: Education Levels of Principals and Teachers

The results in Figure 4.1 indicates that majority of the principals had achieved a degree representing 52% of all principals followed by master's degree at 43% and the least majority of 5% had a Phd. On the other hand, 39% of teachers had a degree followed, 37% had the diploma level of education, 23% had Master's degree while

only 1% had a Phd. Employees' skill capacity and ability to adapt to new systems are affected by their level of training and education (Kamuli & Katahore, 2003). The willingness of principals as well as teachers to understand the importance of technology in pedagogy may be affected by their level of training and education. According to the results, the respondents' education level was appropriate to provide useful information for the research.

4.2.3 Principals Teachers' Experience in Teaching English Language

The investigator also wanted to know how long the participants had been teaching English language in secondary schools. The experience in tutoring English language would enable one to provide reliable information concerning how the use of ICT influences learning and teaching of English language in public secondary schools in Kenya focusing on public secondary school. Table 4.3 summarizes the findings.

Table 4.3: Experience in Teaching English

AGE	Frequency	Percentage (%
1-5 years	6	10
6-10 years	20	33.3
11-15 years	18	30
16-20years	12	20
Over 20 Years	4	6.7
Total	**60**	**100**

Source: Research data (2018)

According to Table 4.3, it can be noted that the majority (33.3%) of the English teachers had taught English for 6-10 years, followed by 11-15 years at 30 %, 16-20years at 20% and 1-5 years at 10%. Only 6.7% % of the sampled teacher respondents had taught English for over 20 years. The length of service the English

teachers could influence their capacity to give valuable information concerning the subject matter. The work experience was considered adequate

4.2.4 Principals Teaching Experience.

Additionally, the researcher also attempted to establish the number of years the principals have taught. The findings are as presented in table 4.4.

Table 4.4 Principals Teaching Experience

AGE	Frequency	Percentage (%)
1-5 years	-	0
6-10 years	4	13.3
11-15 years	8	26.7
16-20years	12	40.0
Over 20 Years	6	20.0
Total	**30**	**100**

Source: Field data (2018)

According to Table 4.4, it can be noted that the majority (40%) of the Principals had taught for 16-20 years, followed by 11-15 years at 26.7 % and 6-10years at 13.3%. None of the principals had taught for less than 5 years. The length of teaching experience of the Principal could also influence their capacity to give valuable information concerning the subject matter. The work experience was considered adequate.

4.2.5 Principals and Teachers Training On Use of ICT

Finally on the Principals and teachers demographics, the researcher examined their expertise in use of ICT. The principals were asked if they had undergone any formal ICT instruction while the teachers were asked whether they had receive any training on ICT in teaching English .The findings are shown in Figure 4.2.

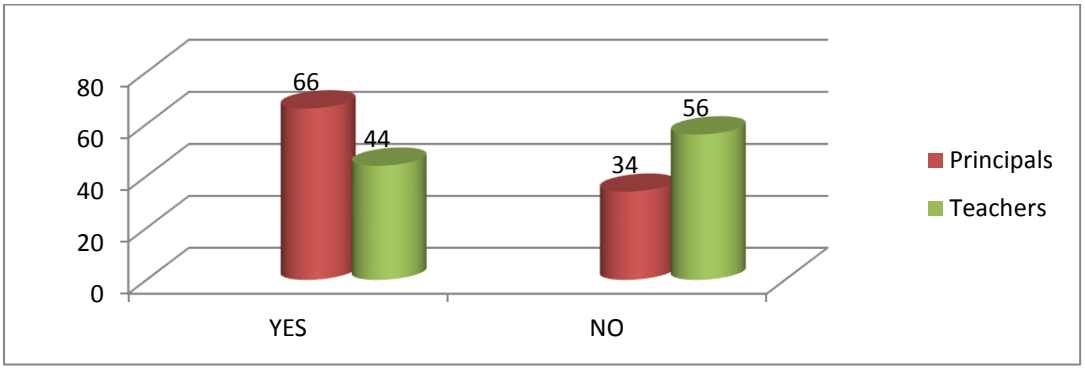

Figure 4.2: Principals and Teachers Training On Use of ICT

Figure 4.2 indicates that a big majority (66%) of the Principals had been trained on use of ICT while a less majority (44%) % of the teachers had been qualified how to use ICT in instruction of English subject. Kamuli and Katahore (2003) opine that employees' skill capacity and ability to adapt to new structures are affected by their level of training and education, the willingness of principals and teachers to understand the importance of technology in pedagogy may be affected by their level of training and education. From the findings the education level of teachers was found to be inadequate. School Teachers ought to be educated on particular instructional use of a specific technology rather than on general device use (Russell, Bebell, O'Dwyer, & O'Connor, 2003).

4.2.6 Students Gender

On students' demographics, the researcher first examined their gender .The study results are presented in Table 4.5

Table 4.5: Students Gender

AGE	Frequency	Percentage (%)
Male	281	46
Female	329	54
Total	**610**	**100**

Source: Students questionnaires (2018)

Table 4.5 suggests that the bulk (54%) of the learners were female while 46% were males. The recent campaign against girl child school dropout through early marriage and other retrogressive traditions coupled with establishment of free secondary education by the government could explain this variance. Initially many girls could not make it to secondary schools. The boy child was given priority.

4.2.7 Category of School

The researcher was further required to determine the category and type of schools that the students were studying in. The findings are as indicated in Figure 4.3.

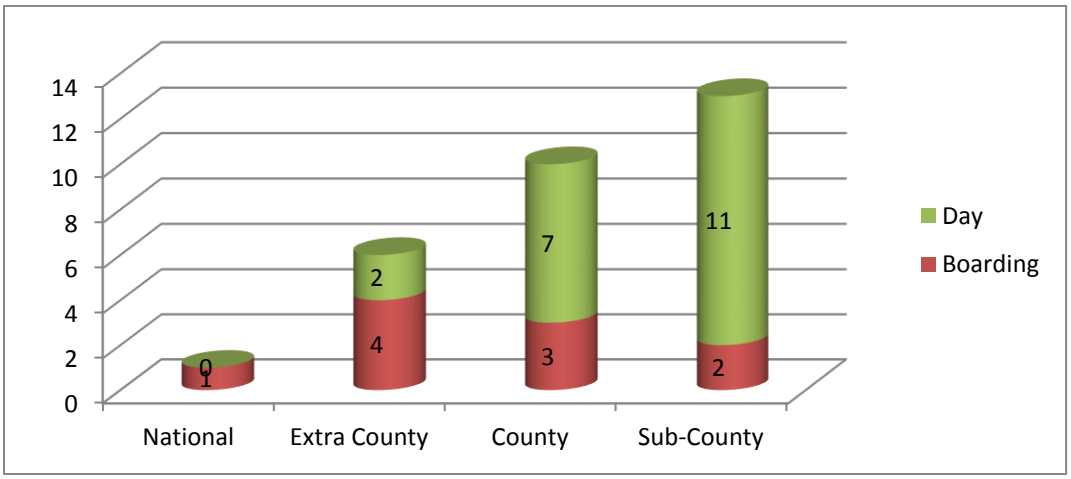

Figure 4.3: Category and Type of school

Figure 4.3 indicates that the majority (11) schools were sub-county day schools which represent 36.7% of the total school sampled schools followed by 7 day, County

schools which represent 23.3% of the totals schools sampled. This is followed by 4 Extra-County boarding schools and 3 county boarding schools representing 13.3% and 10% of total schools sampled. It was observed that both extra county day schools and Sub-county boarding schools had 2 schools each representing 7% of total schools sampled. Only 1 school representing 3% of the total schools sampled was a National school and the same was a boarding school. The type and category of schools would influence the adequacy of ICT resources available.

4.3 ICT Resources Available For English Teaching

The researcher's first objective was to determine what ICT tools were available for English teaching in secondary schools in Nakuru County. To help this inquiry, the respondents were asked a series of questions. Some observation checklists were also used to verify these findings. The results are summarized in Table 4.6.

Table 4.6: List of ICT Resources Available In the School.

Facility	No	Average per School (30)	%	Student Ratio /610	%
Computer	150	5	500	0.24	24
Television	22	0.73	73	0.04	
Printers	34	1.13	113	0.06	6
Internet	7	0.23	23	0.01	1
CR ROM	150	5	500	0.24	24
Radio	25	0.83	83	0.04	
Cell phones	20	0.67	67	0.03	3
Laptop	6	0.2	20	0.01	1
IT room	10	0.33	33	0.02	
LCD Projector	8	0.27	27	0.01	
Interactive white boards	0	0	0	0	

Source: observation checklist and respondents questionnaires (2018)

Table 4.6 indicates that there are 150 computers in the 30 schools sampled. This is an inadequate number as it indicates that on average, each school has 5 computers. Given that an average secondary school has 340 students, this number translates to a ratio of one computer for every 68 student. This ratio is strikingly low when compared to global average of one computer for every 18 students (Nusche and Minea, 2020)

The total number of television in the 30 schools was 22 representing. This figure suggests that on average the schools in Nakuru County have one television while there is a good number that have none. The findings suggest that television is not a popular instructional device among secondary schools in Nakuru County. The findings are not congruent with Watson, Hennessy, and Vignoles (2020) who argues that education television offers a cheap alternative for integrating ICT in education in low income countries. Qualitative data from the interviews clarified that in most schools, television are used for entertainment rather than educational purposes. This is because the learning activities that were previously supported by television such displaying videos can now be done using computers and projectors.

> The use of television in classroom is not common nowadays because the computers have become common. These computers can do most of the things that the television used to do. Now the televisions have been left for entertainment purposes (Interviewee 7, 2018).

> The use of television for learning is not as common as the use of computers. The computers are much simpler. They do not require complex connection and laptops and projectors are easy to carry to class than television (Interviewee 25, 2018).

At least each school had a printer while only 7 schools were connected to internet. This represents only 23% of the school and 1% coverage among the total students population (610). The proportion of school with connection to the internet is very low when compared to European countries where over 80% of schools are connected to broadband internet (Iglesia et al., 2014). Internet gives teachers and learners access to wide range of learning resources including e-libraries, discussion boards, online charts, and World Wide Web for information search.

Table 4.6 further indicates that there were 150 CR ROM serving only 24% of the total student's population. This was highly inadequate. There were also 25 radios in the 30 schools sampled representing 83% of the school. This is fairly inadequate because it means that on average, each school has one radio and there are several schools without any. It means that teachers have to book the radio in advance whenever they want to use especially in large schools that have multiple stream. The issue of booking was brought out during the interview.

> "We have one radio in the library for use by the entire schools". Teachers have to book the radio in advance for them to use it. I think the booking requirement has many teachers from coming for the radio (Interviewee 22, 2018).

An examination of the cell phones available for studying indicates that there were 20 in all the schools sampled. Although this represented 67% of the schools, they could only serve 3% of the total students' population. This was highly inadequate. Further observations in the class room and around the schools indicated that there were only 6 laptops for use in study. This represents a minority (20%) of the total schools sampled

serving only 1 % of the total students' population. Only 10 schools had an ICT Room representing a minority (33%) of the total schools sampled. Finally only 8 LCD Projectors available for use among the 30 schools sampled. This represented a minority (27%) of the schools. The lack of LCD projectors in most schools hampers the use of laptops to facilitate the presentation of information and demonstration of concepts in classrooms.

No secondary school had an interactive white board despite this being the most common ICT device in secondary schools in the USA, Europe, and China (Iglesia et al., 2014; Nusche and Minea (2020). Interactive white boards have become popular in the developed world because of their ability to provide single display for sharing digital information including text, audio, and video (Benoit, 2018). The boards combine the functionality of computers and projects as it provides the computing and display function. The boards facilitate whole class teaching unlike a computer where teacher has to go round from one group of student to another. The fact that interactive white boards can be permanently installed in a classroom means that teachers save time that they usually spend to set-up connections for laptops and projectors (Vita, Verschaffel & Elen, 2018).

Even though computers are widely available and plentiful, their usage in the classroom for instruction will be limited since output devices such as large screen monitors and projectors ought to be connected to the machine to project the learning content. The availability of ICT infrastructure and services in schools is a prerequisite for ICT incorporation in education (Plomp, Anderson, Law, & Quale, 2009). The accessibility and availability of ICT resources, such as software and hardware, is critical for effective ICT integration and application in institutions of learning.

Obviously, if teachers don't have access to ICT services, they won't use them. As a result, getting access to computers, as well as updated software and hardware, is vital to effective technology adoption and incorporation.

4.4 Extent of Use of ICT resources by teachers in English teaching

In the second objective, the investigator required to ascertain the extent to which the ICT resources are used by teachers in English teaching in secondary schools in the Nakuru County. The results as well as its conclusions are indicated in following sub-sections.

4.4.1 Frequency of Use

The researcher first inquired how often some ICT resources were used. The findings are described in Table 4.7.

Table 4.7: Frequency of use of ICT Resources

	Always	Frequently	Occasionally	Rarely	Never
Computer	15%	29%	34%	15%	8%
Television	4%	30.8	39%	11.2%	15%
Printer	30 %	32 %	18%	20%	7%
CD ROM	5 %	5%	35%	50%	5%
Internet www	5%	7%	16%	47%	25%
Radio	15%	24%	39%	15%	8%
Cell phones	10%	17%	35%	15%	22%

Source: Students and Principals questionnaires (2018)

As shown in Table 4.7, majority (34%) of the participants said that the used the computers occasionally in English learning while 29% said that the used computers frequently and another 15% said that they used computers all the time. The findings

suggest that computers are among the commonly used ICT devices in the teaching of English. The findings is congruent with Akubuilo, Nnnam and Ugo (2021), who noted that the computer is the most utilized ICT in secondary schools in Enugu State in Nigeria. The finding is also consistent with the interview guide data where several interviewees mentioned the use of computers to teacher English.

The teachers make use of computers to make presentations and run audio and videos. They also make use of the computers in the library to search for information and prepare notes (Interviewee 18, 2018).

Computers are used a lot. I see a few teachers make use of television to present videos to students. They also use the printer to produce notes and other materials such as passages for the learners (Interviewee 21, 2018).

Another majority (39%) of the respondents said that they occasionally use Television for English learning. On the other hand a significant majority (32% and 30%) said that they frequently and always used a printer for English learning. However a majority (50%) of the students and principals reached felt that they rarely used a CD ROM in English learning. Farther on, a majority (47%) confirmed that they rarely used internet in English learning. On use of Radio a majority (39%) confirmed that they occasionally use it in English Class. Finally a majority (35%) of the respondents held that they occasionally used cell phones in English learning.

4.4.2 Common Application of ICT

The researcher then inquired from the teachers' the common applications of ICT they have used in teaching English. Table 4.8 summarizes the findings.

Table 4.8: Commonly used applications.

AGE	Frequency	Percentage (%)
Literature research	32	53.3
Teaching vocabularies	34	56.7
Setting exams	42	70
Marking exams	28	46.7

Source: Field data (2018)

The finding in Table 4.8 reveals that the ICT applications were majorly used in setting exams as shown by a 70% majority of the teacher participants. This is an indication that the ICT tools were utilized in ways that facilitate the traditional teacher-centred approach of learning rather than being used to facilitate students' engagement. About 56% of the teachers said that they used ICT to teach vocabularies at 56.7%, 53.3% said that they used ICT to search for literature and while 46.7% said that used the devices to mark exams at 46.7%. The findings are congruent with Iglesia et al. (2014), who found that teachers in the UK use ICT for purposes of gathering information as well as, displaying and presenting information. The findings denoted that ICT resources were not being effectively applied to promote innovative teaching strategies such as autonomous learning and fixed classrooms. These results were further reinforced by qualitative findings where most interviewees disclosed that teachers in the school used ICT devices to search for information, create teaching materials, and present materials to students.

> The teachers use computers to search for and prepare notes. They also use the laptop and projector to presents slides and videos to the students. Printers also help in printing of materials and examinations (Interviewee 14, 2018).

The constructivism theory contends that for ICT application to have a meaningful impact, it ought to give students greater control of their learning (Masata, 2020). The ICT devices should help improve teachers' engagement with students rather than being used for the mere preparation and presentation of notes. The devices should create opportunities for learners to figure out things for themselves.

4.4.3 English Language Areas

The researcher also inquired the English language areas that the teachers comfortably integrated ICT when teaching, and which areas the students felt they had improved the most. The findings are shown in Table 4.9 and 4.10.

Table 4.9: Preferred English language areas for ICT use

	SA	A	U	D	SD
Writing	39.1%	31%	6%	26%	7.9%
Reading	39%	30.8%	2%	19.2%	9%
Speaking	20.5%	42 %	7.5%	13%	17%
Listening	28 %	53%	2%	10%	7%

Source: Teachers' questionnaires (2018)

Table 4.10: English areas of improvement through ICT

	SA	A	U	D	SD
Writing	18%	33%	5%	27%	18%
Reading	35%	30%	4%	20%	11%
Speaking	22%	22 %	8%	23%	29%
Listening	35%	35%	3%	9%	16%

Source: Students questionnaires (2018

As revealed in Table 4.11 majority (70.1%) of the teachers agreed that they preferred to use ICT applications for teaching writing skills in English class while 33.9% disagreed. A minority (6%) were not sure. A majority (41%) of the students equally attested that ICT had improved their writing skills. Another majority (69.8%) of the teachers agreed that they preferred using ICT applications to teach on reading skills and this was attested by a majority (65%) of the students who felt ICT had improved their reading skills. Additionally, a majority (62.5%) of teachers held that they preferred using ICT applications in teaching how to speak in English a fact that was confirmed by 44% of the students who felt ICT had improved their speaking skills. Finally a significant majority (81%) of the teachers revealed that they found use of ICT software program effective in tutoring listening skills in English class. This fact was equally attested by a majority (70%) of students who asserted that use of ICT has improved their listening skills.

4.4.4 Extent of Use ICT in Learning and Teaching English

The researcher finally established the extent to which the teachers and students integrated ICT in the English studying as well as teaching process. Tables 4.11 and 4.12 summarize the results.

Table 4.11 Extent of Use of ICT in English Teaching

	Always	Frequently	Occasionally	Rarely	Never
I use ICT to teach vocabulary	15%	23%	30%	17%	15%
I use ICT to access Listening	25%	33%	19%	13%	10%
I use ICT to writing skills	10 %	24%	44%	12%	10%
I use ICT to teach pronunciation	24%	34%	15%	11%	6%
I use ICT to source information	25%	40%	17%	13%	5%
I use ICT to give assignment	4%	20%	21%	35%	20%
I use ICT to teach literature	29%	40%	15%	13%	3%

Source: Teachers' questionnaires (2018)

Table 4.12 Extent of Use of ICT in English Learning

	Always	Frequently	Occasionally	Rarely	Never
We use ICT to learn vocabulary.	20%	30%	35%	15%	10%
We use ICT to learn Listening skills.	17%	24%	30%	12%	7%
We use ICT to learn writing skills.	15%	25%	34%	11%	15%
We use ICT to learn pronunciation.	20%	31%	22%	13%	8%
We use ICT to source information.	20%	31%	20%	20%	9%
We use ICT to do assignment.	4%	15%	19%	40%	22%
We use ICT to learn literature.	30%	34%	20%	16%	0%

Source: Students' questionnaires (2018)

Table 4.11 suggests that a majority 53% of the teachers who participated held that they either frequently or occasionally used ICT resources for teaching vocabularies. Table 4.12 equally indicates that a majority (65%) of the students had a similar contentment. Another majority (58%) of the teachers also held that they either always

or frequently used ICT facilities to accesses listening. Equally so, a majority (54%) of the students held a similar view. On whether the teachers use ICT to teach on writing skills, a good majority (44%) said they occasionally did, a fact confirmed by another majority (34%) of the students respondents as indicated in Table 4.13.

The study showed that another bulk (58%) of the teacher participants also held that they either always or frequently used ICT applications for teaching on pronunciation. This was reinforced by a majority (51%) of students who held with similar sentiments as shown in table 4.12. Farther on, Table 4.12 suggests that a majority (65%) of the school teachers held that they either frequently or always used ICT to source information. This was affirmed by a majority (51%) of the total students respondents had similar views. On whether teachers used ICT to give assignments 35% said they rarely did, a fact confirmed by a majority (40%) of the students respondents. Finally, a majority (40%) of the teacher respondents held that they frequently used ICT applications to teach literature. This was also affirmed by a majority (34%) of all the students respondents interviewed.

Instructors and learners in institutions with adequate ICT facilities and had access to ICT technology, made ICT integration into teaching and learning experiences and processes possible. Previous study findings, such as those of Wastiau et al. (2013), who found that schools lacked sufficient ICT facilities, support the aforementioned empirical findings in Europe (Especially laptops and interactive white boards) were major roadblocks to ICT adoption. Correspondingly, Ozden (2007) described a paucity of computer resources or a shortage of suitable ICTs as barriers to ICT incorporation. Access to hardware and software was needed for a long-term incorporation of ICTs into pedagogical practices and additional materials (Mukuna,

2013).

4.5 Challenges Faced By Teachers While Using ICT in English Teaching

Lastly, the researcher sought to examine the challenges teachers faced while using ICT in the instruction and learning of English in public schools in Nakuru County. To help this inquiry, the respondents were asked a series of questions. The investigator wanted to first establish whether the ICT facilities in the schools were adequate and what was the source of the available resources. The questions were posed to the principal and all seemed to be in agreement that the ICT resources for teaching English in their schools were highly inadequate asserting a clear strain on the available resources. The sources of the available ICT resources are shown in the Figure 4.4:

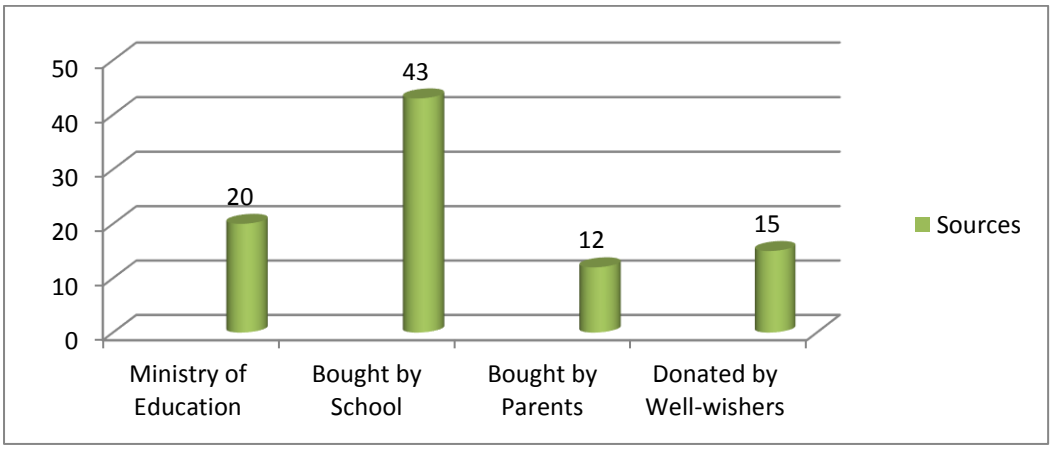

Figure 4.4: Category and Type of school

Figure 4.4 indicates that majority (43%) of the ICT resources available in the school were bought by the School administration, followed by 20% donated by the ministry of education, 15% donated by well-wishers and 12% bought by parents. The summary of major challenges faced while using ICT in teaching English are shown in Table 4.13.

Table 4.13 Challenges Faced while using ICT in Teaching English

	SA	A	U	D	SD
When hardware breaks down it is never repaired in good time	35%	25 %	10 %	18%	10%
We are not provided with software when it is required (CD)	47%	26%	1%	16%	10%
We are not taken for ICT fares	44%	49%	1%	5%	1%
We are not taken for ICT training	40 %	39%	1 %	13%	7%
There are no enough sockets in classrooms	50%	29%	3%	15%	3%
We have limited ICT resources in our school	40%	34%	10%	16%	0%

Source: Respondents questionnaires (2018)

According to Table 4.13, the most significant challenge that teacher face in application of ICT is lack of training. The majority (93%) of the respondents strongly agreed or agreed with the assentation that they are neither taken to ICT fares nor ICT trainings (79%). This finding is consistent with the study by Kweka and Ndibalema (2018), who found that many teachers lack the skills needed to integrate ICT in learning and teaching. The study also found that most teachers had inadequate pre-service and in-service training on application of ICT in pedagogy like operating computers, using basic software and related ICT resources for instruction. Skill inadequacy made the teachers feel anxious about integrating it in their learning and teaching activities in a teaching classroom and consequently affecting their confidence to use it. In addition, the study found that application of ICT in class was hampered by inadequate ICT facilities such as computer labs. The quantitative findings are also reinforced by the views of the principals that were collected during the interviewees. Most of the principals also pointed out the lack of training as a major problem:

> Most of the teachers would like to use ICT devices to teach but have little knowledge on how to integrate them effectively into the curriculum. Although the school had equipment, teachers had not undertaken any formal training on how to incorporate them into the curriculum (Interviewee 11, 2018).
>
> Although the devices were there, many teachers had little experience in using them. No training has been providing to show these teachers how to integrate the devices in teaching English. They have been left to fend for themselves (Interviewee 29, 2018).

Another challenge was insufficient infrastructure marked by lack of enough sockets in the classroom as upheld by a majority (79%) of the participants. The issue of inadequate infrastructure was also noted by Austine (2015), who found that one of the challenges that hamper the utilization of ICT in Nigerian secondary school was poor supply of electricity. The study found that most schools were not linked to the national electricity grid. It was also found that even the schools that were linked to the national electricity grid were constrained by frequent power outages occasioned by breakdowns.

The third highly ranked challenge was inadequacy of ICT devices. The majority (74%) of the total participants held that they had limited ICT resources in their school. This position is supported by earlier findings, which showed that the computer to student ratio is sampled school was 1 computer for every 68 students. The same limitation was also observed among secondary schools in Malaysia where Hasin and Nasir (2021) found that teachers share LCD projectors and need to make reservations one week in advance to use them. As a result, a lot of time is wasted making

reservations and waiting.

The fourth ranked challenge was limited technical support needed to facilitate the application of ICT in teaching English. About 73% of the teachers either agreed or strongly agreed that they were never provided with software when it was required. This issue was also documented in the study by Oldfield (2010), who observed that there was inadequate administrative help for educators who were not secure enough to start using ICT.

The last challenge identified was poor maintenance of equipment. About 60% of the respondents were of the opinion that when hardware breaks down it is never repaired in good time. This challenge was also recorded by Oldfield (2010), who found that teachers received little technical help whenever equipment broke down or there were technical issues to be resolved.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This section shows the summary, conclusion and recommendations of the research, based on the findings and discussions and further gives recommendations for policy and practice.

5.1 Summary of Major Findings

The objective of this study was to assess how the use of ICT influences teaching and learning of English language in public secondary schools in Kenya focusing on public secondary schools in Nakuru County. It examined the ICT resources available for English teaching, determined whether the ICT resources were used by teachers in English teaching as well as examined the challenges teachers face while using ICT in the teaching and learning of English in public schools in Nakuru County. The theoretical model that underpins this research was outlined. A descriptive survey was chosen as the research design, and data was collected using questionnaires.

The results of the data analysis were summarized below in accordance with the objectives: The demographics of the respondents indicated that majority of the head teachers were between 35-54 years at 36.7% and teachers were within 35-44 years at 36.6%. Majority (42%) of the principals had attained a degree representing the teacher majority (39%) had a degree. The majority (33.3%) of the English teachers had taught English for 6-10 years, while majority (40%) of the Principals had taught for 16-20 years. Additionally, the majority (66%) of the Principals had been trained on use of ICT compared to only majority (44%) % of the teachers had been skilled how to use ICT in teaching English. The student's demographics indicated that majority (54%) were female while 46% were males. The majority (36.7%) of the schools sampled

were sub-county day schools. Only 1 school representing 3% of the total schools sampled was a National school and the same was a boarding school.

In the first objective of the study, the study found that the computers available served on 24% of the total students' population. Only 7 schools were connected to internet. Representing only 23% of the schools, and mere 1% average student coverage. This was found to be highly inadequate. The radios available were found to be fairly adequate considering that one Radio can be shared among many students. The study farther found only 6 laptops among all the schools sampled, serving 1 % of the total student's population for English learning. Only 10 schools had an ICT Room representing 33% of the total schools sampled while there only 8 LCD Projectors available for use representing 27% of the schools. The study thus found inadequate number of ICT resources available for integration in English instruction as well as learning among the secondary school in Nakuru County.

In the second objective The bulk of instructors, according to the report, frequently used printers (32%) but occasionally used; Computers(34%) Televisions (39%) Radio (39%) and Cell phones (35%). Majority (50%) rarely use CD ROM .The frequently used applications were for setting exams (70%) and for teaching vocabularies (56.7%).The main uses included for teaching Listening skills (81%), reading skills (69.8%) and slightly speaking skills (62.5%). These findings were validated by the student's respondents. The study finally found that ICT has been fairly integrated by the instructors and learners in English instruction and learning. A lot still need to be done. The major uses included teaching on pronunciation (58%) source information (65%), learning listen (58%) and teaching on vocabularies (53%)

Lastly, the study discovered that teachers face a number of difficulties using ICT in the instruction and learning of English in public schools in Nakuru County. All the principals held that the ICT resources were highly inadequate and majority (43%) of were bought by the School administration. Among the major challenges included; lack of ICT fares opportunities (93%), lack of ICT trainings (79%), lack of enough sockets in the class room as (79%), general limited ICT resources in school(74%), lack of software when it is required(73%), when hardware breaks down it is never repaired in good time (60%).

5.2 Conclusions

Based on the findings, the research concluded that there was inadequate number of ICT resources available for integration in English instruction and learning among the secondary school in Nakuru County. The available ones were evidently strained and could not be relied on. Despite the fact that almost every school had at least one computer, there were insufficient computers to enable ICT incorporation in English classes.

The study also concludes that there have been considerable efforts by schools and English teachers to integrate ICT resources in teaching and learning among public secondary schools. It was further concluded that main ICT facilities used in schools include Computers, Televisions, Radios and Cell phones with the major use being setting exams and teaching listening skills. It is further established that the major uses of ICT in English learning teaching on pronunciation, sourcing of information, learning listen and for teaching on vocabularies. It concluded that ICT resources were mainly applied to search for and present content to students rather than facilitate innovative methods of teaching such as autonomous learning. This scenario had

diminished the impact that ICT had on the effectiveness of teaching English.

The study finally concluded that the utilization of ICT in English teaching among secondary schools had been hindered due to lack of ICT trainings, lack of enough sockets in the classroom, lack of general limited ICT resources in school lack of software when it is required. There were also general defects in the hardware and peripheral systems for computers that were used in combination with the machines to sustain ICT instruction and learning environments. Schools with sufficient ICT facilities, on the other hand, had effectively incorporated ICT into curriculum implementation, but at sub-optimal levels.

5.3 Recommendations

The factors listed below include recommendations based on the study's interpretation, outcomes, and conclusions.

i. This study revealed the severity of ICT infrastructure inadequacies in secondary schools in Nakuru County, which was likely to affect secondary schools throughout Kenya. If the ICT in Education Policy is to be implemented successfully in schools, all stakeholders in the education sector must collaborate to assist schools in obtaining the necessary ICT infrastructure (2006).

ii. Despite having access to ICT resources, the study found that teachers are reluctant to use ICT in the classroom because they struggle to operate ICT devices owing to their inability to do so successfully. As a consequence, teachers should be provided with technological assistance, as this support will be able to provide them with up-to-date technology in the new digital platform

environment. This will give teachers access to and use of ICT resources, allowing for more efficient technology integration in the classroom.

iii. Teachers should also receive adequate training in the use of ICT and how to incorporate it into instruction and learning procedures. This could help tutors gain the information and abilities they need to incorporate ICT technology into curriculum implementation, allowing them to facilitate student-centered teaching.

5.4 Suggestions for Further Research

The study objective was to establish how the use of ICT influences teaching and learning of English language in public secondary schools in Kenya focusing on public secondary schools in Nakuru County. Similar research should be carried out in other Sub-Counties so that the results can be extended to a broader region.

This research recognizes that there are several aspects in the literature that could affect how ICT is used in the classroom. Further investigations in the similar scope could look at the variables that were not studied in depth in this report, which might be divided into teacher-related and other factors since this study was limited to a few variables such as student-related and curriculum-related and school-related factors.

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APPENDICES

Appendix A: Informed Consent Form

My name is Wanjiku Rose Lucy, a student pursuing a Degree of Master of Education in Educational Communication and Technology of Kenyatta University. I am investigating the Availability and Use of Information Communication Technology in the Teaching of English in Secondary Schools in Nakuru County, Kenya.

The objective of this research is to explore the solutions for enhancing the integration of ICT in teaching of English. For the successful completion of the study, your cooperation in providing necessary data is crucial.

For this study, I will collect information from the principals, teachers, and form three students of public secondary schools in Nakuru County. The data collected in this study will be for academic purposes only. Do not include your name or any information that can link you to the study within the data collection instrument.

Participation is voluntary and you are free not to answer any question that makes you uncomfortable with any negative ramification. The risk presented by the study is no greater than the risk you encounter in your day-to-day activities.

I will clarify any unclear question in the instrument. If you agree to participate, place sign this consent form in the space provided:

Signature _____ Date: _____

APPENDIX B: Questionnaire For teachers of English

Please be as open and truthful as possible when completing this questionnaire. Any details you give will be kept private and used exclusively for academic purposes. Please check the appropriate boxes and write the answers down in the spaces given. On the questionnaire, leave your name blank. In advance, thank you for your time and support.

PART I: DEMOGRAPHIC INFORMATION

1 Age:

20-25 yrs.	[ ]	26-30yrs	[ ]
31-35 yrs.	[ ]	36-40yrs	[ ]
41-45yrs	[ ]	Over 50yrs	[ ]

2. Experience in teaching English language in secondary schools.

1-5 years	[ ]	6-10 years	[ ]	11- 15 Years	[ ]
16-20 years	[ ]	over 20 years	[ ]		

3. Highest professional qualification.

P1	[ ]	Diploma	[ ]	B.ED	[ ]
M.ED	[ ]	PhD	[ ]	Others (Please specify) ……	

4. Have you been trained in the use of ICT in teaching English language?

Yes [ ] No [ ]

PART 2

5. Put a tick (√) in the appropriate box or fill in the blank spaces as required.

The following is a list of ICT tools that can help with English teaching and learning. Find out what's available at your school.

Computer	[ ]	Cell phones	[ ]	Television	[ ]	Internet	[ ]
Radio	[ ]	LCD projector	[ ]	Email	[ ]	CD ROM	[ ]

Interactive white board [ ] Others (please specify) ……

6. Are the ICT resources available adequate in teaching English?

YES [ ] NO [ ]

7. What are the common applications of ICT in English?

Literature research [ ] Teaching of vocabularies [ ]

Setting of exams [ ] Marking of exams [ ]

8. Which English language areas are you comfortable in integrating ICT when teaching?

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Writing					
Reading					
Speaking					
Listening					

9. To what extent do you use ICT when teaching English?

I use ICT to:	**Always**	**Frequently**	**Occasionally**	**Rarely**	**Never**
Teach vocabulary					
Access Listening					
Writing skills					
Teach pronunciation					
Source information					
Give assignment					
Teach literature					

10. What challenges do you encounter while using ICT to teach English?

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
When hardware breaks down it is never repaired in good time					
We are not provided with software when it is required (CD)					
We are not taken for ICT fares					
We are not taken for ICT training					
There are no enough sockets in classrooms					
We have limited ICT resources in our school					

APPENDIX C: Questionnaire for the Students

Please complete the following survey as fully as possible. The details you give will be treated with absolute secrecy and used only for the academic purposes.

SECTION A: PERSONAL INFORMATION

Place a check mark in the appropriate box or fill in the blanks as required.

Q1. SEX Male [ ] Female [ ]

Q2. What is your age……..

Q3. What category is your school?

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

Q4. My school is Day [ ] Boarding [ ]

SECTION B

Q5. Below is a list of ICT resources that can enhance the teaching and learning of English. Identify those available in your school

Computer [ ] CD ROM [ ]
Television [ ] Internet (www) [ ]
Radio [ ] Cell phones [ ]
Email [ ] LCD projector [ ]
Others (please specify) _____

Q6. How often are the following common applications of ICT being used by teachers?

Application	Always	Frequently	Occasionally	Rarely	Never
Computer					
Television					
Radio					

Email					
CD ROM					
Internet (www)					
Cell phones					
LCD Projector					
Interactive white boards					

Q8. The use of ICT has improved my ability and skills in

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Writing					
Reading					
Listening					
Speaking					

Q9 To what extent do you use ICT when learning English?

	Always	**Frequently**	**Occasionally**	**Rarely**	**Never**
We use ICT to learn vocabulary					
We use ICT to learn Listening skills					
We use ICT to learn writing skills					
We use ICT to learn pronunciation					
We use ICT to source information					

We use ICT to do assignment					
We use ICT to learn literature					

Q10 What difficulties do you encounter while using ICT to learn English?

We have enough resources in our school				
When hardware breaks down it is repaired in good time				
We are provided with software when it is required (CD)				
We are taken for ICT fares				
We are taken for ICT training				
There enough sockets in our classrooms				

Thank you for your assistance.

APPENDIX D: Interview Schedule for Principals

Welcome and thank you for volunteering to take part in this interview. You have been asked to participate as your point of view is important. I realize you are busy and I appreciate your time. This interview is designed to assess your current thoughts and feelings about the availability and use of ICT in teaching of English in secondary school. The focus group discussion will take no more than one hour.

SECTION A PERSONAL INFORMATION

Q1. Sex (for the interviewer to observe) _____

Q2 Would you mind telling me your age? _____

Q3. What is your highest academic qualification?

_____

Q 4. What subject do you teach? ……

Q 5 How many years have you been working in the teaching education field?
_____

Q 6 Have you trained in the use of I.C.T?

_____

SECTION B

Q7. Please share on some of the ICT resources available in your schools that can enhance the instruction and learning of English.

_____
_____
_____

Q8. Please share your thoughts regarding the adequacy of the ICT resources available in your school?

_____
_____
_____

Q9. How often are the ICT resources that you have identified used to teach English in your school?

_____
_____
_____

Q10. Please share on some of the ways in which the ICT resources you have identified are used to teach and learn English.

_____
_____
_____

Q11. From your perspective, what are some of the challenges that teachers encounter when using ICT to teach English?

_____
_____
_____

Thank you for your time.

APPENDIX E: Classroom Observation Checklist.

1. Types of ICT facilities used in class

Computers	**Yes**	**No**
Television		
Radio		
Email		
CD ROM		
Internet (www)		
Cell phones		
LCD Projector		
Interactive white boards		

2. ICT Resources in School

Resource	**Number**
Computers	
Projector	
Laptop	
IT room	
Printer	

Appendix F: Table of Random Numbers

RANDOM THREE-DIGIT NUMBERS

362 733 614 374 445 672 347 924 765 987 133 788 709 862 298 922 903 154 954 897 308 790 687 905 200 354 879 064 449 972 034
501 639 458 676 359 678 303 933 624 886 644 373 395 396 518 105 916 400 532 694 099 304 251 428 764 069 634 847 524 583 960
800 333 551 291 930 602 289 119 797 078 217 857 246 814401 981 497 344 317 870 754 050 112 806 910 871 214 876 108 825 432
072 424 920 010 854 343 157 980 842 779 844 067 846 174 848 103 293 207 592 824 232 757 545 740 979 851 775 082 258 107 057
700 035 096 643 002 645 629 266 631 722 763 233 115 622 146 052 456 625 785 632 640 397 398 399 248 261 386 703 895 215 041
470 191 074 345 224 976 807 608 988 727 130 732 177 156 337 961 158 247 297 012 127 431 685 813 802 097 711 890 236 617 055
526 239 859 975 766 939 559 736 603 153 376 615 555 654 728 124 277 884 427 808 077 828 580 745 696 231 925 572 315 712 089
918 219 412 561 562 723 817 417 044 731 699 490 759 361 708 205 111 641 758 334 999 389 023 331 853 665 880 414 420 211 253
267 662 513 638 328 071 488 025 835 803 163 351 355 826 085 104 666 906 834 437 952 016 477 878 288 192 262 998 523 560 087
566 471 240 568 122 570 241 525 435 784 101 873 647 990 724 735 956 680 092 393 058 550 706 409 227 845 767 392 208 394 510
512 748 721 626 548 059 831 039 969 282 776 466 327 147 967 511 947 815 912 951 756 646 642 302 276 823 787 045 945 923 090
719 114 840 076 827 024 989 689 263 452 295 612 613 941 265 313 587 964 543 783 595 669 309 932 810 659 342 051 849 762 904
621 274 166 433 822 278 900 061 013 004 249 516 020 535 768 487 837 464 750 751 040 649 081 832 977 118 498 820 017 965 220
986 650 229 919 165 677 927 222 567 836 190 620 272 385 110 829 726 170 032 440 290 457 936 379 029 184 468 137 388 791 442
301 336 237 688 755 415 875 771 943 841 540 352 179 356 455 021 679 305 482 300 422 684 075 869 049 234 102 212 616 287 618
175 423 584 648 268 363 585 531 095 221 819 141 856 116 651 691 109 145 795 995 198 496 499 319 503 053 552 698 065 036 378
809 225 084 743 877 749 747 033 686 594 942 026 576 410 187 818 238 780 444 575 655 957 937 479 863 421 675 549 792 159 387
734 860 326 406 944 966 171 020 582 591 968 607 430 971 509 325 888 692 028 753 425 653 838 230 364 149 866 223 348 462 564
693 083 407 483 242 816 683 534 270 909 367 715 203 773 416 992 384 805 978 279 958 619 868 590 911 872 738 316 569 864 690
830 627 370 786 494 505 946 283 522 439 710 450 940 181 913 563 441 167 772 901 661 134 037 609 461 143 892 244 491 891 635
048 899 515 062 056 338 628 781 962 889 926 365 201 128 368 007 949 162 349 668 636 637 324 042 581 188 068 907 375 746 605
598 752 984 955 140 478 204 080 073 043 586 030 588 443 195 178 446 589 600 601 874 993 018 898 799 476 202 467 180 463 243
285 380 997 382 953 353 538 973 811 682 707 218 197 804 492 357 275 005 959 160 536 558 320 403 480 271 537 254 475 539 506
070 489 574 419 744 093 718 307 833 858 861 664 484 260 006 546 284 038 500 465 132 312 292 408 577 216 066 228 701 257 426
294 100 812 226 717 720 578 151 652 088 596 411 453 597 915 656 657 794 611 658 340 660 902 142 280 991 938 335 917 673 321
144 565 176 079 436 063 528 502 460 106 318 504 138 529 530 186 994 556 557 404 250 269 554 867 019 793 273 438 286 121 377
459 161 533 125 252 117 047 235 014 003 929 113 852 169 713 330 593 623 123 887 714 311 778 865 769 011 667 796 129 741 742
454 760 882 366 299 599 519 931 914 434 015 009 934 508 383 770 935 739 883 777 885 001 086 948 346 950 704 135 472 447 391
495 390 259 314 893 199 896 850 350 630 485 120 451 264 928 521 963 126 553 481 152 789 908 801 031 798 507 281 306 996 547
473 360 008 245 663 193 339 782 983 136 046 172 148 131 774 855 206 843 610 894 633 173 737 985 022 429 921 000 182 670 358
725 196 150 256 541 405 332 579 469 209 371 542 210 544 413 520 185 881 527 310 716 402 839 139 729 695 702 094 697 517 091
671 296 674 448 164 493 604 155 098 982 341 571 486 183 573 474 255 329 213 730 418 681 761 323 606 054 514 189 705 168 060
369 970 027 322 381 372 974 194

Appendix G: NACOSTI Authorization Letter

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

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

Ref: No. **NACOSTI/P/19/19602/28788** Date: **11th April 2019**

Rose Lucy Wanjiku
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Information Communication and Technology in the teaching of English in Secondary Schools in Nakuru County."*** I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **10th April, 2020.**

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

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

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.

Appendix H: NACOSTI Permit

THIS IS TO CERTIFY THAT:
MS. ROSE LUCY WANJIKU
of KENYATTA UNIVERSITY, 2870-20100
NAKURU,has been permitted to conduct
research in *Nakuru County*

on the topic: *INFORMATION COMMUNICATION AND TECHNOLOGY IN THE TEACHING OF ENGLISH IN SECONDARY SCHOOLS IN NAKURU COUNTY*

for the period ending:
10th April,2020

Permit No : NACOSTI/P/19/19602/28788
Date Of Issue : 11th April,2019
Fee Recieved :Ksh 1000

.....
Applicant's Signature

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