INTEGRATION OF INFORMATION COMMUNICATION AND TECHNOLOGY IN TEACHING KISWAHILI GRAMMAR IN PUBLIC SECONDARY SCHOOLS. A CASE OF MUMIAS WEST SUB- COUNTY, KAKAMEGA COUNTY, KENYA

BY

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DECLARATION

Declaration by Candidate

This research thesis is my original work and has not been presented for a degree in any other University. No part of this thesis may be reproduced without prior permission of the author and or Moi University.

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DEDICATION

This thesis is dedicated to my beloved family: My husband Moses Kerre for his moral and financial support that enabled me to do this work. To my children; Ashley Silonya, Britney Wayeta, Henry Kisaka and Ryan Kerre, whose support and understanding energized the zeal to complete this work.

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ABSTRACT

The integration of ICT in education, particularly in teaching Kiswahili grammar, remains a challenge in public secondary schools in Kenya. Despite the potential of ICT to enhance grammar skills, its integration in teaching Kiswahili grammar is still low especially in rural areas like Mumias West Sub-County. Students' grammar skills continue to be a major concern despite global developments in ICT integration in education. The COVID-19 pandemic further exposed the lack of readiness in many educational systems, emphasizing the necessity of efficient ICT integration. This study investigated ICT integration in teaching Kiswahili grammar in public secondary schools in Mumias West Sub-County, Kenya. The study objectives were: To examine the level of teacher preparedness, to find out how teachers use ICT tools in teaching Kiswahili grammar, to evaluate learners' application of ICT in learning Kiswahili grammar and determine school administration support towards ICT integration in teaching Kiswahili grammar. The study was grounded on the Constructivist cognitive learning theory, which emphasizes active learning through interaction with ICT. A descriptive survey design was utilized. The study targeted 69 Kiswahili teachers, 5128 form four students and 28 Heads of the Kiswahili department, 28 public schools. Stratified sampling and proportionate probability sampling were used to select 9 schools, 9 Kiswahili teachers. Simple random sampling procedure was employed in the selection of 361 students and 9 heads of the Kiswahili department were purposively sampled. Data was collected using questionnaires for teachers and students, interview schedules and document analysis guide for departmental heads. Reliability and validity was ensured through triangulation and pre-testing of instruments. Quantitative data were analyzed using descriptive statistics and inferential statistics, while qualitative data were coded and thematically analyzed. Findings revealed a significant association between the independent variables and integration of ICT in teaching and learning Kiswahili grammar: level of teacher preparedness, r=0.796; teachers use of ICT tools, r=0.854; Learners' application of ICT, r=0.826; and school administration support, r=0. 854. It was revealed that the teachers were moderately prepared for ICT integration in teaching, ICT tools were used in teaching for research in class, for quick revision skits and holiday assignments. Internet on smart phones was used by 90% of the learners in learning. Students embraced ICT in learning Kiswahili grammar. The study showed that school administrators provided support for ICT integration through development of instruction materials. The study concluded that effective ICT integration in teaching Kiswahili grammar was hindered by inadequate teacher training, insufficient ICT resources, lack of a computerized Kiswahili curriculum and inconsistent administrative support. It was recommended that there should be enhanced teacher training programs in ICT integration in classroom learning, improved ICT infrastructure and strengthened administrative support towards ICT integration in teaching Kiswahili grammar by the ministry of education. Computer studies in secondary schools should be made compulsory for learners to impart knowledge and skills in ICT to enable effective integration in teaching and learning It is hoped that the findings of this study will form a foundation for further research. Curriculum developers will use the findings to review the syllabus to accommodate integration of ICT in Kiswahili grammar development. Knowledge and skills in ICT should be a requirement in employment of teachers of Kiswahili at secondary school level.

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ABBREVIATIONS AND ACRONYMS

AVs   - Audio-Visual Aids

CAD   - Computer-Aided Design

CAI   - Computer Assisted Instruction

ECDE   - Early Childhood Development Education

EFA   - Education for All

ICT   - Information and Communication Technology

IT   - Information Technology

KCSE   - Kenya Certificate of Secondary Education

KNEC   - Kenya National Examination Council

MDGs   - Millennium Development Goals

NG-CDF.   - National Government Constituency Development Fund

TIM   - Technology Integration Matrix

TTM   - Traditional Teaching Methods

UN   - United Nations

UNESCO   - United Nations Educational Scientific and Cultural Organization.

USA   - United States of America

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter presents the background to the study, the statement of the problem, the purpose of the study, the objectives of the study, the research questions, the significance of the study, the scope of the study, limitations of the study, and assumptions of the study, theoretical framework, conceptual framework and the operational definition of terms used in the study.

1.2 Background to the Study

Globally, the education sector is still embracing the integration of information and communication technology (ICT) in education, but grammar skills among global students remain a challenge (Ahmad, 2016). Despite Swahili having a global reach in broadcasting, teaching and learning its grammar command is elusive to most. It is known according to Ahmad (2016) that use of information and communication technology, which is a versatile and informative approach, enhances grammar skills. In the United States of America (USA), ICT is integrated into education (Huang & Hong, 2016). Nduati (2016) reports that in the United States of America, about one hundred institutions are offering Kiswahili subjects. Moreover, Lawrence (2018) notes that schools have invested in ICT learning. Bottom-line, education and technology have a thin line in the 21st century. Technological advancement has made it possible to integrate ICT into education. Improving grammar skills is at the centre stage of promoting the learning of language subjects such as Kiswahili by the global community, which is yet to be achieved. During the novel coronavirus pandemic, traditional learning approaches were disrupted; only a few institutions with integrated ICT platforms for teaching and learning thrived. Therefore, the period revealed the

unpreparedness of the global countries in enhancing Education when dealing with pandemics of the coronavirus magnitude.

In the past, the use of radios and televisions supplemented the learning and teaching of Kiswahili languages in the United Kingdom (Heinemann, 2014). This was made possible mostly in an environment where the teachers of Kiswahili were untrained and failed to command the language. Moreover, Alsulami (2016) adds that the usage of radio in learning improved grammar skills and promoted quality education. However, radios and television platforms used for learning Kiswahili grammar were not interactive but enhanced the development of listening skills to a great extent but learners were not able to actively participate. The limitation of active interaction between the instructor and the students of Kiswahili led to the integration of a networked computer-based information and communication technology (Bilyalova, 2017). Malaysia and Singapore have integrated information and communication technology through networked computer-based learning in schools (Li *et al.*, 2018). This helped them cope with the disruptions occasioned by the novel coronavirus pandemic of 2019. ICT is currently such an innovative pedagogical tool that has high potential to transform the teaching of the components of Kiswahili language (Ratheeswari, 2018).

In Africa, Kiswahili language is accepted and applied by the African Union (Okombo & Muna, 2017). Moreover, the African governments are putting policies in place to integrate Kiswahili into education (Kaschula & Kretzer, 2019). Therefore, Tchamyou, Asongu and Odhiambo (2019) observed that integration of ICT in education is at a particularly dynamic stage in Africa. This could be seen in South Africa, where Kiswahili language was selected in 2018 as one of the optional languages taught in

schools. Botswana and Namibia have also introduced proposals to have the Swahili language taught in schools. The technological advancement and the integration of information communication technology in education will enhance and promote Kiswahili grammar skills among African students. Mostly, in Africa, Kiswahili language acceptance and learning is still low thus making it hard to establish how the integration of ICT improves grammar skills. Arthur-Nyarko and Kariuki (2019) reveal that access to ICT equipment and electricity significantly influences the Integration of learning. There is an increasing interest by the African countries to have a unifying continental language with Kiswahili gaining prominence (Kandagor, 2020).

The Swahili language origin dates back to when the Arabian traders interacted with the East African Coastal Bantus (Matinda & Laltaika, 2016). Moreover, the language gained transformation through the interaction with the Portuguese, Indians, Germans and the English. Pawlikova-Vilhanova (2020) added that the Islam and Christian religions promoted the spread of Kiswahili.

In Kenya, Omollo (2011) study revealed that Kiswahili as a medium of communication was not frequently used in class. Moreover, Chege (2014) asserts that integration of ICT in learning is only possible when teachers are trained in computer usage in teaching and learning. Kiswahili became a teachable and examinable subject through the recommendations of Gachathi (1976) and Mackay (1981) through an 8-4-4 system of Education (Timammy & Oduor, 2016). Kiswahili subject has three areas of focus composition (Insha), grammar (Sarufi na matumizi ya lugha) and literature (Fasihi) (Ashiono, 2016). According to Ndwiki and Thinguri, (2017), the integration of ICT in teaching and learning helps in simplifying the learning process. Besides,

Ngavana (2018) adds that the interactive platform enables the learner to learn the pronunciation and spelling of common words through animations and demonstrations that go along with the learning of language patterns.

As an examinable subject, Kiswahili for a long time has not recorded better results, especially grammar. In 2021, Mombasa County recorded poor results in Kiswahili which troubled the coastal parents 'association (Mwakio, 2021).

To enhance Kiswahili grammar skills, both the teacher and the learner need to interact adequately with the support of ICT integration (Githimu, 2016). As observed from the many initiatives of developing and adopting the teaching and learning materials there have been gradual changes in the types of teaching and learning materials used in class (Sheila, 2016).

Despite the advantages of ICT Integration in Education, there are challenges occasioned by the lack of resources, national ICT infrastructure, and even electrical supply, particularly in rural areas (Oichoe, 2018). Kiswahili grammar develops the learners 'comprehension skills, reading skills, listening skills, writing skills and pronunciation skills, but there is no known record of ICT usage in learning (Kafu, 2019). The National ICT Policy of Education of 2019 provides for ICT integration in education. This policy spells out measures in place that encourage the application of ICT in schools to improve the quality of teaching and learning (Ministry of Information, Communications and Technology, 2019). Facilitation of Kiswahili grammar is dynamic, there are pedagogical changes that may include digital media, computers and internet-enabled gadgets (Mutegi, 2020). ICT integration in Kiswahili grammar has not been established in schools (Ntorukiri *et al.*, 2021). Moreover, Ntorukiru *et al.* (2021) revealed that the schools have low coverage of ICT

infrastructure which is related to the low cost of investment. Muia (2021) adds that the teachers 'ICT literacy was low, with moderate ICT resources.

In Kakamega County, according to Miima (2014), the application of ICTs to facilitate Kiswahili language was not effective. Moreover, students' and teachers' skills in information and communication technology were low. Malungu (2020) found that student performance correlated with the usage of ICT in education. The use of modern technologies in the education process in class is reportedly moderate. The County has 304 public secondary schools; 224 are adequately furnished with computer systems, 26 schools are averagely furnished with computers and projectors and 54 schools are inadequately furnished with only computers (CSO). From this data, it is not clear whether the available ICT equipment is integrated to improve Kiswahili grammar skills amongst secondary school students in Mumias West sub-county.

1.3 Statement of the Problem

Students' grammar skills continue to be a major concern even with global developments in the integration of information and communication technology (ICT) into education (Ahmad, 2016). This problem is especially noticeable when it comes to teaching and understanding Kiswahili grammar, which many students still find difficult to understand even though it is used extensively in broadcasting. ICT has been shown to improve grammatical abilities (Ahmad, 2016), however, there has been uneven use of technology in the educational field, particularly when it comes to teaching Kiswahili. About a hundred universities in the United States, where ICT integration in education is strong, provide Kiswahili courses, demonstrating the potential of technology to enhance language acquisition (Nduati, 2016). However, the

COVID-19 pandemic exposed the lack of readiness in many worldwide educational systems, emphasising the necessity of efficient ICT integration to maintain. However, the COVID-19 pandemic exposed the lack of readiness in many worldwide educational systems, emphasising the necessity of smart ICT integration to keep learning going even in the face of disruptions.

Although Kiswahili is becoming more widely recognised and included in educational strategies throughout Africa, the use of ICT to improve Kiswahili grammar proficiency is still relatively new (Okombo & Muna, 2017; Kaschula & Kretzer, 2019). In Kenya, insufficient use of ICT is made when teaching Kiswahili grammar, even despite policies that support ICT in education (Ministry of Information, Communications and Technology, 2019). This deficiency is especially noticeable in rural regions with limited ICT resources and infrastructure (Oichoe, 2018). The ineffective use of technology in Kiswahili grammar instruction is further hampered by instructors' inadequate ICT literacy (Muia, 2021).

ICT is not being used effectively in Kakamega County to support Kiswahili language instruction, as evidenced by the low ICT proficiency of both instructors and students (Miima, 2014). Secondary schools vary greatly in their ICT infrastructure availability, with many lacking the essential equipment (CSO). This discrepancy makes one wonder if secondary school pupils in Mumias West sub-county are making full use of the ICT resources already available to them in order to improve their Kiswahili grammar proficiency. Thus, by examining the existing level of ICT usage in secondary schools, identifying problems, and suggesting solutions to improve the teaching and learning of Kiswahili grammar through ICT, this study aims to close the gap in ICT integration in Kiswahili grammar instruction.

1.4 Purpose of the Study

The purpose of this study was to investigate the integration of ICT practices in teaching and learning Kiswahili grammar in public secondary schools: A study of Mumias West Sub-County, Kenya.

1.5 Specific Objectives of the Study

This study was guided by the following specific objectives;

  i.   To examine the level of teacher preparedness in using ICT in teaching;

  ii.   To find out how teachers use ICT tools in teaching Kiswahili grammar;

  iii.   To evaluate learners' application of ICT in learning grammar; and

  iv.   To determine school administration support towards ICT integration in teaching Kiswahili grammar.

1.6 Research Questions

  i.   What is the level of teacher preparedness in using ICT in teaching?

  ii.   How are ICT tools used in teaching Kiswahili grammar by teachers?

  iii. How do learners use ICT in learning grammar?

  iv.   Does school administration support ICT integration in teaching Kiswahili grammar?

1.7 Justification for the Study

In terms of philosophy, this study is consistent with the constructivist view of learning, which holds that knowledge is created via interaction and involvement with the outside world. The use of ICT in the classroom signifies a change towards a more participatory, student-centred learning environment where students actively engage in their education. This study emphasises how ICT may be used to improve Kiswahili's

grammatical abilities, highlighting how important it is to use innovative, contemporary tools to support meaningful learning experiences. Constructivist education is in favour of the notion that students can interact with language learning interestingly and productively by using a variety of dynamic and varied platforms made possible by technology.

From an academic standpoint, this study fills a major vacuum in the body of knowledge about the use of ICT in Kiswahili grammar instruction. While there is ample evidence of ICT's ability to improve language proficiency, less is known about how specifically it may be used to teach Kiswahili grammar. By examining this topic, the study advances the knowledge of the most efficient ways to use ICT resources to help secondary school students' Kiswahili grammar. The results can also be used to guide the creation of curricula and pedagogical approaches, ensuring that the teaching of Kiswahili grammar is up to date and in line with international standards.

Given the continued efforts by African governments to include Kiswahili in the educational system and the focus on ICT integration as delineated in numerous state plans, the study is extremely pertinent in terms of policy. For example, the National ICT Policy of Education in Kenya promotes the use of ICT to raise the standard of instruction and learning. The results of this study can give policymakers important information about how well current ICT integration initiatives are working and point out areas that still require improvement. The study contributes to the development of more focused and efficient educational strategies, which in turn improves the calibre and accessibility of education in the area, by addressing the difficulties and potential solutions for ICT integration in Kiswahili grammar instruction.

1.8 Significance of the Study

The findings from this study may form a foundation and stimulation for further research on the topic under study. Students in secondary schools may be equipped with the requisite information on how to use available ICT facilities to acquire proficiency in reading, writing, listening and speaking Kiswahili. Teachers may improve their pedagogical skills in line with the modern technology of teaching which would allow them to access the current teaching trends and information from the internet. Kiswahili language Curriculum developers may use the results to review the Kiswahili language syllabus to reflect and accommodate the current instructional methods. The results would also inform learners of the benefits of using ICT. Teacher trainers in teacher training colleges could benefit from this study by learning the benefits of integrating technology during teaching. This implies that they can prepare the teacher trainees adequately to use ICT integration in teaching and learning Kiswahili to improve grammar skills. The findings of the study may also spur interest in growing 21[st]century skills in the learner and encourage teachers and learners to anchor learning activities on constructivism as a school of thought.

1.9 The Scope and Limitation of the Study

1.9.1 Scope of the study

This study encompassed an in-depth investigation into the integration of ICT practices in teaching and learning Kiswahili grammar within public secondary schools in Mumias West Sub-County, Kenya. This study aimed to explore the preparedness of teachers to use ICT, the specific ICT tools employed in teaching Kiswahili grammar, the extent of learners' application of ICT in their grammar studies and the level of support provided by school administrations towards ICT integration.

The study was designed to collect data from a sample of 9 public secondary schools, involving 9 heads of Kiswahili departments, 9 Kiswahili teachers, and 321 form-four students. The study employed various data collection methods, including questionnaires for teachers and students, interview schedules for heads of Kiswahili departments and document analysis of educational materials. The focus was on understanding how ICT tools such as computers, projectors, and internet-enabled devices were utilised to enhance grammar skills among students.

This study contributed to the existing body of knowledge by providing empirical evidence on the effectiveness of ICT integration in Kiswahili grammar instruction. It aimed to identify the challenges and opportunities associated with ICT usage in education, thereby offering insights that could inform policy decisions and educational practices. The findings were expected to aid in the development of strategies to improve ICT infrastructure and training for teachers, ultimately enhancing the quality of Kiswahili grammar education in the region.

1.9.2 Limitations of the Study

Potential problems with using questionnaires as a data collection tool were the ceiling and floor effects, which could occur from respondents' incapacity to provide thorough answers. To address this, the study used a triangulation approach to data collecting, combining document analysis of readily available professional documents with interview schedules for the directors of Kiswahili departments.

Despite these precautions, the sample method's shortcomings may have meant that the data were not fully representative of the entire population. Purposive sampling was used to get a representative sample population to remedy this. The fact that just nine of the sub-county's twenty-eight secondary schools were examined should be

noted since this could restrict the applicability of the results to other educational settings.

The data-gathering period also lasted longer than expected because of financial limitations and instructor response delays. This extended period might have affected the accuracy and timeliness of the information gathered. When evaluating the results and extrapolating the findings to larger contexts, these aspects should be taken into account.

1.10 Assumptions of the Study

This study's methodology and findings were based on a number of fundamental assumptions.

First of all, it was expected that participants would accurately and truthfully respond to the interview and questionnaire questions. The honesty of the participants was crucial to the validity and reliability of the data obtained because any variation from this could jeopardise the findings of the study.

Second, the study assumed that ICT was regularly employed in the participating schools' teaching and learning procedures. This presumption was founded on the idea that integrating ICT significantly contributes to the improvement of Kiswahili grammatical proficiency development. It was thought that a key factor affecting how well grammar instruction worked was the regular use of ICT in classrooms.

Finally, it was believed that the secondary school population in Mumias West Sub-County as a whole was represented by the sample of schools, instructors, and students chosen for the study. To ensure that the study's conclusions could be applied to comparable educational situations, this assumption was essential. The study's findings

were relevant and applicable to other schools dealing with comparable issues because the sample was representative.

1.11 Theoretical Framework

1.11.1 Constructivist cognitive learning theory

Through the work of Jean Piaget (1896–1980), Lev Vygotsky (1896–1934), Jerome Bruner (1915–2016), and John Dewey (1859–1952) in the early to mid-20th century, constructivist cognitive learning theory was developed. It asserts that learners actively construct their understanding and knowledge through experiences and reflection. In the 1920s and 1930s, Piaget focused on the stages of cognitive development as well as the assimilation and accommodation processes. In the same time frame, Vygotsky introduced concepts like the Zone of Proximal Development (ZPD) and scaffolding, emphasising the significance of social interaction and cultural context. Bruner, a well-known figure in the 1960s, made contributions with concepts related to spiral curricula and discovery learning, while Dewey, a well-known figure in the early 20th century, promoted experiential learning based on real-world settings to foster critical thinking and problem-solving. Together, these scholars created a framework for education that emphasises social interactions' crucial role in cognitive growth as well as active, student-centred learning.

Constructivism is a crucial component of technology integration. According to this theory, students learn more deeply and retain information longer when they have a say in what and how they learn. The main component of this theory is Inquiry-based learning where learners pose their questions and seek answers to their questions through research. Pairs of learners through collaborative learning can teach one another and increase learning gains.

Based on constructivism theory, ICT integration would constitute a learning environment that is very rich for both teachers and learners to construct knowledge to advance their expertise in reading, writing, listening and speaking. Teachers facilitate discovery by providing necessary ICT integration facilities such as computers, PowerPoint projectors, mobile phones, internet facilities, video decks and comfortable classrooms to facilitate the learning of Kiswahili language and offer intrinsic and extrinsic motivation as the users explore the world of knowledge through the internet. Kiswahili language skills will be enhanced as the teachers and the learners interact with ICT. Kozma and Anderson (2002) concur and assert that ICT integration in teaching motivates students to find relevance in language activities when for instance, they write letters, minutes, diaries, memos and speeches in which real-world activities stimulate their creativity.

Integration of ICT practices in teaching Kiswahili language skills enables learners to construct knowledge by making meaning of their experiences from their exposure to the ICT facilities that serve right as appropriate learning environments. According to this theory, learning is an active, constructive process. Tam, M. (2000), and Gupta, S. (2011) concur with this school of thought and further quips that learners are not only active during the learning time but also vicariously involved in the construction of knowledge. The learner is a knowledge constructor while the teacher takes the position of the facilitator. Learning can also take place through the interaction of fellow learners since it is a social process and ICT tools facilitate the interaction.

For this to happen, the teacher should have knowledge of grammar in Kiswahili, knowledge of students and knowledge of the actual teaching practice which can be achieved through technology use. Thus, Technology integration in the learning

process is seen to enhance and ensure quality dissemination of accurate information. In this case, technology (ICT) is taken to have a relationship with Kiswahili.

1.12 Conceptual Framework

This study investigates the impact of ICT on Kiswahili grammar instruction, including the interaction of independent and dependent factors, as well as the role of school administration support.

Pre-service and in-service training have an impact on teachers' readiness to use ICT in the classroom. Pre-service training teaches fundamental ICT skills, whereas in-service training provides continual professional development chances for improving competencies and staying current on developing technologies. Both criteria have a substantial impact on teacher preparedness.

The second independent variable focuses on the ICT resources that teachers use to teach Kiswahili grammar, which are divided into three categories: audio-visual, computer-based, and interactive technology. Audio-visual resources, such as videos and projectors, improve comprehension, computer-based tools use software for language acquisition, and interactive technology includes interactive whiteboards and internet platforms.

The third independent variable is students' usage of ICT to acquire Kiswahili grammar, which includes online research, instructional apps, DVDs, CDs, and TV/radio broadcasts. These activities provide additional resources and practice opportunities for learning and developing Kiswahili grammar skills.

This study focuses on strengthening Kiswahili grammar abilities, such as listening, speaking, reading, and writing. It implies that exposure to audio materials, interactive

exercises, and ICT tools can help improve listening, speaking, reading comprehension, and writing. Access to digital texts and online resources can help improve reading comprehension and fluency.

School administration's assistance has a substantial impact on ICT integration in Kiswahili grammar instruction. It entails providing essential ICT tools, giving frequent training and implementing policies that promote ICT use. This support fosters an environment suitable for effective ICT integration, improving teachers' skills and fostering effective teaching.

Teachers who undergo pre-service and in-service training are more likely to include ICT in their teaching practices, which improves students' performance in Kiswahili grammar. The use of various ICT resources, such as audio-visual aids and interactive platforms, enriches and reinforces teachings, while students' active use of these tools improves their grammatical abilities. The relationship is shown in the Conceptual Framework in Figure 1.1.
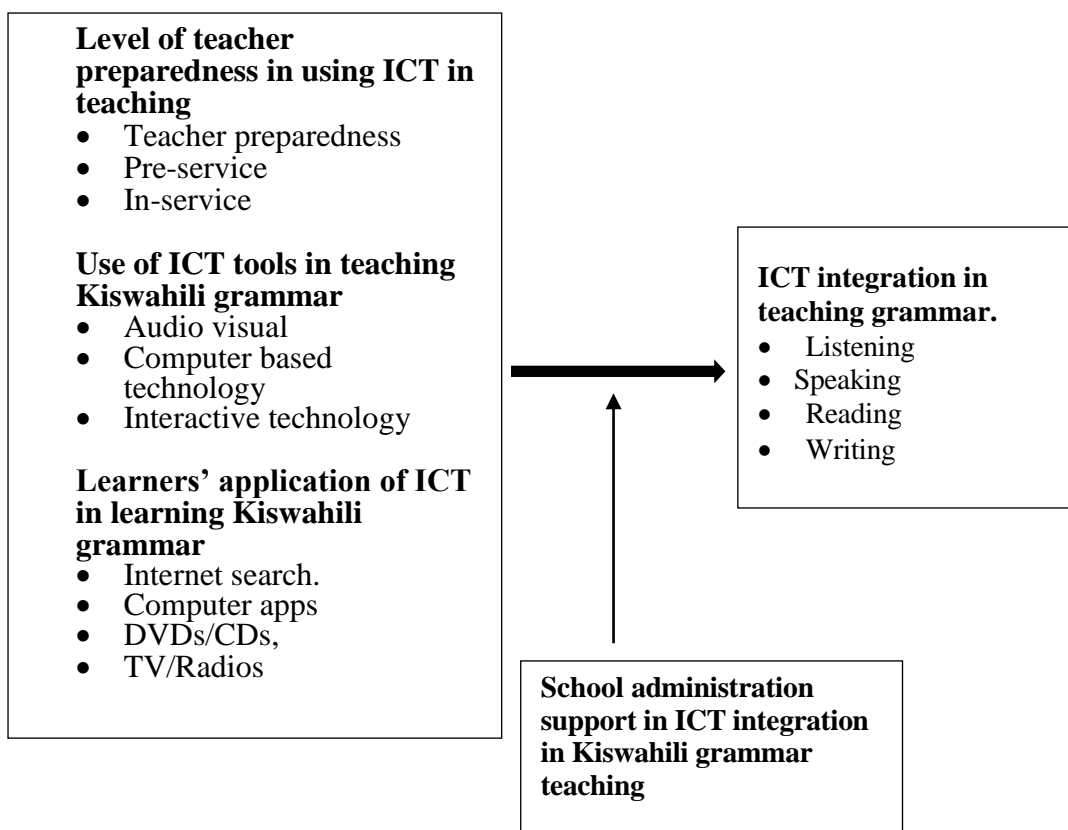
| Independent Variable | Intervening Variable | Dependent Variable |

Figure 1.1: Conceptual Framework

1.13 Operational Definition of Terms

The following are the terms used in this study.

Computer: An electronic device capable of displaying learning materials generated from an internal program. In this study, it refers to devices used by teachers and students to access and interact with digital learning resources.

ICT Integration: The usage of digital technology as a medium of instruction and communication in education. It includes using technology to introduce, reinforce, supplement, and acquire skills in speaking, listening, reading, and writing.

ICT Practices: The routine activities and processes undertaken during teaching and learning by Kiswahili teachers and learners using ICT tools in the classroom. These practices aim to enhance the educational experience through technology.

ICT tools: Digital infrastructure such as computers, laptops, smart phones, projectors and software programs used to create, share and disseminate information for the purpose of teaching and learning.

Internet: A global network connecting computers, allowing access to websites and digital resources. In the context of this study, it refers to the use of online tools and resources to support teaching and learning activities

Kiswahili grammar: Skills in speaking, listening, reading, and writing. This term encapsulates the overall language proficiency.

Public secondary schools: Government owned schools.

Teacher preparation: Acquisition of ICT knowledge and skills through training, familiarity with ICT applications and networking, it also includes teacher preparation with regard to lesson planning, scheming, using ICT resources.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines pertinent research on the use of ICT methods in Kiswahili grammar instruction and learning. It is reviewed thematically following the global, regional and Kenya perspectives.

2.2 Teacher Preparedness in the Use of ICT in the Instructional Process

The effective use of Information Communication and Technology in teaching requires careful educational planning by teachers to ensure that students obtain the benefits expected. This involves the acquisition of ICT skills and knowledge. Robinson (1991) in Okeh & Opone (2007) stated that the use of new information technology can serve three main functions in national educational growth. These are to: deliver all or part of the learning experiences to learners; supplement and extend content provided in different forms other than printed (hard copy); and provide a two-way channel of communication for exchange between tutors and students with their peers for feedback or learning, problem-solving, advice, debate, and reports. This can only be effective when the teacher has the requisite skills and is prepared to deliver content to the class as per the objectives of the learning session.

Globally, most teachers lack pre-service ICT training in teaching and learning in the modern techno-based economy (Apeanti, 2016). Teachers need to understand ICT usage in education (Bhattacharjee & Deb, 2016). Thus, the right attitude will influence the integration of ICT in education (Drossel, Eickelmann & Gerick, 2017). Ibieta *et al*. (2017) revealed that teachers 'perceptions of ICT affect the integration regarding preparedness.

In Indonesia, Mahdum, Hadriana & Safriyanti (2019) found that the teachers in rural areas were not prepared to use ICT in learning activities and some instances, ICT is mostly applied when teachers prepare lessons rather than teaching grammar skills (Zubković, 2017). Usually, teacher preparation is believed to boost the academic performance of students. However, studies have failed to support this view concerning ICT integration in teaching Kiswahili grammar.

The time of acquisition of ICT skills has an impact on its integration into a teaching-learning experience, knowledge and skills acquired during pre-service are inadequate for teachers to integrate ICT in teaching (Cuhadar, 2018). Some teachers prefer the use of ICT in teaching due to its versatility and excitement as well as in classroom experience and it motivates them and the learners; Morat, Shaari, & Abidin, 2016).

Teachers with a positive perception of the use of ICT in teaching adopted ICT approaches in teaching as compared to those who have a negative perception (Erkulova, Samandarov & Samandarova, 2020; Bai, Wang & Chai, 2021). Teachers are hardly prepared to use ICT in teaching but rather are compelled by the current demands to use ICT in teaching and resource sharing as well as conforming to their counterparts who have integrated ICT in teaching (Baek, Jung & Kim, 2008; Zaina, 2012; Raman & Yamat, 2014).

Limited ICT skills and pedagogic know-how are impediments faced by the teachers of language subjects in schools (Hu & McGrath, 2011; Muslem, Yusuf & Juliana, 2018). Teachers have seen the importance of becoming technologically informed as many things are becoming ICT dependent especially research and development (Pardede, 2020). ICT has already gained international recognition in foreign language teaching and learning with a lot of tutorials found online (Hennessy, Ruthven &

Brindley, 2005; Akpabio & Ogiriki, 2017; Alkamel & Chouthaiwale, 2018; Khan & Kuddus, 2020).

Previous studies have shown that there are teachers who are conversant with the use of ICT in teaching and have integrated ICT in teaching in classrooms (Kumar, Rose, D 'Silva, 2008; Boomoh, Jumpakate & Karpklon, 2021) an aspect that this study is seeking to investigate for the case of Mumias West.

These studies have also established the lack of training of teachers on ICT integration in teaching and learning. Especially, teachers in a rural setting who are more predisposed to ICT ignorance. Therefore, this study sought to establish whether the same case exists in Mumias West sub-county.

In Sub-Saharan Africa, teachers are hardly trained on how to use ICT in teaching in schools thus making integration of ICT in schools implausible (Yusuf, Maina & Dare, 2013). Teachers are not trained on ICT usage in teaching and learning in multicultural environments and in classroom management (Dlamini & Mbatha, 2018). The uptake of technology remains low in education; the lack of enforcement of e-education is encumbered by poor infrastructure and skills (Padayachee, 2017). According to Adegbenro, Gumbo and Olakanmi (2017), teachers are required to learn computing skills in software installation, web design software, creating databases using MS Access and electronic resources for teaching, e-mail and the Internet but this is still a challenge in rural Africa.

Teachers support the use of computer resources for instructional purposes in the classroom (Mlambo, Chukwuere & Ndebele, 2018). The majority of the teachers in South Africa were prepared to use ICTs despite the existing financial, technical and digital skills challenges at their schools (Mwapwele *et al.*, 2019). Teachers in Sub

Sahara Africa have a high level of readiness to use mobile learning for instructional delivery; they possess the required skills and competencies to integrate mobile learning to facilitate the instructional process (Oluwadara, Kolapo & Esobi, 2020). The teachers expressed general concerns over the conditions to support the transfer of the training ideas to the school level seemed not adequate during the period of implementation (Agyei, 2021).

These previous studies have shown that African teachers are disadvantaged regarding ICT usage in teaching and learning. Moreover, it has been stated that there is a coherent inadequacy of ICT resources and the level of training on ICT integration in the teaching of language subjects is low (Tenai, 2017). In addition, the teachers are inadequately trained on the use of computer technology and development in education (Mwanda *et al.*, 2017) Since approaches used in ICT professional training rarely equips them in integration in schools (Mwangi & Khatete, 2017). According to Osuji and Everlyn (2018), ICTs enable teachers and learners to access educational resources with ease, making teaching and learning interesting and motivating but ICT is rarely used due to the technophobic attitude among the teachers and the lack of sufficient ICT resources (Osuji & Everlyn, 2018). A large number of teachers have no prior training in ICT and could not help in the integration of ICTs in education (Kanyoi, 2019). Moreover, inadequate ICT infrastructure led to teachers' unpreparedness in the integration of ICT in teaching and learning Kiswahili grammar skills. Both principals and teachers agreed that there were computer laboratories in schools but computers were inadequate for use in teaching and learning (Kanyoi, 2019). Daniel and Khaemba (2021) revealed that the teachers were willing and prepared to participate actively in integrating ICT into the instructional process.

The use of ICT in teaching is associated with teachers' competence and preparedness, which is mainly a challenge experienced in Kenya since the launch of the National ICT Policy in 2006 (Omollo, 2011; Chege, 2014). Teachers' competence in ICT use in teaching is vital considering the technological advances in the 21st century owing to the online economics (Hooker, 2017). Schools that were found to have many teachers with ICT skills in teaching and research had few ICT infrastructures and hence moderately apply ICT services for office work other than teaching (Muia, 2021; Muvango, 2021).

Studies have established that teachers are required to integrate ICT into teaching and learning activities but are hampered by inadequate skills. Teacher's pre-service and in-service ICT training significantly affects the integration of ICT in teaching which to most teachers is lacking. Teacher's preparedness to integrate technologies into teaching determines the effectiveness of the technology but there is inadequate data about teacher's preparedness on ICT integration in Mumias West sub-county, which this study investigated.

2.3 Teacher's use of ICT Tools in Teaching Kiswahili Grammar

The use of ICT in schools is growing at a global scale, especially in developed countries; unfortunately, developing countries face challenges in incorporating ICT in teaching (Ahmad, 2016). ICT is used in teaching as it has enriched understanding of the subjects by teachers and learners where teachers and learners feel free to express themselves and learn freely, especially with the use of video and online streaming of learning materials (Roy, 2019: Pazilah *et al*., 2019) this is supported by studies done by Allen and Seaman (2006) which indicate that3.2 million Students in America integrate ICT in their learning activities in science subjects.

Another report released by the same authors in 2008 shows that many students in higher learning institutions use ICT in learning various curricula. This study is of much importance to the proposed study only because it targeted institutions of higher learning in different faculties at American universities. It also targeted students learning science and computer-related subjects.

The present study aimed at investigating the integration of ICT in teaching and learning of Kiswahili language in Secondary Schools in Kenya which is a developing country.

Mohammad (2003) surveyed teachers on the use of computer technology in secondary mathematics teaching in New Zealand schools. The study attempted to find out to what extent and for what purpose teachers of mathematics and other subjects use computers in the teaching and learning process. The study found that computer use in the classroom was minimal despite the government coming up with a national strategy for integrating computer technology in schools, in line with the goals of the ministry as stated in New Zealand curriculum (MINZC). From this finding, it can be observed that the extent of use of the computer in subject areas may not have had a significant effect on the outcomes of the subject. Similarly, the current study will seek to establish how ICT tools such as computers are used in the teaching-learning process in the acquisition of Kiswahili language skills.

When ICTs are used properly to complement a teacher's existing pedagogical philosophies, ICT provides a knowledge-based system that includes knowledge acquisition, knowledge incubation, knowledge strengthening and knowledge spreading. Information is a key resource which permeates teaching, learning, research and publishing. Alejandre (2005) has provided an extensive discussion of the various

ways in which teachers might use their available classroom resources effectively.

Multimedia presents the material in a diversity of modes and allows students to develop a versatile approach to learning (Grzeszczyk, 2016). ICT implementation in the curriculum gives plenty of advantages. In Japan, Mindog (2016), it was noted that students believed that using apps helped them with their four language skills (listening, reading, speaking, and writing), grammar, vocabulary and spelling. This is similar to what this study seeks to investigate for Mumias West.

In previous years, the use of radios and televisions was a popular ICT approach to teaching grammar to local and international learners which had its limitations (Alsulami, 2016). The limitation of active and effective interaction between the instructor and the learners of grammar led to the development of active interactive ICT platforms i.e., Zoom, Meet, and Teams as well as Facebook, WhatsApp and Instagram that are networked computer-based systems (Bilyalova, 2017; Li *et al.*, 2018). The use of ICT in teaching is a current innovative pedagogical tool that has a high potential to transform education (Ratheeswari, 2018). Kiswahili grammar teaching is becoming popular globally with the use of ICT as schools invest in ICT infrastructure for teaching (Ahmad, 2016; Huang & Hong, 2016; Nduati, 2016; Lawrence, 2018). Technological advancement has made it possible to integrate ICT in teaching which gained much during the novel coronavirus pandemic (El-Din *et al.*, 2020, Lisanza, 2020).

Teachers with ICT skills hardly apply their skills in the classroom which is occasioned in most cases inadequate ICT infrastructure (Samuel & Zaitun, 2007; Bitter & Legacy, 2008; Ghasemi & Hashemi, 2011; Courts and Tucker, 2012; Pilgrim, Bledsoe & Reily, 2012). The use of ICT in teaching grammar is an

interactive process hence motivating the learners to actively participate in the learning process, but schools have inadequate ICT facilities discouraging the use of ICT in teaching (Samuel & Bakar, 2006; Aqsha & Pei, 2009). The limited ICT tools i.e. lack of or poor Internet connection discourages the use of ICT in teaching (Drigas & Charami, 2014; Muslem, Yusuf & Juliana, 2018). The common ICT tools used for teaching are audio tapes, mobile phones, computers, televisions, radios, video tapes and emailing (Thapaliya, 2014). The integration of ICT has enabled the teacher to vary teaching approaches that are learner-centred; however, there are ICT resource limitations making use of ICT in teaching problematic (Raman & Mohamed, 2013). There are ICT tools that are being used by teachers to research for their language lessons such as the internet and smartphones as well as computer programs; however, they hardly use networked ICT to facilitate classroom language teaching experience (Alkamel & Chouthaiwale, 2018; Boonmoh *et al*., 2021).

The use of ICT makes teachers and learners autonomous with easy accessibility of online grammar materials (Guemide & Benachaiba, 2012). The scarcity of ICT infrastructure in schools has been and continues to be a major challenge faced by secondary schools in Africa (Yusuf, Maina & Dare, 2013). Kiswahili language is an acceptable and applicable language by the African Union that may be spoken and incorporated into education curricula by African countries in the future (Okombo & Muna, 2017; Kaschula & Kretzer, 2019; Kandagor, 2020). Tchamyou, *et al.* (2019) acknowledge the use of ICT in teaching is at a particularly dynamic stage in Africa as countries such as South Africa, Botswana and Namibia have selected Kiswahili as an optional language taught in schools.

In Kenya, Ogott and Odera (2012) reported that schools have been having a grave shortage of ICT infrastructure for teaching. The use of multimedia enhances learning achievements in Kiswahili grammar aspects as it increases learning achievements. However, Ratemo's (2017) study revealed that the usage of text messaging as a mode of integrating ICT into learning led to poor language performance. In addition, it was stated that the language of texting was different from standard language thus leading to poor grammar skills in standard written works. Naumi (2017) observed that in the Eldoret West sub-county, there was limited use of ICT in the teaching and learning of Kiswahili grammar skills. Mumias West Sub County as a study area is in a different ecological zone and is endowed differently in terms of resources, the researcher sought to find out the situation in Mumias West hence the reason for the study.

According to Wanjiku-Omollo (2018), ICT tools such as smartphones, e-books, DVDs, LCD projectors and computers, were available in public teacher's colleges, whose teaching methods were most applicable in improving communication skills but Wanjiku-Omollo (2018) further revealed that ICT tools were rarely integrated into the teaching of Kiswahili grammar skills in teacher training colleges. Oredo (2008) in Omariba (2016) concur and further say that trainees in primary teacher colleges only learn basic computer skills but not the integration of ICT. Since the integration of ICT can be acquired through other means such as self-learning, and in-service among other forms. This study is set to explore the integration of ICT in the instructional process in public secondary schools. In Kenya, previous studies reviewed have established that ICT facilities used for teaching and learning Kiswahili are vital, but it was also discovered that online texting as a method of learning languages led to poor performance. Therefore, this study interrogated the extent of ICT usage by teachers in

Kenyan public schools and its value on Kiswahili grammar skills.

Ngavana (2018) agrees that through interactive lessons Kiswahili teachers were able to use computers through the production of media, lesson preparation, and presentation during Kiswahili lessons. Furthermore, Martha (2018) revealed that in teachers' colleges, tutors preferred the use of technologically-enhanced resources such as computers, and laptops, but were inadequate to enhance effective selection and utilization. Ngavana (2018) showed that the teachers felt the ICT tools were insufficient, which hindered them from using ICT tools during content delivery.

2.4 Learners' Application of ICT in Learning Kiswahili Grammar

Recent guidelines on the use of ICT in class indicate that ICT should be used to support learning in specific subjects as well as being a subject in its own right. In an article published by Jenkin (2014), on the use of ICT in literacy lessons, there is a suggested order of activities included in the lesson development. They include: speaking and listening, early reading vocabulary, sentence construction, comprehension, composition writing, and drama. The suggested order of activities by KIE (2002) concurs.

However, in all these initiatives geared towards developing language skills and proficiency, there is no mention of the utilization of ICT resources to promote ICT practices such as PowerPoint application in class, audio technology, video technology and internet connectivity among others, this study sought to establish ICT practices integrated into the teaching and learning of Kiswahili grammar.

Since language teaching is a process of developing speech, much of the time for lesson presentations depends on both oral presentation and written work. The oral work includes the construction of sentences orally and in written form. In this set-up,

the student can question the teacher to resolve ambiguities or clarify difficulties while the teacher is given feedback about the student's understanding. Petty (2004) concurs and further notes that this is because teaching is a two-way process. It's at this stage that ICT tools may be used to benefit the learners. The student can learn how the pronunciation of given words is done, the spellings of new and familiar words and sentence patterns reorganized. This is in concurrence with a study by Abobo (2018) on the Influence of Computer Technologies on Learning areas in Kiswahili grammar aspects in public secondary schools in Nakuru Municipality, the study found that learners who were taught Kiswahili oral skills by integrating multimedia programs such as radio, television and video-mediated programs were able to apply diverse parts of speech correctly. 90% of teachers who integrated computer technologies in teaching agreed that it helped learners learn speaking, spelling skills, and vocabulary acquisition.86 percent agreed that computer technologies helped learners in syntax components while 81%agreed it helped learners to do well in diverse sentence structure and 88% believed learners taught using computer technologies performed better in punctuation than those taught using TLEVEL OF TEACHER PREPAREDNESS. The lack of existing data in the area under study on the subject matter is what prompted this study.

In a similar way British Educational Communication and Technology Agency (BECTA) survey in the year 2000 on the relationship between ICT resources and pupil attainment in primary and secondary school shows that there is a consistent positive trend in terms of better grades in mathematics, English and Sciences for pupils in schools with better ICT resources as compared to those schools with poor ICT resources. The findings of the survey are relevant to the current study in that it concerns the use of ICTs and academic achievement in English which is a language

like Kiswahili. The survey centred on schools with varied ICT resources which is a similar set-up to the current study. This study sought to find out the trend in the Kiswahili language in the current locale.

According to the Kenya ICT Survey (2007), most schools with ICT components such as computers use less than 40% of the available infrastructure and very few use ICT as an alternative method for curriculum delivery. The study by Chege (2014) on Factors influencing teacher readiness to use ICT in teaching doesn't specifically focus on teachers' ICT practices in the teaching-learning process and how the computers in the schools are used in class by teachers though he reports their use as below average. In an effort to assess the use of ICT tools for instructional purposes, this study will seek to find out the various ICT practices in a teaching-learning set-up. Chege (2014) further notes that although fewer schools use ICT for other purposes, very few use ICT as an alternative method for curriculum delivery which the study seeks to establish.

Since ICT has also become integral to the teaching-learning interaction, learners should be able to access and use the ICT tools in the learning process. Demiraslan and Usluel (2008) concurred that, for learners to access and use ICT tools in class; they must be able to physically interact with the tools, both in class and outside of a classroom objectively for instance in a study conducted in two Tanzanian universities on use of internet in teaching and learning by tutors and students the results indicated that the majority (83.2%) of respondents used the Internet for academic purposes, 61.3% used it for searching news and 50% for communication, slightly more than a half (52%) of the respondents were using internet for games and entertainments while only (43%) used it for the social network. A Similar purpose of internet usage was

reported by various researchers such as Bashir (2016); and Sife (2013) revealing that academics, communication and news as the popular purposes of using the internet. This study involved college students and their tutors in Tanzania which is in East Africa just like the current study but did not involve secondary school students and neither did it involve the teaching of Kiswahili grammar which this study sought to bridge. Additionally, the use of ICT in teaching has made access to language materials easy for the teachers of language subjects such as Kiswahili, thus contributing to a positive attitude from the teachers and students alike which in most cases is learner-centred unlike teacher-centred (Cakici, 2016; Pazilah *et al.*, 2019). The use of ICT in teaching grammar and language made it possible for teachers to teach and learners to learn as well due to its versatility (Akpabio & Ogiriki, 2017).

The Sessional Paper No. 1 of 2005 set a platform for transformation in education. Emphasis was laid on quality education and accessibility for there to be equity and equality in learning.

However, going by the sessional paper no. 1 of 2005, ICTs are relatively expensive as compared to chalk and board resources often used in a traditional class setup computers with high-speed internet connections and adequate hardware (desktop computers, laptops, tablets, mobile phones) and software (particularly learning applications) so that students have equitable access to the same digital and online learning opportunities regardless of their family's income level or ability to pay for these technologies. To some extent, affirmative action is put in place to ensure all learners access ICT tools in their quest to acquire knowledge from the learning process. This is reflected in the sessional paper no. 1 of 2005 and the Millennium Development Goals (MDGs). A question may arise; is the learner accessing and using

ICT tools in Kiswahili? Is there equity in the allocation of the ICT learning resources in a learning set-up? Are the learners able to access the ICTs in the teaching and learning setup? This study is meant to bridge the gap.

A study on access to ICT among secondary school students in relation to their academic achievement carried out by Kokkot and Tamilselvi (2016) observes that when students access ICT during their learning, there is a positive correlation with their academic achievement. The Investigation by Kokkot and Tamilselvi narrowed down to accessibility and academic achievement of the learner, it was carried out to study access to ICT among secondary school students concerning their academic achievement but did not necessarily look at learners' ICT practices in teaching and learning which this study sought to address. The study used a normative survey method. Besides, a random sampling technique was used to get the sample for the study though not representative enough, to ensure that the sample was representative enough this study employed purposive sampling to select learner respondents and teachers.

In a study carried out by Miima (2010) in Kakamega County on the use of ICTs by teachers in teaching and learning activities, it showed that CDs and DVDs were mostly used by Kiswahili language teachers and could be associated with their convenience of use since they do not require too much training to grasp the technology required. This indicates that some practices are preferred more by both teachers and learners due to their simplicity.

Preference to some practices enhances the scope of education by facilitating learning and inclusive education. The use of ICT tools facilitates research and scholarly communication. It's further observed that ICTs can enhance the quality of education

in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when managed and used appropriately, can promote the shift to a learner-centred environment. Computers, which form a critical component of ICT are an essential component of communication, which can be used to change the attitude of learners in a language class. On the contrary, the traditional content delivery system has been a classroom setting with a teacher giving a lecture and students listening and writing notes. Interaction between the teacher and student has been more teacher-centred within this arrangement. However, innovations in educational technology used as delivery mechanisms have challenged this paradigm. Advances in IT are enabling teachers to change their approaches to content delivery in class. This has ushered in a new paradigm. This is why many schools have adopted ICT integration in education as a way of bettering content delivery systems. These systems are being promoted as educational pedagogical styles. This has made technology to become a more widespread part of Kiswahili education. A question may arise; are learners of Kiswahili able to access and use the technology so as to gain immensely from its integration in the teaching and learning process? This prompted this research.

The skills development can be enhanced by integrating ICT practice and may take this trend, at the introduction the teacher may interestingly introduce new content by using an audio-visual stimulus in order to capture students' attention and give an overview of the lecture topic (Francis, 2017). This type of approach is heavily dominated by the teacher as they lecture on the subject, giving notes and making demonstrations, at the expense of practical aspects of the lesson. The students remain passive participants expected to listen and observe only.

The use of ICT in teaching and learning has authenticated the learning and teaching process where resources such as films, radio, TV, internet have been used effectively for language teaching and learning (Lombardi, 2007; Shyamlee & Phil, 2012). Blachowicz *et al.* (2009), Morat, Shaari, & Abidin (2016) posited that the use of ICT has proven to sustainably guide the learners and motivate them to learn and enhance their attentiveness in class. Therefore, the use of ICT in teaching has contributed to a significant improvement in teaching language subjects (Shyamlee & Phil, 2012; Jayanthi & Kumar (2016).

ICT has made the learners independent and encouraged them to conquer their weaknesses and enhance their understanding of grammar through self-assessment and tests by searching for resources and content online (Willoughby & Wood, 2008). Learners spend most of their time browsing the internet for other personal interests and hardly browse for grammar learning and pronunciation (Aqsha & Pei, 2009). Bai *et al.* (2016) found that the use of ICT in teaching effectively improved.

Learner's grammar score and interest as well. The use of ICT in teaching has improved the vocabularies of learners due to the access to online applications and reading applications that are easily downloadable and accessible to teachers and learners (Maduabuchi & Emechebe, 2016).

PowerPoint is presented as a tool that may serve as a useful tools in multimedia-enhanced classrooms (Grzeszczyk, 2016, Ashiono, 2016). Teachers require some training that could equip them with the required knowledge on how to develop an appropriate and effective lesson that requires the use of ICTs to bring meaningful teaching and learning to enhance literacy levels.

A PowerPoint presentation of the lecture on new words displayed in different colors plus the use of pictures and diagrams makes the lesson lively. Learners can then proceed to read the words under the teachers 'guidance discuss the meaning of the words, and correctly practice the construction of sentences using the new words (Ngavana, 2018). The teacher can at the end of the lecture give learners an assignment they can undertake using the internet via phones or the computer by use of search engines like Google and Chrome among others (Wanjiku-Omollo, 2018). The teaching of new words in Kiswahili aims to develop the ability of learners to increase their vocabulary level in both oral and written communication (Kirui, 2019). Teachers of Kiswahili do not have adequate time in the curriculum thus making it difficult to integrate ICT in teaching and learning.

Odera (2007) noted that the accessibility of radio programs of language teaching was preferred to Kiswahili grammar teaching by teachers as it helped learners to learn spoken Kiswahili overwritten. Teacher preparedness and learners 'acceptance of the use of ICT in teaching and learning must be interactive with adequate ICT infrastructure which still lags behind (Githimu, 2016; Sheila, 2016). Moreover, the use of ICT in teaching and learning has challenges occasioned by the lack of resources, national ICT infrastructure, and even electrical supply, particularly in rural areas (Oichoes, 2018). Kafu (2019) underscored the important role played by the use of ICT in learning as it develops the learners 'comprehension skills, reading skills, listening skills, writing skills and pronunciation skills, but there is no known record of the use of ICT in learning grammar in schools in the study locale. (Abobo, 2018) argued that the use of ICT in teaching grammar was established to improve performance by 12.7%, improved reading by 33.2% and improved writing by 27.4%

In Morocco, online texting among high school students has proven to have promoted the development of language vocabulary especially English and provides great opportunities for students to practice writing (Lakhal, 2020). Therefore, online texting was revealed to be an efficient and effective technique that should be exploited to develop proficiency in writing (Lakhal, 2020). The study by Lakhal was concerned with the English language, this study will investigate if proficiency in writing skills is enhanced by the use of ICTs in Kiswahili.

In Ghana, according to Nyamekye, Baffour-Koduah & Asare (2021), integration of ICT into their instruction is on an occasional basis, which was brought about by the lack of financial support for ICT resources and lack of in-service training however in Africa, studies have established that ICT has had a positive impact among learners learning language subjects. It was also established that African schools experience shortages of ICT resources thus affecting its integration in teaching and learning. However, in this study's area of interest, there is a lack of information on ICT usage and uptake in teaching and learning.

According to Alsulami (2016), the students at Saudi Arabian Effat University stated that the computer software, social networking websites, online videos, audio tools (i.e., YouTube, Skype, MP3 players), and smartphone and tablet apps had a positive impact on learning.

On the contrary, phones can be used as teaching aids but should strictly be configured to be under parental control to avoid misuse by learners who are likely to be tempted to visit non-academic sites as this will reverse the gains made.

Besides, it was revealed that ICT integration in teaching and learning languages could clearly be effective in improving the student's language and communication skills

(Alsulami, 2016). The study revealed that the use of smartphones in learning languages promotes vocabulary practice more than speaking skills (Metruk, 2021). These global studies reviewed have shown that ICT integration in teaching and learning language subjects is at the epicentre of grammar skills development. However, in this area of study, we have no documented evidence of ICT integration practices in developing grammar skills, which this study sought to establish.

2.5 School Administration Support on ICT Integration in Teaching Grammar

The school administration is an important entity for making sure that the ICT facilities and resources are available for the teachers to use in teaching in schools; considering the poor performance in Kiswahili especially grammar (Ngavana, 2018; Mwakio, 2021).

School management and administration are equally important in the adoption and integration of ICT tools in education (Dlamini & Mbatha, 2018). The role of administration is critical in implementing a change of any sort since it's tasked with ensuring that the best pedagogical use of ICTs is made (Picatoste *et al.,* 2018). School administrators provide leadership that can enable teachers to engage in innovative practice and encourage teachers to integrate ICTs into teaching and learning activities.

In most African schools, computers are a preserve of the administrators, science teachers, librarians and lab technicians (Dlamini & Mbatha, 2018). In South Africa, Mwapwele *et al.* (2019), the prohibitive school policies hamper the integration of ICT in teaching and learning in schools.   The reviewed literature has shown that in Africa the school administration hampers ICT integration in teaching and learning.

Commitment by the school administration to maintain the ICT facilities and infrastructure affects the integration of ICT in teaching (Maduabuchi & Emechebe, 2016). The effect of school commitment on the maintenance of ICT facilities is not known. Unfortunately, sub-Saharan African countries hardly have ICT infrastructure in schools that supports the integration in teaching such as computer systems and electricity (Arthur-Nyarko & Kariuki, 2019).

The school administration hardly supports the implementation of ICT in teaching such as training the teachers in readiness to use ICT in teaching (Hu & McGrath, 2011; Hadijah & Shalawati, 2017). The use of ICT in teaching is directly dependent on the teachers' preparedness, but there is limited use of ICT in classroom teaching experience due to many challenges such as lack of resources for teaching and limited time (Correos, 2014; Thapaliya, 2011).

The use of ICT in teaching has been associated with attitudinal and scare of change barriers from the teachers especially without ICT training (Johnson *et al*., 2016). Teachers' hesitancy to use ICT in teaching, teacher workload, inadequate ICT skills, time limitation, older teachers lack of interest in using ICT are some of the barriers to ICT use in teaching in schools (Raman & Yamat, 2014; Malagón & Pérez, 2017; Hafifah, 2020). The global changes after 2019 have seen many global schools integrating ICT in teaching and learning experiences with technicians readily available to assist when required (Pardede, 2020).

Therefore, this study sought to find out the status of the school administration's contribution to ICT integration in teaching and learning as well as its barriers in public secondary schools in the Mumias West sub-county.

School administration is the engine that propels development and change in a learning institution, but it has inadequately provided ICT instructional materials to teachers for teaching Kiswahili grammar (Benson & Odera, 2013). This is supported by Tenai (2017), who noted that the inadequacy of Computer systems for teaching Kiswahili grammar skills has made the integration of ICT problematic in public secondary schools. The scarcity of ICT resources is an indication of the failure to plan by the administration.

Ngavana (2018) found that in 81.8% of surveyed schools, the school's administration encouraged teachers to acquire IT skills and also motivated them to use ICT-based tools in the teaching and learning of Kiswahili language.

Kanyoi (2019) observed that the secondary school principal's leadership and ICT literacy among teachers plays a significant role in ICT integration in teaching and learning. However, most teachers had not undergone in-service, studies reviewed have shown that it is of utmost importance to invest in ICT and teachers' training on the integration of ICT in teaching and learning. A study by G. Polizzi (2011) emphasized that principals' positive attitudes can affect their supportive behaviours and therefore there's a need to deal with the ICT-related roles of school principals since their perceptions and behaviours can have an impact on the implementation of ICT integration. A gap that the study explored.

2.6 Review of Related Studies

Literature reviewed indicates that despite the increasing use of ICT use in education developing nations confront significant obstacles in properly implementing these technologies (Ahmad, 2016). Previous research has concentrated on higher education and science disciplines, leaving a gap in knowing how ICT tools are used to

teach Kiswahili grammar in secondary schools. Furthermore, the potential of multimedia and interactive platforms such as Zoom and WhatsApp to improve grammar instruction is underexplored (Bilyalova, 2017; Li et al., 2018). This study attempted to fill this gap by looking into the extent and efficiency of ICT tool use in teaching Kiswahili grammar in Mumias West.

Additionally, effective incorporation of ICT in teaching requires comprehensive teacher training and preparation. However, there is a substantial global gap because the majority of teachers do not receive enough pre-service and in-service ICT training. Despite some instructors' good attitudes towards ICT, many are unprepared and motivated by present needs rather than actual readiness (Baek, Jung, & Kim, 2008; Zaina, 2012). Teachers, particularly in rural regions, frequently lack the requisite skills and resources to properly incorporate ICT, which this study sought to investigate further inside Mumias West sub-county.

It was established from this chapter that ICT integration in teaching and learning of language subjects is at the epicentre of grammar skills development but African schools experience shortages of ICT resources thus affecting its integration in teaching and learning. It was made aware in this research that ICT facilities used for teaching and learning Kiswahili were vital but it was also discovered that online texting by learners as a method of learning languages led to poor performance, thus affecting grammar skills. It was revealed from this chapter that the lack of training of teachers on ICT integration in teaching and learning, especially, teachers in a rural setting disposes teachers to ICT ignorance. Therefore, African teachers were more disadvantaged regarding ICT usage in teaching and learning in the context due to inadequate ICT resources. Moreover, teachers' attitudes towards the usage of ICT in

teaching have hampered the progress of ICT integration in teaching and learning. The teacher-centred method of ICT teaching and learning is mostly used in teaching and learning. Teachers of Kiswahili do not have adequate time in the curriculum thus making it difficult to integrate ICT in teaching and learning. The school administrators were the cause of poor ICT integration in teaching and learning due to poor investment in teachers' training and in ICT infrastructure.

While ICT may significantly enhance language learning, there has been little research into its specific impact on Kiswahili grammar teaching. Existing research frequently emphasises the effectiveness of multimedia and online resources in developing language abilities (Blachowicz et al., 2009; Morat, Shaari, & Abidin, 2016). However, there is a shortage of particular studies about the way secondary school learners in Kenya use ICT to acquire Kiswahili grammar. This study attempts to fill this gap by investigating Mumias West learners' ICT behaviours and their impact on grammar skill development.

Lastly, the role of school administration in supporting ICT integration is important but understudied, particularly in secondary education in Sub-Saharan Africa (Maduabuchi & Emechebe, 2016). Previous research has shown that bad infrastructure, insufficient training, and a lack of administrative support are significant hurdles to efficient ICT use in schools (Yusuf, Maina, & Dare, 2013; Arthur-Nyarko & Kariuki, 2019). The purpose of this study is to look into the level of administrative support for ICT integration in Mumias West, specifically how leadership, infrastructure, and policy influence the successful adoption of ICT in teaching Kiswahili grammar.

2.7 Summary of the Chapter

It was established from this chapter that ICT integration in teaching and learning of language subjects is at the epicentre of grammar skills development but African schools experience shortages of ICT resources thus affecting its integration in teaching and learning. It was made aware in this research that ICT facilities used for teaching and learning Kiswahili were vital but it was also discovered that online texting by learners as a method of learning languages led to poor performance, thus affecting grammar skills. It was also revealed from this chapter that the lack of training of teachers on ICT integration in teaching and learning, especially, teachers in a rural setting disposes teachers to ICT ignorance. Therefore, African teachers were more disadvantaged regarding ICT usage in teaching and learning in the context due to inadequate ICT resources. Moreover, teachers' attitudes towards the usage of ICT in teaching have hampered the progress of ICT integration in teaching and learning. The teacher-centred method of ICT teaching and learning is mostly used in teaching and learning. Therefore, teachers of Kiswahili do not have adequate time in the curriculum thus making it difficult to integrate ICT in teaching and learning. The school administrators were the cause of poor ICT integration in teaching and learning due to poor investment in teachers' training and in ICT infrastructure.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research methodology that was applied in carrying out this study. The chapter covers the research design, study area, target population, sample size and sampling procedure, data collection instruments, data collection procedure, reliability and validity of research instruments, data analysis, presentation and Ethical considerations of the study.

3.2 Research Design

The descriptive survey research design was used in this study. The advantage of descriptive survey research design was that it could be applied to different populations at a given point in time. Descriptive research design looks at both the descriptive and observational approaches whose analysis is both descriptive and inferential.

In this study, the descriptive research approach was preferred because it permits the researcher to collect data instantly at a single point in time. Moreover, it allows the researcher to observe the environment of the things of importance in his/her/their study. This survey design was best fitted to assess the integration of ICT in developing grammar skills in Kiswahili in public secondary schools in Mumias West sub-county: The unit of observations were the students, teachers of Kiswahili and the heads of Kiswahili department in the schools.

The convergent parallel mixed method, which combines qualitative and quantitative data gathering and analysis techniques, was used in the study. With this method, qualitative data was gathered independently through document analysis and

interviewing. This made it possible to thoroughly examine the viewpoints, experiences and insights of the participants. In the meantime, questionnaires were used to collect quantitative data, which gave quantifiable and statistically analysable details on the research population.

These two sets of data outcomes were also examined independently. While quantitative data analysis used statistical techniques to understand questionnaire results, qualitative data analysis involved coding and identifying themes from document analysis and interviews. Ultimately, a triangulation of the results from the qualitative and quantitative assessments was conducted. This indicates that the outcomes were contrasted and integrated.

3.3 Area of Study

This study was carried out in public secondary schools in Mumias West Sub-County. According to the Ministry of Education, Mumias West sub-county has28 public secondary schools with 5128 students. Its main economic activities include motorcycle transport, subsistence farming sugarcane farming, dairy farming and horticulture. Mumias West sub-county is bordered to the North by Matungu, East by Mumias East, South by Butere and West by Siaya County. The area of study is attached as Appendix VI.

3.4 Target Population

This study sought to investigate the integration of ICT practices in teaching Kiswahili grammar in public secondary schools in Mumias West Sub-County. According to Kakamega County MOEST (2022), there were 5128 form four students, 69 teachers of Kiswahili and 28 heads of the Kiswahili department from 28 public secondary schools. This formed the target population. This target population was also accessible

to the researcher within Mumias West sub-county. Table 3.1 summarises the target/accessible population distribution.

Table 3. 1: Target Population

Sample population	Frequency (N)
Kiswahili teachers	69
Form four learners	5128
Heads of Kiswahili Department	28
Total	5225

Source: MOEST Report, Kakamega County 2023

3.5 Sampling Size and Sample Technique

A sample is a sub-unit representative of the whole with a particular characteristic that a researcher intends to investigate. Sample size determination is the process of scientifically determining through probabilistic or non-probabilistic approaches to choose a number from the whole population. A sampling technique is a procedure for selecting sample members from a population. This study used various sampling methods, stratified sampling was used to categorize schools into county, extra county and sub-county schools. Proportionate probability sampling was used to sample 9 schools for research. Stratified sampling was also used to categorize respondents into heads of Kiswahili department, teachers of Kiswahili and students in form four class.9 heads of Kiswahili department were purposively sampled to represent the schools sampled for the research.Simple random sampling was employed in the selection of 361 students from the nine sampled schools. Each school sampled 41 students for the study. Proportionate probability sampling was used to sample 9 teachers from the sampled schools.

The sampled population was allocated as below. The samples are shown in the sample frame in Table 3.2.

Table 3. 2: Summary of sampled schools and respondents

School category	Total number of schools	Sampled schools	Proportion %	Sampled teachers
National	0	0	0	0
Extra county	2	1	30	1
County Girls boarding	2	1	30	1
County Boys' boarding	2	1	30	1
Sub county mixed day and Boarding	14	4	30	4
Mixed day schools	8	2	30	2
Total	28	9	30	9

From Table 3.2, the sample size was selected using a purposive approach. The student sample size was determined using the Krejcie and Morgan sampling table of 1970 from a total population of 5,128, which was 361 learners.

Table 3.3: Sample Frame

Title	Sample (n)
Kiswahili teachers	9
Learners (form four)	361
Heads of Kiswahili department	9
Final Total	379

3.6 Data Collection Instruments

Data refers to the several types of unprocessed information that are collected for research or assessment. In addition, data collection refers to the gathering of information to serve or prove some facts (Kothari & Garg, 2014).

Primary information was gathered by use of interview schedules from 9 heads of the Kiswahili department in the schools (key informants) and questionnaires for both teachers of Kiswahili (9) and form four students (361). Document analysis on the syllabus, schemes of work and lesson plans.

Quantitative data was obtained from teachers of Kiswahili, form four students. Qualitative data was obtained from the heads of Kiswahili departments in selected public secondary schools and document analysis.

3.6.1 Questionnaire

This study made use of the questionnaire, which was created as a series of organised questions to facilitate data gathering. The purpose of these questionnaires was to allow respondents to self-administer the questions and provide answers on their own. Quantitative data was the main kind of information gathered via questionnaires. In this study, data on the use of ICT practices in Kiswahili grammar instruction and learning were gathered in public secondary schools in Mumias West Sub-County, Kenya, using questionnaires. Different questionnaires were created for educators and students to collect pertinent data from each group.

The questionnaires that were given to the teachers covered topics including how much ICT is utilised, what particular tools are used, and how equipped and trained they are to integrate ICT. On the other hand, the student questionnaires sought information about how they interacted with ICT tools, what obstacles they faced, and how useful they thought these tools were for learning Kiswahili grammar. This approach made it possible to gather a wealth of information from instructors and students, giving analysts a solid foundation on which to examine how ICT was integrated into the sub-county's educational system.

3.6.1.1 Teachers' Questionnaire

Teachers are the main instructors in schools and are critical in addressing the questions regarding the integration of ICT practices in teaching grammar in schools. Moreover, the teachers' level of skills in ICT use in teaching was paramount for the

study to uncover in order to determine the status of the integration of ICT in teaching. It was important also for this study to explain the role of the school administration in supporting the integration of ICT in teaching and learning in schools.

Part I of the questionnaire was used to obtain the demographic information of respondents such as age, gender, education level and length of service to provide information on teacher characteristics. On the other hand, part II was divided into seven sections, A-G which sought to obtain responses to the Likert scale items on the independent (predictor variables) and grammar (dependent variable).

Closed-ended questions with ordered choices were mainly used and required the respondents to examine each response independently of the other choices given. The choices formed a continuum of responses which were provided by the Likert scales and numerical ranges. Cooper and Schindler (2011) opined that Likert scales were the most frequently used variation of summated rating scales; they were the most reliable and provided a greater volume of data than many other scales. The teacher questionnaire is attached as Appendix A.

3.6.1.2 Learners' Questionnaire

Learners are the main stakeholders in schools in this digital age where ICT play an important role in the academic sector. This study preferred to use the learners in form four due to the time they have been in school and thus they have more experience and information regarding ICT and its application in teaching and learning experience.

Part I of the questionnaire was used to obtain the demographic information of respondents such as age, gender, and education level. On the other hand, part II was divided into seven sections, A-G which sought to obtain responses to the Likert scale

items on the independent (predictor variables) and grammar (dependent variable).

Closed-ended questions with ordered choices were mainly used and required the respondents to examine each response independently of the other choices given. The choices formed a continuum of responses which was provided by the Likert scales and numerical ranges. Cooper and Schindler (2011) opined that Likert scales are the most frequently used variation of summated rating scales; they are the most reliable and provide a greater volume of data than many other scales. Secondary data from the KCSE results were also used to provide a wider understanding of the issues under research. The learner questionnaire is attached as Appendix II.

3.6.2 Interview Schedule

An interview schedule is a data collection tool with a set of structured questions designed for a one-on-one interaction with the interviewee collecting data on a specific goal or objective. The interview schedule aids in collecting qualitative data. In this study, the interview schedule was used to collect data from the heads of Kiswahili departments in public secondary schools in Mumias West Sub-County in Kenya. Heads of Kiswahili department have important information pertaining their departments, especially with regard to the integration of ICT in teaching and learning. The interview schedules were used to support and verify the information from the questionnaires. It is attached as Appendix B.

3.6.3 Document Analysis Guide

A document analysis guide is a data collection tool that is used for a retrospective analysis of documents to get the intended information as per the question guide. This study saw it fit to analyse the school documentation regarding the integration of ICT in teaching and learning such as the scheme of works and record keeping approaches.

The document analysis guide focused on the extent of technology integrated as contained in the syllabus. The researcher used the teaching documents to establish the evidence of technology integration in their planning in preparation of the lesson plans, schemes of work and records of works covered. The document analysis guide is attached as Appendix D.

3.7 Pilot Study

A pilot study was carried out in Vihiga County to ensure the reliability and validity of research tools. According to Kothari and Garg (2014), a pilot study is a small study conducted prior to a large piece of research to determine whether the methodology, sampling, instruments and analysis were adequate and appropriate. Consequently, a pilot study identifies the shortcomings that could be experienced during the actual study, and therefore put in place corrective measures. The study included a small sample from two public secondary schools, including one Kiswahili instructor, one Kiswahili department head and 18 form four pupils per school making a total of 2 teachers, 2 heads of Kiswahili department and 36 students. The pilot study used the same data collection instruments as the main study, such as questionnaires for both teachers and students, interview schedules for the Kiswahili department heads, and document analysis guides for examining teaching documents and evidence of ICT integration.

Research assistants received training to ensure they understood the study's objectives, data collection instruments, and administration procedures. Questionnaires were sent to the two Kiswahili teachers and the 36 form four pupils, along with detailed instructions on how to complete them. Semi-structured interviews were performed with the two leaders of the Kiswahili department and audio-recorded with the

participant's consent.

To determine the level of ICT integration in Kiswahili grammar education, the researcher and research assistants reviewed important documents such as work schemes, lesson plans, and work coverage records. The data from the pilot study were examined to find any inconsistencies or problems with the research tools. Quantitative data were entered into a statistical software program for preliminary analysis, while qualitative data were assessed to detect common themes and potential problems with the interview questions or document analysis guide.

Based on the pilot study results, many changes were made to the research instruments and processes, including rephrasing questions for clarity, optimizing interview schedules and upgrading the document analysis guide to include more specific indications of ICT integration. This pilot study offered critical feedback that was used to fine-tune the research approach and ensure the usefulness and quality of the data-gathering tools for the larger study.

3.8 Reliability and Validity

3.8.1 Reliability of research instruments

A reliability test is used to measure a research instrument to figure out whether the instrument could be used as a measuring tool or not (Mohajan, 2017). It is the degree to which measures can be free from random error and hence yield consistent results (Pandey and Pandey, 2021) and ascertain the research instrument's consistency when the process is repeated. Pandey and Pandey (2021) explain that the main goal of a reliability test is to minimize the errors and biases in a research study, which is an important consideration when assessing the value of any research. Thus, to determine the reliability as based on internal consistency, the pilot test was conducted. The

questionnaires were distributed to two schools.

Data was received, coded and analysed. A repeat exercise took place after two weeks to expose the same instrument to the respondents in order to measure consistency. The responses were compared using the Pearson Correlation Coefficient. According to Mohajan (2017), a reliability of at least 0.7 is normally accepted as a measure of reliability for the instruments. The reliability of the instruments especially the questionnaires which were the main tool for the study was accepted at r=0.7 or above. It was established that the average Cronbach Alpha score that guided this study was 0.745.

The consistency and dependability of the data gathered are referred to as reliability in the context of an interview schedule. Multiple measures were implemented to improve the reliability of the interview schedule utilised in this investigation. To ensure that every responder was given the same questions in the same way and to minimise variability brought on by variations in question phrasing, the interview schedule was first carefully created using standardised questions. To ensure consistency and clarity, a small group representative of the study sample participated in pilot testing to assist find and fix any unclear or confusing questions. Interviewers received extensive training on conducting the interview according to the schedule, being impartial, avoiding leading questions, and accurately documenting answers - all of which are necessary for collecting data that can be trusted.

To ensure complete information coverage and to explain responses, additional questions were used. To reduce the impact of outside variables on interviewees' responses, the setting in which they were conducted was uniform and regulated. By verbatim recording and transcription of interviews, the possibility of errors or biases

was reduced and data was reliably captured and analysed. Together, these actions improved the interview schedule's dependability and ensured that the information gathered accurately reflected respondents' views and experiences with regard to the use of ICT in the teaching of Kiswahili grammar in Mumias West Sub-County's public secondary schools.

3.8.2 Validity of research instruments

The study endeavoured to validate the Content of the research instruments. Validity is the degree to which the instrument measures data and generates scores which the researcher infers to conclude the research tool. It is the extent to which a measuring instrument provides adequate coverage of the investigative questions that guide the study (Pandey and Pandey, 2021). If therefore, the instrument happens to contain a representative sample of the universe of the subject matter of interest then its content validity would be said to be good, and the converse could be true.

Content validity was by seeking the opinion of experts. The instruments were presented to experts of education who were conversant with the area of study to judge whether the instruments adequately covered the required content area or adequately represented the construct of interest. The instruments were then revised to ensure they captured the required data. The study concluded that the research tools were valid and proceeded to collect the data from the sampled public secondary schools in Mumias West Sub-County.

3.9 Data Collection Procedures

According to Martin, Mullis and Hooper (2017), the collection of data is a process of obtaining data for a given research study. This study collected the data using self-administered questionnaires from the Kiswahili teachers and the learners. Each

questionnaire had a cover letter that explained the objective of the survey to assure respondents of the confidentiality of their responses. A follow-up was made to the administered questionnaires to enhance the response rate. These questionnaires were administered to respondents of the two categories and were collected then the data was edited carefully for purposes of correcting and adjusting any omissions, inconsistencies, irrelevant answers and wrong computations from the survey. Heads of Kiswahili department were interviewed using an open-ended questionnaire as contained in the interview schedule. Professional documents such as the syllabus, the schemes of work, records of work covered and the lesson plan provided data on the integration of ICT in Kiswahili teaching and learning preparation.

3.10 Data Analysis

This study collected both quantitative and qualitative data. The quantitative data was analysed with the aid of Statistical Package for Social Sciences (SPSS) Version 25. To check if there were any significant connections between the dependent and independent variables, a Pearson correlation analysis was used. To find out the level to which integration of ICT in teaching and learning Kiswahili grammar could be predicted by the dependent variables, regression analysis was undertaken. Descriptive data was presented using tables and figures. Qualitative data was grouped manually into themes relating to the integration of ICT in developing skills in grammar among learners in Mumias West Sub-County. Qualitative results were presented as direct quotes from participants or as narrations. These results were finally triangulated with the quantitative data.

3.11 Ethical Considerations

The study observed professional research ethics. This was an object to avoid issues arising from ethical concerns. Participation of the sampled respondents was voluntary, hence no adverse consequences for those who chose not to take part in the study, at any stage of the study. The raw data from the field were kept confidential and only the researcher could access it. For data stored on a PC, the file was encrypted by a password to make it accessible only to the researcher. Permission was sought from the School of Graduate Studies of Moi University before the commencement of research. Thereafter, the researcher applied for a research permit from the National Commission for Science, Technology and Innovation (NACOSTI).

All participants were assigned an alpha-numeric code that was used to compile and organize all subsequent data. The data collected were organized and packaged in the form of a thesis. The study results would be accessed by curriculum developers, scholars, teacher education management, teacher trainees, college tutors, and researchers in the field of Educational Communication. Anonymity and confidentiality were salient throughout the research process.

A plagiarism check was done by CERMESA –Moi University; the antiplagiarism certificate is attached as appendix X.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter covers detailed data analysis, presentation, interpretations and discussions. First, statistical and qualitative methods are used to ensure the data is accurate and reliable. The data is then clearly presented in tables, graphs and descriptions. The interpretation explains the meaning of the findings and connects them to the research goals and theories. Finally, the discussion compares the results with existing studies, pointing out important patterns and their wider implications for future research. The findings of the study have been presented as per the data collection instruments as follows; semi-structured questionnaires for teachers and students, structured interview schedules and a document analysis guide for heads of Kiswahili department.

4.2 Return Rate of Questionnaires

A total of 9 teachers and 9 Heads of Kiswahili department correspond to 100% respectively respondents in this study. However, for the students with a population of 5128 with a sample size of 361 according to Krejcie and Morgan's sampling table. The response rate was 88.9% (321) participated in this study and filled out their questionnaires.

4.3 Sociodemographic characteristics for the teachers

According to Table 4.1, 63.6% of the participating Kiswahili teachers were female and 36.4% male. Age distribution of the teacher was as follows: 50% were aged between 20 – 30 years, 36.4% were aged between 31 – 40, 9.1% were aged between

41 – 50 and finally 4.5% were aged between 51 –60. From the foregoing results on age distribution, the majority were youthful participants. Very few teachers were aged and nearing retirement. The majority of the teachers were female. It has been revealed that the communities served by the schools were largely rural at 59.1%, followed by suburban at 31.8% and lastly urban at 9.1%. Being teachers of secondary schools, it was revealed that 77.3% of Kiswahili teachers had a Bachelor's degree certification, 9.1% had a Master's degree certification, 4.5% had a Doctor of Philosophy degree certification and 9.1% had a Diploma certification an indication that all were qualified to teach Kiswahili in secondary schools. Moreover, it has been proved that the academic qualifications and professional training of teachers have a direct and positive bearing on the quality of teaching performance as effective teaching is determined by both subject matter knowledge and pedagogical skills (Mbito, 2013). Table 4.1 shows the findings.

Table 4.1: Kiswahili teacher's Sociodemographic characteristics

Sociodemographic characteristics		Frequency (n)	Percent (%)
Gender	Male	3	36.4
	Female	6	63.6
Age group	20 – 30	5	50.0
	31 – 40	3	36.4
	41 – 50	1	9.1
	51 – 60	1	4.5
Level of education	Bachelor's Degree	7	77.3
	Master's Degree	1	9.1
	Doctorate Degree	1	4.5
	Teacher college Diploma	1	9.1

4.4 The Level of Teacher Preparedness in Using ICT in Teaching

The first objective of this study sought to assess the teachers' level of preparedness in using ICT in teaching. The objective focused on the teachers' acquisition of ICT

skills for teaching, pre-service and in-service ICT skills acquisition by teachers, ICT programs and networking preparedness by teachers.

4.4.1 Teachers' acquisition of ICT skills for teaching

On the question of acquisition of ICT skills by teachers; 11.8% acquired skills from attending computer colleges, 38.2% of the respondents were self-taught and 20.4% from workshops and seminars and 29.6% from colleagues at work (school). Figure 4.1 presents the yes responses from the respondents.
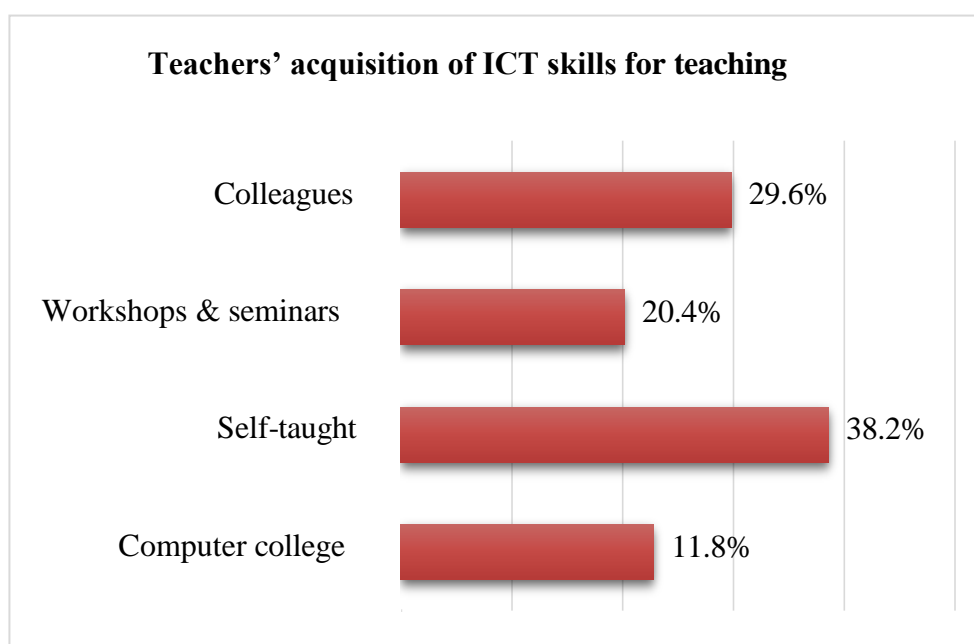
Figure 4.1: Teachers' acquisition of ICT skills for teaching

The study sought from the Heads of Kiswahili department provided important information on ICT skills acquisition by Kiswahili teachers. Three themes emerged: ICT workshops and seminars, computer colleges and skill acquisition from colleagues/own effort. One of the key informants said that

> "…Teachers are taken through workshops and seminars for ICT induction."

Another one said that:

> "… Some teachers acquire basic ICT skills by attending computer colleges."

Also, another key informant said that:

> "…Teachers who are ICT skilled have been helping those who are not trained in ICT to apply it in school, especially resource sharing and emailing. This is normally done by young enthusiastic teachers."

4.4.2 Pre-service and In-service ICT skill acquisition by teachers

It was observed that 42.9% of the teachers acquired ICT skills through in-service training and 57.1% from pre-service training. Figure 4.2 illustrates the findings.

ICT skills acquisition time

In-service 42.9%

Pre-service 57.1%
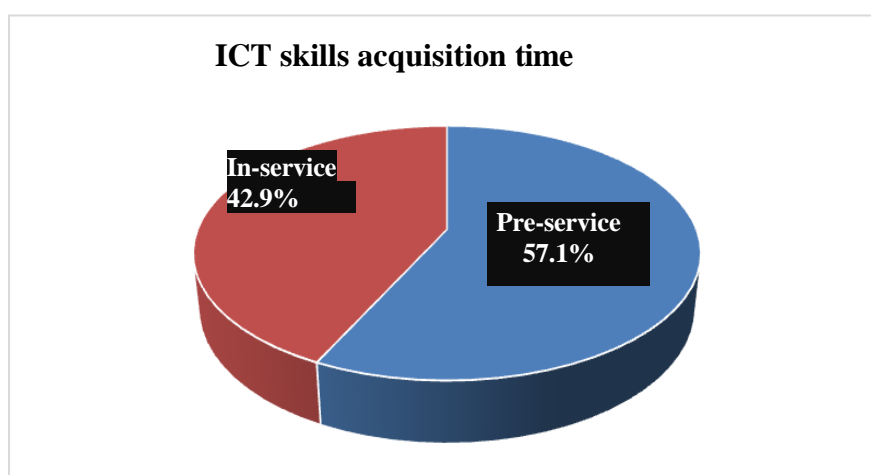
Figure 4.2: ICT skills acquisition time

4.4.3 ICT programs and networking preparedness for teaching

On the question of teachers' ICT programs and networking preparedness for teaching, it was revealed that 31.8% of the teachers were prepared to use Word programs to teach grammar and 27.3% were prepared to use PowerPoint for teaching grammar. It was also revealed that 54.5% of the teachers were prepared to use the internet to facilitate teaching. Findings are presented in Table 4.2.

Table 4.2: ICT programs and networking preparedness for teaching

ICT programs and networking preparedness for teaching		Frequency (n)	Percent (%)
Word	Not prepared	6	68.2
	Prepared	3	31.8
PowerPoint	Not prepared	7	72.7
	Prepared	2	27.3
Internet	Not prepared	4	45.5
	Prepared	5	54.5

Results are presented in frequency (n) and proportions (%)

Other gadgets used in class during Kiswahili lessons were radio lessons (27.1%), listening to recorded sounds on CDS and DVDS (15.3%) and finally, watching video clips that teach Kiswahili grammar during Kiswahili lesson period (57.6%). Findings are presented in Figure 4.3.
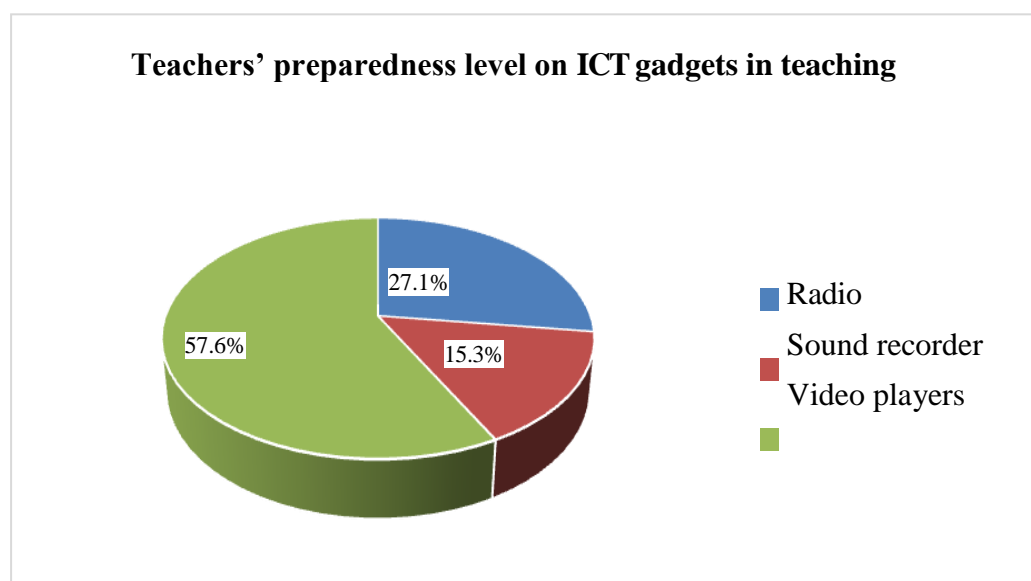
Figure 4.3: Teachers' preparedness level on use of ICT gadgets in teaching

4.4.4 Document analysis findings on the level of teacher preparedness in using ICT for teaching

Findings in Table 4.3 revealed that about 50 per cent of the teachers used ICT programs to teach selected topics in grammar such as composition writing, teaching speaking and listening skills. Prepare schemes of work. A third of the teachers were using ICT programs to plan for the lessons. Finally, ICTs such as computers were also used by the school administration to store examination records of the students'

exam analysis, and preparation of assignments and exams. Teachers kept manual

class records in their offices. Findings are presented in Table 4.3.

Table 4.3: Document analysis on the level of teacher preparedness in using ICT for teaching Kiswahili grammar

No.	Statement	Response
1.	Schemes of work are prepared using computer programs	Half of the teachers use ICT programs to prepare schemes for work
2.	Lessons are planned using computer programs.	About a third of the teachers use ICT programs to plan for the lessons.
3.	The record of classwork is stored on the computer.	Teachers use a manual system to store class work records (physical files) but exam-related records are stored in the computer.

4.5 The Use of ICT Tools in Teaching Kiswahili Grammar

The second objective of this study sought to assess the use of ICT tools in teaching

Kiswahili grammar in schools in Mumias West Sub-County.

On the question of how ICT tools are used for teaching grammar, it was revealed that

80.4% of the teachers were using online tuition and assignments to teach Kiswahili

grammar. It was also revealed that 71. 2% of the teachers used ICT to get revision

notes, quick revision skits to learn vocabularies and their pronunciations. Findings are

presented in Table 4.4.

Table 4.4: Use of ICT tools in teaching

Use of ICT in teaching		Frequency (n)	Percent (%)
ICT used for online tuition/ assignments	Yes	7	80.4
	No	2	19.6
ICT used for revision notes/sample exams	Yes	6	71.2
	No	3	28.8

4.5.1 Teachers' opinion on Integration of ICT in teaching Kiswahili grammar skills

This question sought to establish the impact of integrating ICT in learning. This study showed various integration of ICT in learning Kiswahili grammar in terms of Strongly Disagree, Disagree, Agree and Strongly Agree.

The study revealed that 31.8% agreed and 22.7% strongly agreed that ICT was effective for teaching grammar. However, 31.8%, disagreed and 13.6% strongly disagreed with the statement. It was revealed that 36.4% of the respondents agreed and strongly agreed respectively that there was a positive impact on academic achievement through ICT in teaching grammar. Alternatively, 18.2% disagreed and 9.1% strongly disagreed with the statement. The study also revealed that 23.8% agreed and 42.9% strongly agreed with the use of ICT in developing learners' interpersonal skills. However, 23.8% disagreed and 9.5% strongly disagreed with the statement. The study showed that 42.9% agreed and 33.3% strongly agreed that ICT had a role in improving learners' critical thinking. However, 14.3% disagreed and 9.5% strongly disagreed. The study also revealed that 36.4% agreed and 31.8% strongly agreed ICT helped in the development of communication skills. Conversely, 22.7% disagreed and 9.1% strongly disagreed with the statement.

The study showed that 22.7% agreed and 40.9% strongly agreed that ICT was seen as a motivator for learners. However, 18.2% disagreed and 18.2% strongly disagreed. The findings have revealed that 36.4% agreed and 27.3% strongly agreed ICT enhanced the flexibility of teaching approaches. However, 27.3% disagreed and 9.1% strongly disagreed with the statement. The study showed that 36.4% agreed and 31.8% strongly agreed that ICT was recognized as a valuable instructional tool.

Conversely, 22.7% disagreed and 9.1% strongly disagreed with the statement. The findings are shown in Table 4.5.

Table 4.5: Teachers' Opinions on Integration of ICT in teaching grammar skills

Integration of ICT in learning	Strongly Disagree		Disagree		Agree		Strongly Agree	
ICT is effective for teaching grammar	1	13.6%	3	31.8%	3	31.8%	2	22.7%
ICT has positive academic achievement	1	9.1%	2	18.2%	3	36.4%	3	36.4%
ICT develops learners' interpersonal skills	1	9.5%	2	23.8%	2	23.8%	4	42.9%
ICT improves learners' critical thinking	1	9.5%	1	14.3%	4	42.9%	3	33.3%
ICT develops communication skills	1	9.1%	2	22.7%	3	36.4%	3	31.8%
ICT motivates learners	2	18.2%	2	18.2%	2	22.7%	4	40.9%
ICT has flexible teaching approaches	1	9.1%	2	27.3%	3	36.4%	2	27.3%
ICT is a valuable instructional tool	1	9.1%	2	22.7%	3	36.4%	3	31.8%

Results presented in frequencies (n) and proportions (%)

The study also corroborated the opinion of the KII regarding the integration of ICT tools in teaching Kiswahili Grammar. Four themes emerged i.e., the impact of ICT teaching approaches, ICT teaching and learning flexibility, the value of ICT as an instructional tool and the limitation of the use of ICT as an instructional tool.

According to the impact of ICT teaching approaches, it was revealed in this study where the KIs said that:

> "… The use of audio-visual technology is appealing to the teachers and the learners."

Another one said that:

> "… Teaching is easier since in most cases it is self-explanatory and thus easy to comprehend."

Regarding ICT teaching and learning flexibility, it was revealed that:

One of the KI said that:

> "… ICT integration helps learners collaborate in class and encourages group discussions, which improves interpersonal skills."

Another key informant added that:

> "… The use of ICT in schools makes teachers and learners proactive and eager to use the technology."

Regarding the value of ICT as an instructional tool, it was said by one of the key informants that:

> "… Use of ICT as an instructional tool is valuable as it makes teachers confident and competent as well."

Another one said that:

> "… ICT integration in Kiswahili grammar lessons fits well with modern teaching approaches such as virtual learning as it promotes learner-centred teaching approaches."

Finally, regarding the limitation of the use of ICT as an instructional tool, it was said that:

> "… Word programs and PowerPoint are most preferred in teaching grammar due to their ease of access to them. Other ICT instructional materials like videos are mainly used in teaching oral literatures and Swahili play."

4.5.2 Availability of ICT resources in the classroom

On the question of the availability of ICT resources in the classroom learning experience, it was revealed by 50.9% of the teachers that the internet was available in the classroom, especially on smartphones. Moreover, 59.6% of the teachers noted that ICT instructional materials/equipment were available in classrooms. It was revealed by only 26.3% of the teachers of the availability of ICT equipped classrooms;

however, 45.6% of the classrooms have technical support available. The findings are

presented in Table 4.6.

Table 4.6: Availability of ICT resources in classrooms

Resources		Frequency (n)	Percent (%)
Classroom internet access	Available	5	50.9
	Not available	4	49.1
ICT instructional materials	Available	5	59.6
	Not available	4	40.4
ICT equipped classrooms	Available	2	26.3
	Not available	7	73.7
Technical support	Available	4	45.6
	Not available	5	54.4

Results presented in frequency (n) and proportions (%); n=9.

4.5.3 Document analysis of the use of ICT tools in teaching Kiswahili grammar

The inadequacy of infrastructure in public secondary schools surveyed in Mumias

West sub-county was the main reason for the poor integration of ICT in learning.

Public secondary schools surveyed did not have a clear indication of the integration

of ICT in teaching grammar skills, thus, it was difficult to detect its existence in the

professional documents. Table 4.7 illustrates the findings from document analysis.

Table 4.7: Document analysis on the use of ICT tools in teaching Kiswahili Grammar Skills

	Statement	Response
1.	Extent of technology integration in schools	Schools have inadequate infrastructure. However, ICT gadgets are fairly distributed among teachers. Most of the teachers had smartphones at school.
2.	Extent of ICT integration in syllabus coverage	Not clearly outlined the extent of ICT integration in developing Kiswahili grammar skills in the schemes of work and lesson plans from the schools surveyed

4.6 Learners application of ICT in learning

The objective sought to evaluate the familiarity of learners with ICT programs and the use of ICT in the classroom learning experience.

4.6.1 Learners' familiarity with ICT programs/apps and Internet connectivity

From the question of learner familiarity with the use of ICT programs; 22.7. % were familiar with the Word program and 40.9% were familiar with the PowerPoint program. The Question regarding internet connectivity, 86.4% of the learners had used the internet on computer systems and 90.9% had used the internet on smartphones/tablets. Findings are presented in Table 4.8.

Table 4.8: Learners' familiarity with ICT programs/apps and Internet connectivity

Learners' familiarity levels		Unfamiliar		Familiar	
		N	%	N	%
ICT programs/apps	Word	248	77.3	73	22.7
	PowerPoint	190	59.1	131	40.9
Internet connectivity	On computer	277	86.4	44	13.6
	On Smartphone/tablet	29	9.1	292	90.9

Results are presented in frequencies (n) and proportions (%)

4.6.2 ICT gadgets used for learning grammar

From the question of other ICT gadgets used for learning grammar, 10% had used television sets, 80.1% recorded video players, 21.5% had used computer programs and 66% had used smartphones/tablets to access learning materials. These findings are presented in Table 4.9.

Table 4.9: ICT gadgets used in learning

ICT gadgets used in classroom learning experience		Frequency	Per cent
Television	Never used	289	90.0
	Used	32	10.0
Video recorders and players	Never used	64	19.9
	Used	257	80.1
Computer & programs	Never used	252	78.5
	Used	69	21.5
Smartphones	Never used	109	34.0
	Used	212	66.0

Key informant opinion was sought and it indicated that Word and PowerPoint were the most popular programs used in teaching and learning Kiswahili grammar. Learners accessed the internet for learning via a few computers available in the computer lab for schools that had computers as an optional subject. Learners also accessed the internet on smartphones at home to access learning materials and assignments from school. School rules prohibited learners from carrying phones to school. Learners are familiar with ICT programs, apps and the internet. Some of the opinions were drawn from four themes i.e., Mass media (Radio and Television), Video recorders and players, Computer programs/internet services and Smartphones.

It was revealed according to the emerging themes that on mass media, KI said that:

> "… Radio is not common in classrooms therefore it is hardly used for education purposes"

Another one said that:

> "… Televisions are mainly used for specific set books to boost students grasping of Kiswahili grammar"

Regarding Video recorders and players, it was said by the KI that:

> "… Video recorders and players are used in teaching sounds: consonants, vowels (listening, speaking skills)"

Regarding Computer programs/internet services, the KI said that:

> "…Teaching writing skills e.g. word, sharing assignments, watching videos for assignments, researching topical areas."

Finally, regarding smartphones, the KI said that:

> "… Smartphones are used to help in research on content areas by teachers while in class, used for online tuition and assignments mostly during school holidays to keep learners engaged during their break."

4.6.3 Learner opinion on the integration of ICT in learning Kiswahili

The integration of Information Communication Technology (ICT) in education has been widely discussed and advocated as a means to enhance learning experiences and outcomes. However, the actual reception and acceptance of ICT integration among learners can vary significantly. The data from Table 4.10 provides a comprehensive insight into the opinions of learners regarding the integration of ICT in learning Kiswahili.

The study found that 65.4% (210 students), do not support the integration of ICT in learning Kiswahili, while only 34.6% (111 students) were in favour. This indicated some level of resistance or lack of interest towards adopting ICT as a learning tool.

It was also revealed that 69.1% (222 students) the integration of ICT into learning was not comforting, while only 30.9% (99 students) found ICT integration in learning comforting. Therefore, the majority (69.1%) of students felt uncomfortable using ICT in their learning Kiswahili grammar. The discomfort could stem from a lack of adequate training, insufficient access to ICT resources, or a general apprehension towards using technology for educational purposes.

A large proportion i.e., 81.5% (262 students) were in disagreement with the statement on whether they perceived advantages to using ICT in learning; only 18.5% (59 students) agreed with the statement. This showed that there could be a significant gap in recognizing the potential benefits of ICT in education, especially in teaching grammar such as Kiswahili.

The students were still preferring the use of traditional learning methods as agreed by 70.1% (225 students) who preferred using textbooks over ICT tools for learning Kiswahili. Conversely, only 29.9% (96 students) favoured the use of ICT in teaching-learning Kiswahili grammar. This strong inclination towards textbooks suggested that learners were more comfortable with conventional methods of learning. It also indicated a potential challenge in shifting educational paradigms towards more technology-integrated approaches. Table 4.10 presents the findings.

Table 4.10: Learner opinion on the integration of ICT in learning Kiswahili

Student Opinion		Frequency (n)	Percent (%)
Learners support the integration of ICT in learning.	Yes	111	34.6
	No	210	65.4
It is comforting to integrate ICT into learning.	Yes	99	30.9
	No	222	69.1
There are many advantages to integrating ICT into learning	Yes	59	18.5
	No	262	81.5
Prefer textbook use over ICT use in learning	Yes	225	70.1
	No	96	29.9

Results are presented in frequency (n) and proportions (%); n=321

4.7 School Administration support towards ICT integration in teaching Kiswahili grammar in public secondary schools

This objective sought to determine the school administration's support towards ICT integration in schools from the teachers' opinions. The study a number of areas that the school administration supports in the integration and use of ICT in teaching

Kiswahili grammar. The study analysed its findings based on four agreement levels Strongly Disagree, Disagree, Agree and Strongly Agree.

This study found that 31.8% strongly agreed that the school administration encouraged the implementation of ICT in teaching. This was supported by 27.3% of the teachers who agreed with the statement. However, 31.8% of the teachers disagreed and 9.1% strongly disagreed with the same statement. It was revealed from this study that 40.9% of the teachers agreed and 31.8% strongly agreed that the school administration encouraged the development of ICT materials. Conversely, 27.3% of the teachers disagreed. Based on the provision of necessary ICT materials and equipment, it was revealed that 33.3% agreed and 28.6% strongly agreed that the administration provides the needed resources. Conversely, 23.8% disagreed and 14.3% strongly disagreed with the statement. It was revealed from these findings that 25% agreed and 35% strongly agreed that ICT was important in resource-sharing. However, 40.0% disagreed with the statement.

Findings in this study show that 36.8% agreed and 31.6% strongly agreed that the school administration provided technical support for ICT. However, 26.3% disagreed and 5.3% strongly disagreed with the statement. It was revealed that 15.0% agreed and 35.0% strongly agreed that the school administration facilitated ICT workshops and seminars to enrich the teachers with the skill and application. On the other hand, 40.0% disagreed and 10.0% strongly disagreed with the statement. The study further showed that 25% agreed and strongly agreed respectively that the school administration supported teacher professional development. On the same note, 35.0% disagreed and 15.0% strongly disagreed.

The study found that 28.6% of respondents agreed and strongly agreed respectively that the school administration provided the opportunities to try various ICT instructional tools. However, 38.1% disagreed and 4.8% strongly disagreed. Finally, it was revealed that 19.0% agreed and 28.6% strongly agreed that the school administration overall encouraged ICT implementation in teaching. However, 42.9% disagreed, and 9.5% strongly disagreed with the statement. Table 4.11 illustrates the findings.

Table 4.11: School administration support for ICT integration

Statement	Strongly Disagree		Disagree		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%
Encourages ICT implementation in teaching	2	9.1	7	31.8	6	27.3	7	31.8
Encourages development of ICT instructional materials	0	0.0	6	27.3	9	40.9	7	31.8
Provides the needed ICT material and equipment	3	14.3	5	23.8	7	33.3	6	28.6
ICT is important for resource-sharing	0	0.0	8	40.0	5	25.0	7	35.0
Provide ICT technical support to teachers	1	5.3	5	26.3	7	36.8	6	31.6
Facilitates workshops and seminars	2	10.0	8	40.0	3	15.0	7	35.0
Supports teacher professional development	3	15.0	7	35.0	5	25.0	5	25.0
Provides opportunities to try various ICT instructional tools	1	4.8	8	38.1	6	28.6	6	28.6
Encourages ICT implementation in teaching	2	9.5	9	42.9	4	19.0	6	28.6

Results are presented in frequencies (n) and proportions (%)

4.7.1 Perceived barriers by school administration to integration of ICT in teaching Kiswahili grammar in public secondary schools

The study investigated the perceived barriers to the integration of ICT in teaching Kiswahili grammar. This was achieved by assessing the time factor, internet

connectivity, hardware and software, technology support, technical know-how, availability of models/examples for effective use of the technology, effect of the internet on morality and availability of computerized Kiswahili curriculum. Table 4.12 summarises the findings.

Table 4.12: Perceived barriers by school administration to the integration of ICT in teaching

Perceived barriers by school administration to integration of ICT in teaching	Limits		Does not limit	
	N	%	N	%
Teacher ICT induction time	8	90.9	1	9.1
Internet connectivity	6	68.2	3	31.8
Unavailability of ICT infrastructure	8	86.4	1	13.6
Lack of technical support	8	86.4	1	13.6
Lack of technical know-how	7	79.9	2	20.1
Internet moral degradation of learners	7	81.8	2	18.2
Lack of computerized curriculum	8	86.4	1	13.6

Results are presented in frequencies (n) and proportions (%)

The researcher sought to obtain key informants' insights on the school administration's support for the use of ICT for teaching in schools, focusing on the support provided by the school administration and the barriers potentially affecting the use of ICT in teaching, as guided by the National ICT Policy in Education of 2019.

From key informant interviews, it was noted that the school administration was at the forefront of encouraging ICT integration by promoting the development of ICT instructional materials. Some schools set aside a budget allocation towards the purchase of ICT gadgets and accessories to facilitate teaching and learning. Technical staff were hired on a need basis to offer technical services. Capacity building of

teachers was enhanced through the facilitation of workshops and seminars for teachers of Kiswahili.

The qualitative data revealed several barriers to the integration of ICT in teaching Kiswahili grammar in public secondary schools. One major barrier was the issue of teacher ICT preparation time. According to some KII responses, one of them said that:

> "…Technology in teaching is time-wasting among teachers with inadequate skills and knowledge."

However, another said that:

> "…Use of ICT integration in enhancing Kiswahili grammar skills is time-saving among the ICT expert teachers,"

This was echoed by another KII who said that:

> "…Use of ICT It is easier and faster thus promoting access to support materials and resources remotely."

Another significant barrier was the scarcity of ICT infrastructure. The key informant interviews indicated that:

> "… There are few ICT infrastructures in public secondary schools, which are majorly used to support mainly administrative duties, very few are used in teaching."

The lack of practical ICT experience among teachers was also said by the KI that:

> "… There is little measure of teachers' practical ICT experience to conduct ICT-enabled teaching."

Finally, the absence of a computerized curriculum was noted as a critical barrier. A KI respondent said that:

> "…There is hardly computerized grammar text in our school for teaching."

4.8 Pearson Correlation

To see if there were any significant connections between the dependent and independent variables, a Pearson correlation analysis was used. All of the

independent factors exhibited significant associations with, teacher preparedness r=0.796; teachers use of ICT tools, r=0.854; Learners' application of ICT, r=0.826; and school administration support, r=0.854. The researcher next carried out regression analysis to determine the extent to which the independent factors might predict the dependent variable as shown in Table 4.13.

Table 4.13: Pearson Correlation

Correlations		Level of teacher preparedness	Teachers use of ICT tools	Learners' application of ICT	school administration support	Performance in Kiswahili Grammar
Integration of ICT in teaching and learning Kiswahili Grammar	Pearson Correlation	.796**	.854**	.826**	.854**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	85	85	85	85	85
**.Correlation is significant at the 0.01level (2-tailed).						

4.8.1 Model Fitting

To find out the level to the Integration of ICT in teaching and learning Kiswahili grammar could be predicted by the independent variables, regression analysis was undertaken. This multivariate regression analysis results are presented in this section.

4.8.1.1 Coefficient of Determination

Table 4.14 show that the population from which the study sample was obtained could explain 85.8% variance in the Performance in Kiswahili Grammar.

Table 4.14: Coefficient of Determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate
1	.926[a]	.858	.851	.18580

a. Predictors:(Constant), school administration support, level of teacher preparedness, teachers use of ICT tools, Learners' application of ICT

b. Dependent Variable: The Integration of ICT in teaching and learning Kiswahili grammar

4.8.2 Analysis of Variance

Table 4.15 shows that the combined influence of the independent variables could statistically and significantly predict the Integration of ICT in teaching and learning Kiswahili grammar

Table 4.15: Analysis of Variance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.650	4	4.163	120.582	.000[b]
	Residual	11.095	317	.035		
	Total	27.745	321			

a. Dependent Variable: Integration of ICT in teaching and learning Kiswahili grammar

b. Predictors:(Constant),school administration support, level of teacher preparedness, teachers use of ICT tools, Learners' application of ICT

4.8.3 Regression Coefficients

The regression coefficient shows that all the independent variables could statistically predict Integration of ICT in teaching and learning Kiswahili grammar (P values <0.05). Standardized Beta Coefficients were also obtained as follows: level of teacher preparedness, β=0.409, t=6.550, p<0.05; teachers use of ICT tools, β=1.025, t=5.329, p<0.05; Learners' application of ICT, β=1.476, t=-5.365, p<0.05; school administration support, β=1.025, t=5.329, p<0.05). These findings indicate that an increase in level of teacher preparedness by 0.409; teachers use of ICT tools Level by 1.025; Learners' application of ICT by 1.476 and; school administration support by

1.025 would lead to increase in Performance in Kiswahili Grammar by 1 unit each.

Using the unstandardized coefficients, the fitted regression model was as follows:

Integration of ICT in teaching and learning Kiswahili grammar= *1.047 + 0.238* level of teacher preparedness + 1.000*teachers use of ICT tools* + 1.448** Learners' application of ICT + 1.000* school administration support +0.198.*

Table 4.16: Regression Coefficients

		Coefficients[a]				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.047	.198		5.289	.000
	Level of teacher preparedness	.238	.036	.409	6.550	.000
	teachers use of ICT tools	1.000	.188	1.025	5.329	.000
	Learners' application of ICT	1.448	.270	1.476	-5.365	.000
	school administration support	1.000	.188	1.025	5.329	.000

a. Dependent Variable: Integration of ICT in teaching and learning Kiswahili grammar

4.9 Interpretation and Discussion of Findings

This section is based on the objectives of this study.

4.9.1 Interpretation and discussion of the level of teacher preparedness in teaching using ICT

The first objective of this study sought to assess the teachers' level of preparedness in using ICT in teaching. The objective focused on the teachers' acquisition of ICT skills for teaching, pre-service and in-service ICT skills acquisition, ICT programs and networking preparedness by teachers in Mumias West Sub County.

The result revealed a rising tendency by 54.5% of the teachers who were using ICT in teaching using internet and all other search engines. This self-directed learning is

consistent with Pardede's (2020) assertion that teachers are gradually embracing the technological literacy perspective given that ICT is almost seamless to research and development processes. The ever-increasing availability of cheap smart mobile phones has also contributed to this development as teachers are able to acquire and appropriate minimum necessary IT skills on their own. This self-motivation is especially demonstrated in the young teachers; through the demonstration of much energy in the adoption of new technologies. Morat, Shaari, and Abidin stated in their work whereby these young teachers who belong to this generation are capable of improving the pedagogy results if appropriately supported with mentorship on how to incorporate ICT skills into teaching.

The study also highlights that 20.4% of teachers acquired ICT skills through formal workshops and seminars. Despite representing a smaller segment, this group underscores the critical role of structured training sessions in equipping educators with necessary ICT competencies. This finding resonates with Apeanti (2016) and Bhattacharjee & Deb (2016), who emphasize the importance of both pre-service and in-service training in preparing teachers to integrate ICT effectively into their instructional methodologies. Workshops and seminars not only impart technical skills but also create a collaborative environment that fosters the exchange of ideas and experiences among educators.

Furthermore, 29.6% of teachers reported gaining ICT skills through peer participation in workshops and seminars. This peer-to-peer learning model is highly effective, as it facilitates the practical transfer of knowledge and ICT applications in teaching contexts. Ibieta et al. (2017) underscore that teachers' perceptions and readiness for ICT integration are significantly influenced by their colleagues. This communal

approach to professional development promotes a culture of continuous learning and mutual support, enhancing overall ICT integration in educational settings.

Computer training colleges play a crucial role in ICT skill acquisition, offering foundational training in Office Packages such as Word, Excel, PowerPoint, Publisher, Access, Emailing, and Internet. Such formal education provides teachers with a broad understanding of essential ICT tools crucial for their professional tasks. However, as Cuhadar (2018) points out, the skills acquired during pre-service training often prove insufficient for the effective integration of ICT into teaching. Therefore, continuous professional development and practical applications are necessary to bridge this gap, ensuring teachers are fully prepared to leverage ICT in their classrooms.

The launch of the national ICT policy in 2006 motivated many teachers and other government personnel to pursue and enrol in computer colleges across the country in order to get ICT skills (Omollo, 2011; Chege, 2014). This is consistent with the comments provided by 11.8% of instructors who received their ICT skills from computer colleges. During the period when the teachers learned ICT skills. It was found that 57.1 per cent of the teachers questioned acquired ICT skills during preservice, which is consistent with a study by Mahmud et al that suggests that pre-service training poorly prepares teachers for ICT use in the classroom (Cuhadar, 2018).

Teachers without previous ICT training 42.9%, took up in-service training to conform to the current ICT demands. The findings are in agreement with the Kenya national ICT policy of 2006 and 2019 that encourages ICT use in teaching at all levels of teaching from primary schools, colleges and universities (Omollo, 2011; Chege, 2014).In Mumias West Sub-County, about a-fifth of the teachers in public secondary

schools use smartphones to research Kiswahili grammar and pass the same information to learners. Thus, it means that the school management in conjunction with the Ministry of Education through their sub-county education office ought to support the program, especially research and development of ICT integration in learning.

As part of teacher preparation, key informant interviews reported that ICT use in preparing teachers' schemes of work was being utilized by 50 per cent of the secondary schools in Mumias West Sub-County. This adoption rate was facilitated by the availability of ICT infrastructure in at least half of the schools. The transition from traditional paper-based recording of schemes of work to using Word programs represented a significant shift, as the Word program not only eliminated paperwork but also enhanced the professionalism of the teachers. This shift towards digital documentation aligned with the observations of Okeh and Opone (2007), who emphasized the importance of ICT in supplementing and extending educational content in various forms.

The use of ICT in lesson planning, however, accounted for only about 33.3%, which was below average. This indicated that many teachers were not yet accustomed to online lesson planning compared to traditional methods. The preference for physical lesson planning could be attributed to the comfort and familiarity of working either at home or in school without the reliance on ICT tools. This observation is consistent with the findings of Apeanti (2016) and Bhattacharjee & Deb (2016), who noted the crucial role of structured training in familiarizing teachers with ICT integration in their instructional practices.

In addition to computer systems, teachers utilized various ICT gadgets in their teaching programs, such as recorded sounds and video clips. Radio programs were used by only 27.1% of the teachers, which could be due to the lack of radios in schools or the inconvenient timing of radio programs. The low usage of recorded sounds (15.3%) suggested that schools might lack audio players or that this method was not deemed reliable for teaching grammar. Conversely, video programs were preferred by 57.6% of grammar teachers, indicating that videos provided a more practical and engaging learning experience. However, the application of CDs/DVDs was also low (15.3%), possibly due to the unavailability of suitable Kiswahili grammar programs. These findings resonate with previous research by Morat, Shaari, and Abidin (2016), who emphasized the motivational impact of versatile ICT tools in the classroom.

The findings demonstrated that teachers in this study possessed ICT skills, supporting Shiundu and Omulando's (1992) assertion that relevant training is crucial for teachers as curriculum implementers. Regardless of how and when these skills were acquired, the moderate preparedness of teachers to use ICT amidst varying challenges highlighted their adaptability and willingness to incorporate technology. The use of Word, PowerPoint, and Internet programs for teaching underscored the presence of ICT in Mumias West schools. This situation is comparable to the findings of Mwapwele et al. (2019), who noted that teachers in South Africa were prepared to use ICTs in teaching despite facing financial, technical, and digital skills challenges.

4.9.2 Interpretation and discussion of the use of ICT tools in teaching Kiswahili grammar

The study set out to assess the use of ICT tools in teaching Kiswahili grammar in

public secondary schools in Mumias West Sub County. The research question generated was: How are ICT tools used in teaching Kiswahili grammar in Mumias West sub-county schools?

The outcome of the study, as presented in Table 4.3, highlighted that ICT was extensively used as an instructional tool by teachers in Mumias West Sub-County. Notably, 80.4% of the teachers utilised ICT to assign tasks and provide online tuition to learners, while 71.2% used ICT to give revision notes, conduct quick revision skits, and enhance learners' vocabularies and pronunciation. This high level of ICT use, despite resource limitations, indicated that teachers predominantly relied on smartphones to interact with learners, especially during school holidays. This practice was supported by key informant interviews, which revealed that limited ICT resources in schools often confined ICT systems to teachers' offices and laboratories (Miima, 2018). These findings were consistent with Naum (2017), who emphasized that resource limitations hindered the full integration of ICT in teaching and learning.

When exploring the effectiveness of ICT as an instructional tool for teaching Kiswahili grammar, the study found that 54.5% of teachers believed that ICT integration could significantly improve the efficacy and effectiveness of classroom learning. Teachers perceived numerous advantages in using ICT for teaching grammar skills, a sentiment echoed by Agyei (2021), who noted that although there were concerns about adequate support during implementation, the potential benefits of ICT in education were evident. However, the lack of comprehensive professional development for teachers, as highlighted by Mwangi and Khatete (2017), meant that many teachers were not fully prepared to integrate ICT effectively into their teaching practices.

The study also revealed that 72.7% of teachers observed a positive impact of ICT on academic achievement, suggesting that ICT motivated learners and improved their grammar skills. This finding was supported by Tchamyou et al. (2019), who identified ICT integration as a dynamic force in promoting grammar skills in Africa. Similarly, Ngavana (2018) pointed out that interactive ICT platforms helped learners with pronunciation, spelling, and understanding language patterns. Teachers noted that ICT fostered critical thinking and interpersonal skills among learners, with two-thirds agreeing on its role in developing these skills. This observation aligned with Francis (2017) and Abobo (2018), who highlighted the enhancement of speaking, reading, listening, and writing skills through ICT integration.

Moreover, 76.2% of teachers supported the notion that ICT boosted learners' critical thinking, indicating that the use of technology in teaching could prompt learners to advance their grammar skills. This was particularly relevant during the coronavirus pandemic of 2019, which necessitated a networked approach to learning (Li et al., 2018). The integration of ICT was seen to transform the teaching of Kiswahili language components, such as composition, grammar, and literature (Ashiono, 2016; Ratheeswari, 2018). Additionally, 68.2% of teachers observed that ICT use improved learners' communication skills, making the learning process more engaging and effective. This observation was supported by Omollo (2018), who found that tools like smartphones, e-books, DVDs, LCD projectors, and computers enhanced communication skills among learners.

The study also indicated that 63.6% of teachers found ICT to be a motivating factor for learners, as technology's attractiveness and convenience encouraged participation and engagement in the classroom. This was consistent with Grzeszczyk (2016), who

noted that ICT appealed to various learning modes and provided equal opportunities for learners. Despite recognising the benefits of ICT, the study found that infrastructure inadequacies in public secondary schools in Mumias West Sub-County hindered its full integration. Teachers acknowledged the significant advantages of ICT but cited the lack of infrastructure as a primary barrier to its effective use in teaching Kiswahili grammar skills. This finding aligned with previous studies by Mlambo et al. (2018), which highlighted similar challenges in the integration of ICT in educational settings.

4.9.3 Interpretation and discussion of the learners' application of ICT in learning Kiswahili grammar

This study sought to evaluate how learners use ICT in learning Kiswahili grammar. The research questions generated to address this objective were, how do learners use ICT in learning grammar? Which ICT programs/apps are learners familiar with? Do they have access to ICT tools for learning Kiswahili grammar?

The findings presented in Table 4.5 revealed that 77.3% of learners were familiar with the Word program, and 59.1% were familiar with PowerPoint. Despite this familiarity, only 13.6% of learners had used the Internet on computer systems, whereas 90.9% had accessed the Internet through smartphones or tablets. These findings indicated that while learners were technologically adept, their skills were not being fully translated into the classroom learning experience. This discrepancy could be attributed to barriers to ICT integration in learning environments, as noted in studies by Wanjiku-Omollo (2018), which highlighted the convenience of online assignments and the frequent use of smartphones for educational purposes.

Regarding the availability of ICT resources, 50.9% of teachers reported that internet access was available in classrooms, primarily through smartphones. This finding was consistent with Wanjiku-Omollo (2018), who observed that assignments could be conveniently shared online, and learners frequently used the internet on their devices for research and homework. However, the study also revealed that in half of the surveyed schools, computer laboratories were designated exclusively for computer studies, limiting access for learners not enrolled in these courses. Nyamekye et al. (2021) supported this observation, noting that ICT integration in instruction occurred sporadically due to inadequate infrastructure. Moreover, Muia (2021) emphasized that low levels of teachers' ICT literacy and insufficient ICT resources were significant barriers to effective integration in teaching and learning.

Furthermore, it was found that half of the schools had internet connectivity, typically in those with computer laboratories. While approximately two-thirds of the schools possessed instructional facilities supportive of ICT, classrooms were not sufficiently equipped for comprehensive ICT integration. This gap underscored the infrastructural challenges faced by schools, as identified in previous studies. The limited technological readiness of classrooms impeded the broader application of ICT in teaching and learning processes.

Learners' opinions on ICT integration revealed a mixed response. Only 34.6% supported ICT integration, 30.9% were comfortable with it, and a mere 18.5% recognized its advantages. Conversely, a majority of 70.4% preferred traditional learning methods using textbooks. This resistance to ICT integration was largely due to inadequate ICT resources, which discouraged learners from embracing new technologies. This finding aligned with the observations of Martha (2018) and

Ngavana (2018), who noted that insufficient ICT resources significantly hindered educational integration. Key informant interviews further revealed that while ICT was beneficial for teaching Kiswahili oral literature and plays, it was rarely used for grammar instruction, thereby reinforcing reliance on textbooks for grammar skills acquisition. This limited the potential of ICT to facilitate comprehensive grammar instruction, as teachers and learners predominantly depended on traditional resources.

4.9.4 Interpretation and discussion of school administration support for ICT integration in Kiswahili grammar

This study sought to establish the school administration's support for ICT integration in teaching Kiswahili grammar. The research question generated to address this objective was: Does school administration provide support towards ICT integration in teaching Kiswahili grammar?

The study indicated that in sixty per cent of the surveyed schools, the school administration played a key role in encouraging the implementation of ICT instructional technology in classrooms. This finding aligned with Dlamini and Mbatha (2018) and Picatoste et al. (2018), who emphasized the critical role of school administration in integrating ICT tools in education. Through effective leadership, school administrations assured teachers could engage in innovative practices and encouraged the integration of ICT in teaching and learning activities. However, the study also identified hitches in the effective implementation of ICT integration due to ill-equipped computer laboratories. Tenai (2017) noted similar challenges, attributing them to the administration's reluctance to integrate ICT in teaching and learning due to resource limitations.

Encouragement by the school administration was found to be essential for effective ICT integration in schools. Approximately three-quarters of the teachers acknowledged the support they received from the school administration in using ICT for teaching. Heads of Kiswahili departments concurred, stating that administrative support was central to teachers' use of ICT in teaching. About two-thirds of the teachers agreed that the school administration supported the provision of necessary ICT materials and equipment. This support was crucial for enabling classroom teaching and learning experiences and was seen as a main link to ICT integration in education. The importance of resource provision was echoed by Christensen et al. (2018), who pointed out that schools faced significant problems integrating ICT due to inadequate resources.

Technical support for the installation and operation of ICT equipment was also highlighted as important. Teachers did not necessarily undergo computer training, such as pre-service or in-service, to qualify for deployment in teaching. Therefore, the provision of extension services was crucial for effective ICT integration in classroom teaching and learning experiences. Buabeng-Andoh (2019) emphasized that school administrators' practical experience in advocating for ICT in the classroom was of grave importance. Furthermore, Ngavana (2018) corroborated that teachers were encouraged to acquire IT skills for teaching Kiswahili grammar skills. More than half of the Kiswahili teachers affirmed that they were given opportunities to share ideas on the use of ICT instructional technology in the classroom learning experience, indicating their interest in applying ICT in teaching.

The findings showed that technology-based professional training was provided for about half of the teachers surveyed. The study highlighted the technological change

influencing teachers' need to equip themselves with technical know-how on their own merit. This independent acquisition of technology skills was supported by Petterson (2018), who asserted that there had been increased interest among teachers in acquiring technology skills. Moreover, the school administration supported half of the surveyed teachers by providing opportunities to use various computer applications for instructional purposes. Key informant interviews revealed that technology application time in Kiswahili grammar skills limited ICT integration in learning, with some informants noting that technology could be time-wasting among low achievers, while others recognized its time-saving potential among ICT expert teachers. The study found that ICT integration in learning Kiswahili grammar skills facilitated easier and faster access to support materials, promoting an interactive learning experience.

ICT integration in Kiswahili grammar skills was relevant due to its role in imparting knowledge and skills among learners in secondary schools. Lessons with longer learning times became more convenient and friendly for both learners and teachers, mitigating boredom in the classroom. However, the study noted the inadequacy of ICT infrastructure in the surveyed public secondary schools in Mumias West Sub-County. This inadequacy inhibited the effective integration of ICT in Kiswahili grammar skills acquisition. According to the National ICT Policy of 2019, internet connectivity was a requirement for public secondary schools to integrate ICT in teaching and learning. Wanjiku-Omollo (2018) observed that teachers often used Google Meet classes during remote learning workshops on ICT integration. The use of digital media in teaching and learning, such as computers and internet-enabled gadgets, was central to achieving ICT integration (Mutegi, 2020).

Despite the importance of ICT infrastructure in aiding teaching and learning, the study found these resources to be inadequate. This scarcity of ICT infrastructure decelerated ICT integration in education and discouraged its application in Kiswahili grammar skills learning. The lack of technological support in public secondary schools further limited ICT integration. Teachers with ICT gadgets adapted faster to changing technological advancements, underscoring the importance of equipping teachers with technical know-how for effective ICT integration. However, internet connectivity raised concerns about morality, as unrestricted access to the internet could expose learners to harmful content. The study also noted the lack of a computerized Kiswahili curriculum, which limited online Kiswahili grammar skills learning experiences.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the research findings, draws conclusions from the findings and eventually makes appropriate recommendations and suggestions for further studies.

5.2 Summary of Research Findings

The purpose of this study was to investigate the integration of ICT in teaching and learning Kiswahili grammar in public secondary schools in Mumias West Sub County. Questionnaires were the main research tools used to collect quantitative data. Qualitative data was collected using interview schedules and a document analysis guide for this study. The information related to this study was also obtained from textbooks, teacher's professional records and Mumias West Sub-County Education office.

5.2.1 Summary of the level of teacher preparedness in using ICT in teaching Kiswahili grammar

The level of teacher preparedness in using ICT in teaching Kiswahili grammar focused on the teachers' acquisition of ICT knowledge and skills through various programs and networking. There were less than a quarter of the teachers who had gained their computer skills from attending workshops and seminars specifically designed for ICT integration in teaching and learning. This was the method that was favoured by the Heads of Kiswahili departments. Moreover, about a third of teachers learned about ICT integration and computer operations from colleagues knowledgeable in the technology. On the same strength, the study showed that

slightly above a third of the teachers acquired ICT skills through their efforts and personal initiatives. They indicated that most of the teachers received their ICT skills during pre-service training, while a few gained them through in-service training.

Notwithstanding the support for using computer resources for instructional purposes, the majority of the teachers did not utilize applications such as Word and PowerPoint for Kiswahili grammar lessons. Besides, more than half of the teachers agreed that they would use the Internet for classroom teaching. The use of the Internet was majorly necessitating lesson planning and researching whose practical application was varied across public secondary schools in Mumias West Sub-County. Approximately a fifth of the teachers used smartphones to research Kiswahili grammar and share the information with learners.

5.2.2 Summary of the use of ICT tools in teaching Kiswahili grammar

The study found that the use of ICT as an instructional tool was used by the teachers to give online tuition and assignments to learners and to give revision notes, quick revision and to sharpen learners' vocabulary and pronunciation. Also, the integration of ICT in teaching and learning is resource-based therefore, the classes had limited ICT enabled resources that could support its full integration in teaching and learning. The inadequacy of ICT infrastructure posed a challenge to its application in teaching and learning. Computer hardware and software were majorly found at the computer laboratories for schools with Computer Studies subjects.

The teachers felt that ICT was an effective tool for learning grammar considering ICT had a positive academic achievement, helped in the development of the learners' interpersonal skills and improved learners' critical thinking. Moreover, ICT helped develop learners' communication skills, motivated learners to learn grammar, had

flexible learning approaches and was a valuable instructional tool.

5.2.3 Summary of learners' application of ICT in learning

The study indicated that most learners were hardly familiar with the Word and PowerPoint Applications. However, most of the learners said that had used the internet on computers and smartphones/tablets. About half of the schools selected for this study had computer laboratories to enable computer studies practical and, in most cases, only learners who pursue computer studies were permitted into the computer laboratory. About two-thirds of the schools had instructional facilities that support ICT but the classrooms were not technologically equipped for ICT integration in teaching and learning. Moreover, it was revealed from learners' opinions that a third of the schools supported the integration of ICT in learning and were comfortable with ICT integration in learning. However, most of the learners were against the use of ICT in learning Kiswahili Grammar and preferred the use of textbooks.

5.2.4 Summary of the role of school administration on ICT integration in teaching Kiswahili grammar public secondary schools

School administration was striving to encourage the implementation of ICT in teaching. The school administration was encouraging the development of ICT instructional materials mainly and would fairly provide the needed ICT materials and equipment to the teachers. Moreover, most teachers that the school administration provided ICT technical support to teachers as a way to encourage the use of ICT in learning.

The study investigated the perceived barriers to the integration of ICT in teaching Kiswahili. It was revealed that they mostly limited integration due to time constraints, internet connectivity limitations, inadequacy of hardware and software, insufficient

technology support and technical know-how. The lack of technology support in the classroom and laboratory greatly limited the integration of ICT in learning and teaching Kiswahili grammar skills. Most participants said there was a negative side effect of the Internet on morality greatly limited the integration of the Internet in classroom learning and teaching. Moreover, the lack of a computerized Kiswahili curriculum greatly limited the integration of ICT in classrooms. The key informant's interview observed that execution of technical know-how among teachers need to be tried and practically executed to measure teachers' understanding and application of ICT in teaching and learning experience.

5.3 Conclusions

The study concluded that the teacher's preparedness in the use of ICT to support the process of teaching Kiswahili grammar in the Mumias West Sub-County is moderate but still growing. There is high proactivity among teachers in their learning processes and professional development workshops/seminars. The existence of ICT in schools has allowed preparation of schemes of work with ICT though the level of introduction of ICT in the actual lesson planning seems very low. Therefore, the findings indicated that teachers were prepared and were integrating ICT into the teaching practices gradually; this supports the significance of backup support and enhancement offered by the school administration.

The teaching of Kiswahili grammar in public secondary schools in Mumias West Sub-County had incorporated ICT tools widely with positive outcomes in consideration of the resource constraints. Thus, using ICT in the classroom, teachers ensured learners' active participation in assigning tasks, online tuition and carrying out the revision exercises, enhancing mastery of Kiswahili grammar among the

learners. The integration of ICT was perceived as a useful instructional intervention that engaged learners, enhanced problem-solving and supported learners' communication. However, the following limitations were found regarding the integration of ICT: inadequate infrastructure and inadequate comprehensive professional development to fully capitalize on ICT integration in the education systems thus implying that there is still much capacity to be achieved in enhancing education through the integration of ICT.

While the learners in Mumias West Sub-County were effectively able and ready to use ICT in their day-to-day lives, they were limited in how they could use the technology to enhance their understanding of Kiswahili grammar. Although most of the learners had basic ICT skills in Word and PowerPoint, nearly all the learners used their Smartphones to access the internet, this technological literacy was not fully utilized in classroom practices primarily due to inadequate technological enablers and physically limited access to computer laboratories. Even though there was some access to the Internet connection at the classroom level, there was limited use of ICT because of a lack of resources and inadequate computer-equipped instructing facilities. In addition, the reaction of the learners to the use of ICT in the teaching and learning process was mixed since the majority of them preferred traditional teaching and learning. This was because there was little access to ICT tools and most of the teachers relied on textbooks in the teaching of grammar.

School administration support is a vital component through which ICT can be integrated into teaching Kiswahili grammar in public secondary schools in Mumias West Sub-County because schools are constrained in terms of resources, findings revealed that sixty per cent of schools received administrative encouragement towards

implementing ICT instructional technology. The study also pointed out how these administrative support of ICT material and technical support are important. CT enhancement in education not only depended on the resources but the active engagement of the school authorities as well. Nonetheless, the major challenges that hamper the exploitation of ICT in teaching and learning Kiswahili grammar include poor ICT resources/ associations and the absence of a computerized curriculum about the Kiswahili language.

5.4 Recommendations

Based on the fact that there was a moderate preparedness among teachers in using ICTs to support the teaching of Kiswahili grammar in Mumias West Sub-County, there is a need for school administrators to work harder in increasing the intake of ICTs through follow-up professional development. This could entail the conduct of frequent, specialised ICT training and awareness creation programmes based on specific ICT usage in lesson preparation and delivery. Additionally, ensuring the availability and distribution of ICT resources and school infrastructures, such as more internet-connected devices and effective technical assistance will also increase teachers' capacity to teach ICT-supported lessons. Continued administrative support and maintaining ways in which the teachers can exchange ideas on possible implementations of ICT in teaching will be paramount in continuing and improving the regular use of ICT in education.

Considering the extent of improvement made by the use of ICT tools in teaching Kiswahili grammar in public secondary schools in Mumias West Sub County in light of the resource constraints, the following recommendations are made to solve the above limitation. School administrations and the policymakers in the area of

education should therefore seek to strengthen ICT support in education by acquiring more internet-supportive gadgets, proper internet connection, and other relevant technological support. Moreover, broad and ongoing staff development interventions should be developed and implemented in order to enable the teachers to effectively and efficiently utilize ICT tools and assets. These programs should embrace application skills in ICT, transformation in the methods of teaching and learning through the use of ICT among learners, problem-solving skills and communication skills among learners. Concerning these gaps in infrastructure and training, it is conceivable that the education system will be in a position to enhance the usage of ICT to enhance the pedagogy of Kiswahili grammar as well as other subjects.

The study suggests that educational stakeholders in Mumias West Sub-County should invest in ICT infrastructure to improve the integration of ICT in teaching Kiswahili grammar. This includes investing in computer facilities and internet connectivity in classrooms, increasing computer laboratories, and providing portable devices. Teachers should be trained on advanced ICT integration techniques, using workshops and training sessions to integrate ICT into lesson plans. A campaign to shift learners' attitudes towards ICT in education is also recommended, demonstrating its effectiveness through pilot programs and success stories. A comprehensive ICT curriculum for Kiswahili grammar should be developed and implemented, aligning with national education standards and incorporating interactive and engaging tools and applications. This will help students become more receptive to using technology in their learning processes.

The study recommends that educational stakeholders in Mumias West Sub-County invest in ICT infrastructure to increase ICT integration in Kiswahili grammar

instruction. This involves improving computer facilities and internet connectivity in classes, expanding computer laboratories, and offering portable devices. Teachers should be taught in advanced ICT integration approaches, such as workshops and training sessions for incorporating ICT into lesson planning. A campaign to change students' attitudes towards ICT in education is also proposed, with experimental programmes and success stories to demonstrate its usefulness. A complete ICT curriculum for Kiswahili grammar should be created and executed, with an emphasis on interactive and engaging tools and applications that correspond with national educational requirements. This will assist students become more open to using technology in their learning processes.

5.5 Suggested Areas for Further Studies

The study suggests further research to be done in the following areas:

i. Assessing the Long-term Effects of Specialized ICT Training Programs on Teachers' Integration of Technology in Kiswahili Grammar Instruction in Kakamega County, Kenya.

ii. Teachers gender influence on ICT integration in teaching Kiswahili grammar in public secondary schools in Kakamega county, Kenya.

iii. Investigate how Student Attitudes impact ICT Adoption in Learning Kiswahili Grammar in Mumias West Sub-County.

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APPENDICES

Appendix I: Kiswahili Teachers' Questionnaire

Thank you for considering completing this survey questionnaire. The survey instrument will not take more than 20 minutes of your time. I will request that you kindly take some time and fill this survey out honestly and accurately. The results will go a long way towards improving grammar in Kiswahili teaching in Kenya. Any information will be held in confidence. Thank you.

Clarification: The terms ―technology‖ and ―educational technology‖ used throughout the survey refer to an array of computer-based tools in current Kiswahili classrooms that might prove helpful in advancing student learning. These tools include but are not limited to, software (e.g., Word, PowerPoint, Excel,), hardware (e.g., interactive whiteboards, mobile phones, computers), and Internet applications/activities requiring high-speed processes using computerized data.

Section A: Demographic Data

1. What is your gender: Male [   ]   Female [ ]
2. Please choose the category that best indicates your age group.

    20-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51-60 years []

Other (please specify) _____

3. What type of community does your school serve?

    Largely rural   [ ]   largely sub-urban [   ]   largely urban [   ]

4. Indicate your level of education:

    Teacher college diploma Bachelor's degree   [   ]

    Master's degree   [   ]

Doctorate (Ph.D. or Ed. D)   [   ]

Other (please specify)_____

SECTION B: LEVEL OF TEACHER PREPAREDNESS IN USING ICT IN TEACHING

5. Where did you receive ICT training?

College [ ] Workshop/seminar [ ] Colleagues [ ] Self-taught [ ] Never trained [ ]

6. For the teachers with ICT training, when did you receive the training?

Pre-service [ ]   In-service [ ]

7. What is your preparedness level for the following ICT programs/applications?

Applications/Programs	Prepared	Not prepared
Word		
PowerPoint		
Internet		

8. How prepared are you when using the following gadgets to teach Kiswahili grammar?

ICT gadgets	Prepared	Not prepared
Radio		
Sound recorder		
Video recorder		

PART C: USE OF ICT TOOLS IN TEACHING KISWAHILI GRAMMAR

9. Do you use ICT when preparing and submitting class grammar assignments to learners?

Yes [ ]   No [   ]

10. Do you use ICT to teach vocabulary and pronunciation to learners?

Yes [ ]   No [   ]

11.   Integration of ICT in teaching grammar skill

What is your agreement with the following statement on the integration of ICT in teaching Kiswahili grammar in secondary school?

No	Integration of ICT learning	Disagree	Agree
1	ICT is effective for teaching grammar		
2	ICT has positive academic achievement		
3	ICT develops learners' interpersonal skills		
4	ICT improves learners' critical thinking		
5	ICT develops communication skills		
6	ICT motivates learners		
7	ICT has flexible teaching approaches		
8	ICT is a valuable instructional tool		

PART D: LEARNERS APPLICATION OF ICT IN LEARNING GRAMMAR

12.   What are some of the ICT gadgets used for learning grammar?

ICT gadgets used in classroom learning experience	Used	Never Used
Radio		
Television set		
Video recorders and players		
Sound recorder		
Computer & programs		
Internet services		
Smartphones/tablets		

13.   What are some of the ICT resources that are available in your classroom?

Resources	Available	Not available
Classroom internet access		
ICT instructional materials		
ICT equipped classrooms		
Technical support		

14.   What is your opinion on the following statement on the integration of ICT in learning Kiswahili?

Statement	Agree	Disagree
Learners support the integration of ICT into learning.		
It is comforting to integrate ICT into learning.		
Many advantages are integrating ICT into learning.		
Prefer textbook use over ICT use in learning.		

PART E: SCHOOL ADMINISTRATION SUPPORT TOWARDS ICT INTEGRATION IN SCHOOLS

15. What is your agreement with the following statement on school administration support for ICT integration?

School administration support for ICT integration	Disagree	Agree
Encourages ICT implementation in teaching		
Encourages development of ICT instructional materials		
Provides the needed ICT material and equipment		
ICT is important for resource-sharing		

Provide ICT technical support to teachers.		
Facilitates workshops and seminars		
Supports teacher professional development		
Provides opportunities to try various ICT instructional tools		

16. Perceived barriers: Please rate how the following barriers would limit you from integrating technology in Kiswahili teaching at your school.

Perceived barriers by school administration to integration of ICT in teaching	Limits	Does not limit
Teacher ICT induction time		
Internet connectivity		
Unavailability of ICT infrastructure		
Lack of technical support		
Lack of technical know-how		
Internet moral degradation of learners		
Lack of computerized curriculum		

Appendix II: Learner's Questionnaire

Thank you for considering completing this survey questionnaire. The survey instrument will not take more than 20 minutes of your time. I will request that you kindly take some time and fill this survey out honestly and accurately. The results will go a long way towards improving Kiswahili grammar teaching in Kenya. Any information will be held in confidence. Thank you

PART A: Learners' application of ICT in learning grammar

1.   Learners' familiarity with ICT programs/apps and internet connectivity

Learners' familiarity levels	Familiar	Not familiar
Word		
PowerPoint		
Internet connectivity on the computer		
Internet connectivity on Smartphones/tablet		

2.   Have you ever used the following ICT gadgets used in learning grammar?

ICT gadgets used in classroom learning experience	Used	Never Used
Television set		
Video recorders and players		
Computer & programs		
Smartphones/tablets		

3. What is your opinion on the following statement on the integration of ICT in learning Kiswahili?

Statement	Agree	Disagree
Learners support the integration of ICT into learning.		
It is comforting to integrate ICT into learning.		
Many advantages are integrating ICT into learning.		
Prefer textbook use over ICT use in learning.		

Appendix III: Interview Schedule

Interview Questions for Heads of Kiswahili Department

NOTE: In each case, where technology appears, mention the type of technology you may be referring to.

1. How many years have you been heading this department at this school?

2. Where and how did you learn about various technologies?

3. Do you think your learners are familiar with ICT programs/apps/internet? If yes mention the technology available for learners at your school.

4. What is the impact of the ICT teaching approach?

5. Do you consider ICT teaching flexible?

6. What is the value of ICT as an instructional tool?

7. Do teachers in your school embrace ICT as an instructional tool?

8. How has the school leadership supported your department in using ICT in teaching?

9. What are the barriers that inhibit you from using technology in teaching?

Appendix IV: Document Analysis Guide (DAG)

Document

Technology Integrated

Schemes of work

Lesson plans

Records of work covered

Appendix V: Map of the Study Area

MAP OF MUMIAS WEST SUB COUNTY
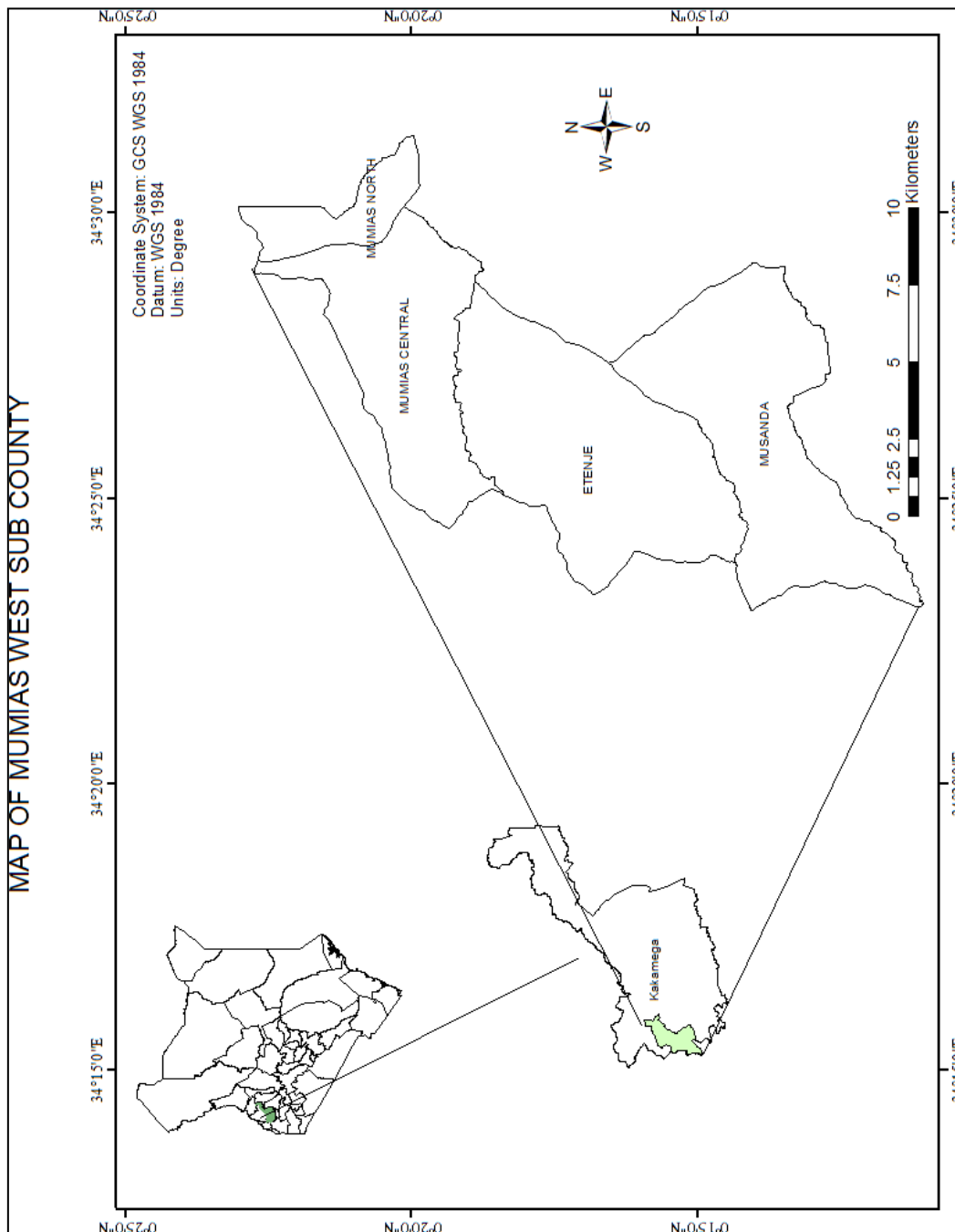
Appendix VI: Research Permit - NACOSTI

Verification QR Code

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

NOTE: This is a computer generated License. To verify the authenticity of this document,
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Date of Issue: **04/May/2022**

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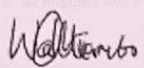
RESEARCH LICENSE

This is to Certify that Ms.. Dianah Shirakola Kisaka of Moi University, has been licensed to conduct research in Kakamega on the topic: Assessment of ICT integration in developing grammar skills of Kiswahili learners in public secondary schools in Mumias West sub-county, Kakamega County Kenya. for the period ending : 04/May/2023.

License No: **NACOSTI/P/22/17108**

819976

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Approved

SUB-COUNTY ADMINISTRATOR
MUMIAS WEST
P.O BOX
MUMIAS - 50102
8/6/2022

Appendix VII: Letter to the Sub County Director of Education – Mumias West

Dianah Shirakola Kisaka
P.O. Box 277 – 50102
Mumias

23rd May 2022

The Sub County Director of Education,
Mumias West Sub County
P.O.BOX, Private bag
Mumias

FORWARDED Noted

SUB-COUNTY DIRECTOR OF EDUCATION
MUMIAS WEST SUB-COUNTY
Date: 2/6/2022
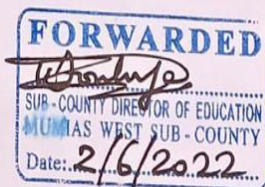
REF: REQUEST FOR APPROVAL TO UNDERTAKE RESEARCH ON ICT
INTEGRATION IN DEVELOPING GRAMMAR SKILLS OF KISWAHILI LEANERS
IN PUBLIC SECONDARY SCHOOLS MUMIAS WEST SUB COUNTY.

The above matter hereby refers.
I am a master of Education second year student at Moi University
I have been permitted to undertake the above research by NACOSTI as evidenced by the
attached license
I would like to seek the approval of your office to undertake data collection from Mumias West
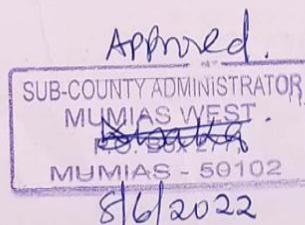Public Secondary Schools for the purpose of my education research
The exercise will be undertaken within a period of one Month.
Attached please find a copy of the NACOSTI research license.

Yours faithfully

Dianah Shirakola Kisaka
ID. NO. 14542108

PHONE: 0710946306.

Approved.
SUB-COUNTY ADMINISTRATOR
MUMIAS WEST.
MUMIAS - 50102
8/6/2022

Appendix VIII: Anti-Plagiarism Certificate

SR191

ISO 9001:2019 Certified Institution

EDU 999 THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

DIANAH SHIRAKOLA KISAKA

EDU/PGCM/1010/15

In recognition for passing the University's plagiarism

Awareness test for the thesis: **THE INTEGRATION OF ICT PRACTICES IN TEACHING AND LEARNING OF KISWAHILI GRAMMAR IN PUBLIC SECONDARY SCHOOLS, KENYA** with a similarity index of 10% and striving to maintain academic integrity.

Awarded by:

Prof. Anne Syomwene Kisilu
CERM-ESA Project Leader   Date: 13/06/2023