INFORMATION COMMUNICATION TECHNOLOGY INTEGRATION ON COMPETENCY BASED EDUCATION: A CASE OF SELECTED PRIMARY SCHOOLS IN KAJIADO NORTH SUB-COUNTY, KAJIADO COUNTY, KENYA

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A Thesis Report Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Master Education in the Department of Education School of Humanities and Social Sciences of Africa Nazarene University

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DECLARATION

I declare that this Thesis Report has my original work and has not been presented for a degree in any other university or award.

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This Thesis Report has been done under our supervision and submitted for examination with our approval as University Supervisors:

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DEDICATION

I dedicate this work to the Almighty God who has given me the strength to press on; my late parents, Joseph Gitau and Hannah Wanjiru and all my well-wishers for their excellent encouragement. May the Almighty God bless them.

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TABLE OF CONTENTS

DECLARATION i
DEDICATION ii
ACKNOWLEDGMENT iii
LIST OF TABLES viii
LIST OF FIGURES ix
LIST OF APPENDICES x
ABSTRACT xi
ABBREVIATIONS AND ACRONYMS xii
OPERATIONAL DEFINITION OF TERMS xiii
CHAPTER ONE 1
INTRODUCTION 1
1.1 Introduction 1
1.2 Background of the study 1
1.3 Statement of the problem 4
1.4 The Purpose of the Study 5
1.5 Objectives of the study 5
1.5.1 General Objective 5
1.5.2 Specific Objectives 6
1.6 Hypothesis of the study 6
1.7 Significance of the study 6
1.8 The Scope of Study 8
1.8.1 Geographical Scope 8
1.8.2 Content Scope 8
1.8.3 Time Scope 8
1.9 Delimitation of the Study 9
1.10 Limitations of the study 9
1.11 Assumptions of the Study 9
1.12 Theoretical Framework 10
1.13 Conceptual framework of the study 11
CHAPTER TWO 14
LITERATURE REVIEW 14
2.1 Introduction 14
2.2 Concept of Computer and ICT literacy 14

2.3 Empirical Literature Review 15
2.3.1 Availability of ICT Resources and Competency Based Education 15
2.3.2 Teachers Training in Information Communication Technology and Competency Based Education Implementation 16
2.3.3 School Administration's support in the use of Information Communication Technology and implementation of Competency Based Education 19
2.3.4 Influence of Information Communication Technology Integration towards the Competency Based Education Implementation 21
2.4 Summary of Literature Review and Research gap 22
CHAPTER THREE 24
RESEARCH METHODOLOGY 24
3.1 Introduction 24
3.2 Research Design 24
3.3 Research Location 25
3.4 Target population 25
3.5 Study sample and study sample size. 26
3.6 Data Collection Methods and Instruments 26
3.6.1 Questionnaire for Grade 9 Learners 27
3.6.2 Questionnaires for the Teachers 27
3.6.3 Key Informant Interview Guide 28
3.6.4 Piloting of Research Instruments 28
3.7 Validity and Reliability of Data Collection Instruments 29
3.7.1 Validity 29
3.7.2 Reliability 29
3.8 Data Collection Procedures 30
3.9 Data Processing and Analysis 31
3.10 Legal and Ethical Considerations 32
CHAPTER FOUR 33
DATA ANALYSIS AND FINDINGS 33
4.1 Introduction 33
4.1.1 Response Rate 33
4.2 Respondents' Demographic Information 33
4.2.1 Learners' Demographic Information 33
4.2.2 Teachers' Demographic Information 34

4.3 To examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County.. 36
4.3.1 Descriptive Statistics.....36
4.3.2 Inferential Statistics 38
4.3.3 Qualitative Data 38
4.4 To establish the influence of teachers training in ICT on Competency Based Education Implementation in primary schools in Kajiado North Sub-County. 39
4.4.1 Descriptive Statistics.....40
4.4.2 Inferential Statistics 41
4.4.3 Qualitative Data 42
4.5 To examine the influence of administrative support in integration of ICT in teaching and learning of Competency Based Education implementation in primary schools in Kajiado North Sub- County. 42
4.5.1 Descriptive Statistics.....42
4.5.2 Inferential Statistics 43
4.5.3 Qualitative Data 44
4.6 To determine the influence of ICT integration towards the Competency Based Education implementation in primary schools in Kajiado North Sub- County, Kajiado County, Kenya.45
4.6.1 Availability of ICT Resources 46
4.6.2 Teachers' ICT Literacy 46
4.6.3 Administrative Support in ICT 47
4.7 Hypothesis Testing.....47
CHAPTER FIVE.....49
SUMMARY, CONCLUSION, AND RECOMMENDATIONS 49
5.1: Introduction 49
5.2: Discussion of the Findings.....49
5.2.1 To examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County. 49
5.2.2 To Establish the Influence of Teachers Training in ICT on Competency Based Education Implementation in primary schools in Kajiado North Sub-County. 51
5.2.3 To examine the influence of administrative support in integration of ICT in teaching and learning of Competency Based Education implementation in primary schools in Kajiado North Sub- County. 52

5.2.4 To determine the influence of ICT integration towards the Competency Based Education implementation in primary schools in Kajiado North Sub- County, Kajiado County, Kenya.53
5.2.4.1 Hypothesis Testing.....55
5.3: Summary of the Findings.....56
5.3 Conclusion 58
5.4 Recommendations.....59
5.4.1 Areas of Further Research 59
REFERENCES 60
APPENDICES 71

LIST OF TABLES

Table 3.1 Sample Size Distribution 26
Table 3.2: Likert Scale of Measurement 28
Table 3.3: Reliability Statistics 30
Table 4.2: Teachers Demographic Characteristics 35
Table 4.3: Descriptive Statistics for Availability of ICT Resources 37
Table 4.4: Pearson Correlational Analysis Showing Relationship Between ICT Integration Indicators and the Competency Based Education Implementation 38
Table 4.5: Descriptive Statistics for Teachers Training in ICT 40
Table 4.6: Pearson Correlational Analysis Showing Relationship Between Teachers Training in ICT and the Competency Based Education Implementation 41
Table 4.7: Descriptive Statistics for Administrative Support in Integration of ICT 43
Table 4.8: Showing Relationship Between Administrative Support in ICT and the Competency Based Education Implementation 44
Table 4.9: Multilinear Regression Analysis 46
Table 4.10: Hypothesis Testing 47

LIST OF FIGURES

Figure: 1.1: Technology Acceptance Model (TAM).....11
Figure 1.2: Conceptual Framework.....12

LIST OF APPENDICES

APPENDIX I: LETTER OF INTRODUCTION 71
APPENDIX II: INFORMED CONSENT FORM 71
APPENDIX III: LEARNERS QUESTIONNAIRES 73
APPENDIX IV: TEACHERS QUESTIONNAIRE 74
APPENDIX V: INTERVIEW GUIDE FOR HEADTEACHER 77
APPENDIX VI: WORK PLAN: 78
APPENDIX VII: BUDGET 79
APPENDIX VIII: INTROCUTION LETTER FROM AFRICAN NAZARENE UNIVERSITY 80
APPENDIX IX: MAP OF KENYA SHOWING KAJIADO COUNTY 81
APPENDIX X: MAP OF KENYA SHOWING KAJIADO NORTH SUB-COUNTY 82
APPENDIX XI. INFERENTIAL STATISTICS 83
APPENDIX XIII: PLAGIARISM REPORT 88
APPENDIX XIV: NACOSTI LETTER 89

ABSTRACT

The study sought to investigate the influence of ICTs in Competency Based Education in primary schools in Kajiado North Sub - County. The study objectives were to examine the influence of the availability of ICT resources on Competency Based Education implementation in primary schools in Kajiado North Sub- County, to establish the influence of teachers training on ICT Competency Based Education implementation and to examine the influence of administrative support in integrating ICT in teaching and learning on Competency Based Education Implementation, and finally to determine the influence of ICT integration towards the Competency Based Education Implementation in primary schools in Kajiado North Sub - County, Kajiado County , Kenya. The study was guided by the Technology Acceptance Model (TAM). The study adopted descriptive survey research design. The study targeted 93 head teachers and 876 teachers across the 93 primary schools. The 93 primary schools have 2797 grade 9 nine learners. The 9 head teachers, 88 teachers and 280 learners was the sample size calculated by the researcher out of the target population as adequate for dependable results for interview and questionnaires respectively.

In objective one, findings indicated a high level of Availability of ICT Resources (Aggregate Mean=3.355, SD=0.798) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of a strong significant positive linear relationship between availability of ICT resources and Competency Based Education implementation in primary schools in Kajiado North Sub-County at a correlational coefficient r= 0.659*, P Value 0.017<0.05. In objective two, findings indicated a moderate level of Teachers' ICT Literacy (Aggregate Mean=3.011 0, SD=0.779) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of an average/medium significant positive linear relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub- County, at a correlational coefficient r= 0.439*, P Value 0.041<0.05.

In objective three, findings indicated a moderate level of administrative support in ICT (Aggregate Mean=2.818, S. D=0.792) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of a very strong significant positive linear relationship between administrative support in ICT and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.831**, P Value 0.000<0.01.

In objective four, the multiple regression analysis results indicate an adjusted R square of 0.682 which implies that ICT integration influence Competency Based Education implementation in primary schools Kajiado North Sub-County by 68.2%.

Based on the findings, it was recommended that; The school administration together with other administrators in the education sector they should provide ICT resources such as computers, reliable internet, reliable electricity and other resources to the primary schools for better Competency Based Education implementation. The education office at Kajiado North Sub-County together with Kajiado county should invest more on teachers' ICT literacy by encouraging and sponsoring more teacher to attend ICT organized seminars and enrolling in ICT related short courses. By having more teachers who are literate in ICT will lead to improvement in implementation of the Competency Based Education in primary schools.

ABBREVIATIONS AND ACRONYMS

ASAL:	Arid and Semi-Arid Lands
CAI:	Computer Assisted Instruction
CBE:	Competent Based Education
CBE:	Competent Based Curriculum
CBE CI:	Competent Based Education Curriculum Implementation
DESD:	Decade for Education for Sustainable Development
EFA:	Education for All
GOK:	Government of Kenya
ICT:	Information Communication and Technology
IT:	Information Technology
KPHC:	Kenya population and housing census
KNBS:	Kenya Nation Bureau of Statistics
KNSC:	Kajiado North Sub-County
MDA:	Millennium Development Goals
MIS:	Management Information System
MOEST:	Ministry of Education Science and Technology
NACOSTI:	National Council for Science and Technology and Innovation
NAMSIP:	Nairobi Metropolitan Structure Improvement Program
OHP:	Overheard Projects
PLC:	Professional Learning Community
PPSs:	Public Primary Schools
ROK:	Republic of Kenya
TAM:	Technology Acceptance Model
Teacup:	Technology Across the Curriculum Project
UN:	United Nation
UNESCO:	United Nations Educational, Scientific and Cultural Organization

OPERATIONAL DEFINITION OF TERMS

E-Learning: In this thesis E-learning refers to blended learning, which involves a mix of in-person training (with instructors in a classroom) and digital education.

Communication: In this thesis communication denotes the exchange of thoughts and information.

Computer: In this thesis computer is defined as an electronic apparatus that takes user input (data) and processes it according to a set of instructions known as programs to generate the expected output (information).

Curriculum: In this study the word curriculum denotes the educational content and lessons provided in a school or particular course or program.

ICT: In this study ICT refers to the Information Communication Technology

ICT education: In this thesis ICT education refers to the non-examinable subject in primary schools that introduces learners to computers and teaches them how to use these devices as tools for learning.

ICT Infrastructure: In this Thesis ICT Infrastructure refers to the essential process of developing information and communication technology systems, including hardware, software, ICT devices, and internet access, among other components.

Integration: In this thesis integration is defined as the consistent and effective use of different ICT tools in learning environments to enhance students' learning outcomes.

Internet: In this thesis internet is defined to mean the network that connects computers within the school, enabling communication and the sharing of resources.

Online learning: In this study online learning refers to learning experiences that take place through various electronic devices.

Technology: In this thesis Technology is the practical application of scientific knowledge to solve problems or to create useful products or solutions.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

According to Piper et al., (2015) Information Communication Technology (ICT) is an umbrella term that includes all technological tools, resources, and services used to create, store, manage, transmit, or manipulate information electronically. The term expresses the convergence of audiovisual and telephone networks with computer networks, enabling seamless digital data sharing and communication. KICD (2017) define Competency Based Education (CBE) as an educational approach which focuses on students demonstrating mastery of specific skills, knowledge, and abilities, rather than the time spent in a classroom. The approach is flexible, learner-paced system where students advance upon proving proficiency in a subject, allowing them to personalize their learning speed.

1.2 Background of the study

Globally, Information and Communication Technology (ICT) are increasingly being used in all spheres of development and operations including in the education sectors to ensure efficient and efficiency education systems (Bago et al., 2020). Accordingly, to DEP (2018) CBE curriculum implementation has challenges in many of the elementary schools in Kenya. As many of the learners from the low-income and rural areas schools do not have the same level of devices, internet bandwidth or modern computers for ICT implementation. The longitudinal study by (Morrison et al., 2019) it was revealed that worldwide it is recognized that efficient and effective learning process plays a crucial role in shaping personalities and influencing how people respond to life's challenges. In many of the elementary schools the transformation from theory learning to practical life skills-oriented learning has led to significant transformation. On the same note, the study by Maniar, (2019) it was revealed that implementation of the ICT curriculum in many of the elementary schools is a significant challenge due to insufficient teachers training. Many of the elementary school teachers are not well equipped with knowledge and skills on ICT integration in learning. Many of the teachers highly on how to use the ICT tools rather than on how to teach with the tools.

Consequently, UNESCO, (2020) in the contemporary competitive world, ICT education has become the basic need and a significant requirement for human survival, compared to clothes, food and shelter. The global rapid technological education shift has very highly impacted more

that 50% of the student population worldwide. In the landlocked countries in Eastern Europe and Central Asia (Kazakhstan) many of the elementary school's struggle with the implementation of the ICT education through the keeping of pace with the new ICT tools, platforms, even teaching practices. Many of the purchased technologies become outdated before they are fully implemented. This has made many of the governments have shifted to the provided printed materials and television broadcasts to support e-learning (Bakayev et al., 2021).

A competency-based education system is a system that rethinks the traditional system used to educate a child. It is a new system that switches from a seat time mandate to a competency mandate. Therefore, instead of requiring that a student meet a certain amount of time in a classroom seat in order to receive credit for the course, the student is simply required to demonstrate mastery of the subject in order to receive credit for the course. In other words, within this system, learning is seen as most effective when the student is not bound by a seat time mandate (Scully et al., 2021). The cross-sectional study by (Erumit, 2020) in Turkey, the implementation of CBE curriculum in the elementary (primary) schools has been a challenge to both the parents, teachers and the government due to poor ICT device management and maintenance. This is due to ICT device require constant upkeep by charging, repairing, monitoring usage, and updating software. On the other hand, kids' damages ICT devices more easily due to age.

Competency-Based Curriculum (CBC) is an approach to education that focuses on the acquisition of skills, knowledge, and attitudes that are relevant and applicable to real-world situations. According to Kemboi and Maina (2021), the CBC aims to develop learners who are not just knowledgeable but also capable of applying their knowledge and skills to solve real-world problems. CBC is designed to shift the focus of education from a content-centered approach to a skills-centered approach (Mwiria, 2017). As Bhatt and Sharma (2021) state, the CBC is a learner-centered and emphasizes the importance of learner agency, self-direction, and self-evaluation. CBC is based on a set of competencies that are predetermined and aligned with the needs of the society. These competencies are meant to be measurable, observable, and achievable by learners (Kemboi & Maina, 2021).

The CBC is also designed to be flexible, allowing learners to progress at their own pace. The emphasis is on the mastery of competencies, not on the amount of time spent in the classroom (Bhatt & Sharma, 2021). As Mutisya (2019) notes, the CBC allows for a variety of teaching

and learning approaches that encourage learners to be more active and engaged in the learning process. According to the study by (Delcker & Ifentheler, 2020) in Germany it was revealed the need for the vocational school teachers to have a strong leadership with clear plans, dependable technological infrastructure, and sufficient teacher competencies to identify and employ digital teaching tools. In Ireland, teachers displayed positive attitudes toward technology and felt that digital learning approaches in their schools reflected recommended best practices (Scully et al., 2021). Recognizing the role of ICT in education, Malaysia's Education Blueprint (2013–2025) strengthened ICT integration within primary and secondary curricula (Ghavifeker et al., 2019).

In Kenya, the policymakers view ICT in education as an enabler for knowledge acquisition leading to innovation and skill development to address the challenges faced by the country's education system (Republic of Kenya, 2019). In line with Kenya's development blueprint Vision 2030, the education curriculum has been reviewed from the 8.4.4 system to a competency–based education (CBE). The vision of the competency-based education reforms is to equip learners with world – class standards and skills needed to thrive in the 21st century, such as digital literacy (KICD, 2017). To achieve this, the integration of ICT in the curriculum is emphasized in the teaching of every subject, a shift from the previous system, which did not include the integration of ICT in primary schools but only in secondary schools as an elective subject. The current pandemic forced education systems to face main challenges that raise fundamental questions about the future of education. Teachers have been forced to implement, during the closing of schools, an "emergency remote education," very different from planned practices such as distance education, e-learning, or b-learning, with very mixed results and the revelation of weakness in the system such as the digital divide, inequity or social injustice.

According to the descriptive study (Wanzala & Nyamai, 2018) it was revealed that since 2013 when Kenya launched a major initiative to supply laptops to all 1.2 million Grade One learners as part of its digital learning agenda, until now ICT implementation in primary schools is challenged. Accordingly, Keter Philemon Kibet (2023) in his study in Bomet Central Sub-county found out that 86.3% of primary schools lacked ICT laboratories or access to ICT facilities. On the same 82.1% of the primary schools had no functional libraries. The study by Julius Murithi and Jin Eun Yoo (2021) it was revealed that in broader national-level 87.7% of the public primary schools in Kenya lacked internet connectivity. About 70& of the teachers reported lack of projectors to display ICT-enhanced teaching in their schools, 73.5% of the teachers lacked access to laptops provided by the government for ICT teaching in primary

schools. According to the study by Stephen Christopher Mutembi and Emily Nyabisi (2023) in Kitui County it was revealed that 76.7% of the teachers have not been given any training in ICT integration in the CBE syllabus. Even those teachers who attended in-service training of ICT integration they lack pedagogical ICT integration skills. Julius Murithi and Jin Eun Yoo (2021) in their study found out that 44. 7% of the teachers did not use computers to prepare teaching materials, and 58.4% of teachers did not plan lessons integrating ICT.

Since the introduction of the competency-Based Education (CBE) in Kajiado North Sub-County primary schools, the comprehensive implementation has not been easy (KPSEA 2023). Many of the primary schools in Kajiado North Sub-County have inadequate CBE implementation infrastructures such as classrooms, well equipped computer laboratories, and special learning spaces required for CBE. On the other hand, there acute shortage of trained teachers, as76% of the public primary schools lacked internet connectivity, 48.6% of the primary school's lack ICT infrastructures. While 56.4% of the teachers had no enough training in ICT integration in the Competency Based Education implementation, and 71.6% of the teachers doesn't use computers to prepare teaching materials and planning lessons by integrating ICT. This makes the subcounty slow in the CBE implementation, specifically in primary schools (KPSEA, Report 2023). Therefore, it was from the background that the researcher wants to establish the influence of ICT integration on competency-based education implementation in primary schools in Kajiado North Sub-County, Kajiado County, Kenya.

1.3 Statement of the problem

In the education sector, the Competency Based Education is expected to transform education from teacher centered to child centered to enable the learners fit in the market place in the 21st century. The system functions smoothly from the basic through grade one to the senior school levels (Simba et al., 2020). The Competency Based Education implementation is expected to produce learners with relevant practical competencies, supported well by the trained teachers, adequate infrastructures and resources, and to be implemented smoothly and equitably across education systems while aligning with the Kenya's broader socio-economic goals (UNESCO, 2020).

According to the Kajiado Education office Report (2018) the use of technology for teaching and learning remains limited in 67% of the primary schools in Kajiado North Sub-County, 56% of the primary schools lacked ICT laboratories or access to ICT facilities, 48.6% have no

functional libraries, 76% of the public primary schools lacked internet connectivity, 48.6% of the primary schools lack ICT infrastructures (such as computers, projectors). While 56.4% of the teachers had no enough training in ICT integration in the Competency Based Education implementation. Therefore, 71.6% of the teachers doesn't use computers to prepare teaching materials and planning lessons by integrating ICT. This slow adoption of ICT threatens the delivery of quality education, particularly given challenges such as overcrowded classes, teacher shortages, and the inclusion of learners with special needs in Kajiado North Sub-County. According to KPSEA (2023) national Competency Based Education implementation index was 45.1% indicating room for stronger implementation and learning achievement despite the efforts of teachers Competency Based Education training, strategic planning and school leadership support, infrastructure expansion, adoption of leaner-centered pedagogies and county education initiative to build digital literacy and special needs handing still Competency Based Education implementations is low. If stronger implementation in Competency Based Education in Kajiado North Sub County is not improved, there is a likelihood that academic excellence, institutional influence, digital skills integration in the Competency Based Education may be hindered, hence the achievement of the Kenya's vision 2030 in education sector may be a great challenge. The other studies in Kajiado North Sub County did not seek the influence of ICT on Competency Based Education. The present study therefore sought to determine the influence of ICT integration on Competency Based Education implementation in primary schools in Kajiado North Sub-County, Kajiado County, Kenya.

1.4 The Purpose of the Study

The purpose of the study was to establish the influence of ICT integration on competency-based education implementation in primary schools in Kajiado North Sub-County, Kajiado County, Kenya. This included the aspects such as teacher's preparedness, availability of ICT resources, school leadership, and the extent to which ICT supports the effective delivery of the Competency Based Education and the realization of educational goals.

1.5 Objectives of the study

This research was guided by both the general and specific objectives

1.5.1 General Objective

The main objective of the study was to establish the influence of Information Communication Technology integration in Competency-Based Education (CBE) implementation in selected primary schools of Kajiado North Sub- County, Kajiado County, Kenya.

1.5.2 Specific Objectives

The study specific objectives were as follows;

(i). To examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County.

(ii). To establish the influence of teachers' ICT literacy on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County.

(iii). To examine the influence of administrative support in ICT on Competency Based Education implementation in selected primary schools in Kajiado North Sub- County.

(iv). To determine the influence of ICT integration towards the Competency Based Education implementation in selected primary schools Kajiado North Sub- County, Kajiado County, Kenya.

1.6 Hypothesis of the study

The study was guided by the following null hypotheses:

$H0_1$: There is no statistically significant relationship between availability of ICT resources and Competency Based Education implementation among the primary schools in Kajiado North Sub-County.

$H0_2$: There is no statistically significant relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub-County.

$H0_3$: There is no statistically significant relationship between administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

1.7 Significance of the study

This empirical study may be of much significance because it will provide the evidence-based insights on how technology such as ICT influences teaching, leadership and learning in public primary schools Kajiado North Sub-County and beyond. The findings and conclusion of the study may benefit multiple stakeholders in the education sectors such as the headteachers, teachers, grade 9 leaners, education policy makers, other researchers and academicians.

Primary School Headteachers: The study findings may help the primary school headteachers discover details regarding the effects of ICT on CBE implementation so that they can catalyze aid in maintaining effective ICT education initiatives. Through the findings of the study the school headteachers also can clearly understand their role as the school administrators in the active integration of the ICT in the CBE implementation in their specific primary schools.

Primary School Teachers: The primary school teachers being the direct user of the ICT equipment in classrooms will highly benefit as they be highly equipped with skills on how ICT supports learner-centre teaching which is the basic principle in CBE. The primary school subject teachers may be encouraging in the use of ICT tools for creativity, collaboration and problem solving. Through the study teachers will identify the ICT training needs and skills gaps in CBE implementations.

The Leaners: The grade 9 leaners being the ultimate beneficiaries of the ICT integration, the findings of the study will enhance their leaning out come by improving engagement, motivation, and understanding. it will support the individualized and self-paced learning. the learners will also be eager to build their digital literacy, critical thinking and creativity.

Education Policy Makers: The findings and conclusion of the study will be used by the education policy makers such as the ministry of education science and technology (MoEST) as it will be the foundational data to realize the weakness in CBE implementation and develop policies which can enhance the active ICT integration in the CBE implementations in Kajiado north sub county and other sub-counties in Kenya. The school administration in Kajiado North Sub-County and other areas might enhance their policies and refine best practices that led to strong performance outcomes in their schools.

Other Researchers and Academicians: After the completion of this empirical study, its findings and conclusions will be used to other researchers and academicians because it will add to the literature banks for future related studies. hence, it may be used by other future researchers and academicians to build their empirical literature their similar studies in different places. The findings and conclusion of the study will help other researchers and academicians in gaining access to new pedagogical tools and methods like e- learning platforms, it will necessitate and support teacher training and professional development, it facilitates greater collaboration and knowledge sharing among academicians both within and beyond their institutions.

The Researcher: The findings and conclusion of the study will improve the ability of the researcher to access and analyze educational data, leading to deeper insights to learning process, it will enable and faster and wider dissemination of research findings, will encourage the development of ICT related innovations and research, fostering a conducive environment.

1.8 The Scope of Study

1.8.1 Geographical Scope

The study was carried out in Kajiado North Sub-County which is located within Kajiado County. Kajiado County is located in the Rift Valley region, sharing its western border with Narok County, its northern border with Nakuru County, Kiambu County, and Nairobi, its eastern boundary with Machakos County, Makueni County, and Taita Taveta County, and its southern border with Tanzania. It spans an area of 21871.1 km². As per the 2019 Kenya population and housing census, the population stood at 1,117,840. It experiences a yearly growth rate of 5.5% and has a population density of 51 per square kilometer. The Kajiado North Sub-County has a total of 212 primary schools, in which there are 93 public primary schools, 109 private primary schools, plus 8 special units, 2 special schools (Kajiado North Sub-County Education Office, 2025). The rationale of choosing public primary schools in Kajiado North Sub-County is because of the deteriorating level of competency-based education implementation as indicated in the statement problem.

1.8.2 Content Scope

The study was to establish the influence of ICT integration in Competency Based Education (CBE) implementation in primary schools in Kajiado North Sub-County, Kajiado County, Kenya. The independent variable was ICT integration which was indicated by Availability of ICT facilities, teachers' ICT literacy level, and administrative support on ICT. The dependent variable was Implementation of Competency-Based Education (CBE) which was indicated by Teaching and learning, and the ease of online teaching aids such as charts & graphics. The study focused on these variables because none of them has been addressed among the primary schools in Kajiado North Sub-County. Hence creating a knowledge gap, so the findings of the study helped to bridge that gap.

1.8.3 Time Scope

The study focused on the research studies for the last 5 years from 2020 to 2025; this is because this is the period within the implementation of the CBE deterioration was realized among the primary schools in Kajiado North Sub-County. The study was carried out in 9 months from the time of approval of the proposal to the presentation of the research thesis (project).

1.9 Delimitation of the Study

The study's delimitation refers to the boundaries established by the researcher through deliberate decisions on what to exclude and include concerning the topic of interest (Simon & Goes, 2014). Delimitations are under the researcher's control. Numerous elements could affect the application of technology in the implementation of the Competency Based Education in primary schools within Kajiado North Sub-County. The key factors affecting technology use in primary schools in Kajiado North Sub-County are education, socio-economic status, attitudes toward technology, perceived advantages of technology, and access to technology. This research concentrated on the accessibility of technological resources, teacher training in ICT, and administrative support for technology use in Kajiado North Sub-County.

1.10 Limitations of the study

The study was limited to quantitative approach whereby the self-administered questionnaires were used which was intended to gather numerical data and it does not give any chance to the respondents to give out non-numerical data in terms of respondents' suggestions, opinions and recommendations regarding the problem understudy. In this the re researcher prepared interview guides which she administered to the school administrators to gather qualitative data which was used to support the quantitative data.

The study was limited to cross-sectional study targeting specific group of respondents within specific period of time and in specific area which primary schools in Kajiado North Sub-County, and any other primary school outside the geographical scope was not considered. Cross-sectional study does not give long term sequence of events in a wide geographical area. The study recommended for further studies to address the same content in different areas, and she supported the findings of the study with empirical literature from previous studies carried out in different places.

1.11 Assumptions of the Study

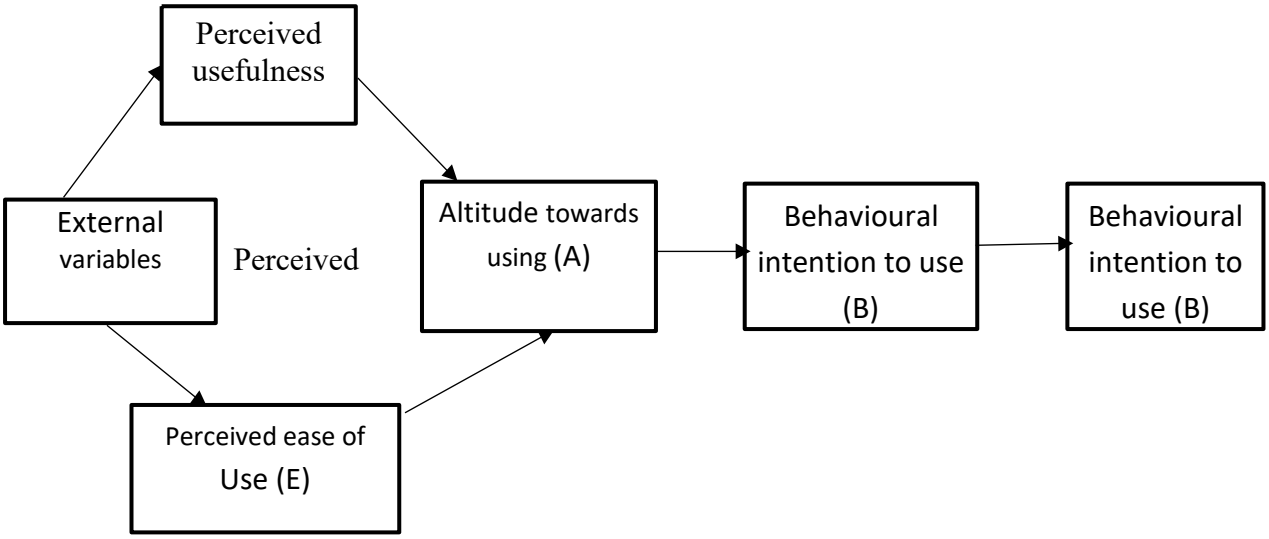
Simon (2011) clarifies that assumptions are foundational beliefs that the researcher acknowledges, yet are challenging to verify in any tangible manner. In other words, assumptions are perceived true facts that serve as realistic expectations essential for the study's relevance, as they form the foundation of the research. The research presumed that every primary school teacher in Kajiado North Sub-County has access to fundamental computer skills. The study posited that ICT facilities are accessible, that teachers are knowledgeable about them, and that they possess strong content and pedagogical skills, which made the implementation of the Competency Based Education in primary schools in Kajiado North Sub-County a reality. Information Communication Information and Competency Based Education are connected in that Information Communication Education is necessary for integrating the Competency Based Education.

1.12 Theoretical Framework

The study used Technology Acceptance Model theory (TAM) developed by Fred D. Davis in (1989). According to Davis (1989) the TAM theory states "that peoples' intention to use a technology and ultimately their actual use is driven by perceived usefulness perception (the degree of which a person believes that using a particular technology will improve their performance) and perceived ease of use perception (the degree to which a person believes that using the system will be free of the efforts)". The theory explains that if the user think that a system will help them do their job better, faster and more effectively, they will accept it. If the system is easy to learn and operate users will willingly adopt it. This theory aids in assessing the perceived utility and simplicity as indicators of a user's intention to utilize ICT. Davis et al. (1989) interpreted that technologies such as computers are intricate, leading to ambiguity in people's perceptions regarding their effective utilization: individuals develop attitudes and intentions toward attempting to learn technology usage. This research focuses on the role of ICT in primary education within the Kajiado North Sub-County. The educators might have been exposed to ICT for instructional purposes and, as a result, could have developed varying attitudes about incorporating ICT into their teaching methods.

The appropriateness of the TAM (Technology Acceptance Model) for forecasting teachers' acceptance in instruction needs to be investigated. The Technology Acceptance Model (TAM) is a theory in information systems that explains how individuals accept and utilize a technology. The real system utilization is the point at which individuals engage with the technology. The attitude (A), which is the overall perception of the technology, influences the behavioral intention (BI). The Acceptance Model posits that the aim of this theory offers an explanation

for the factors influencing computer acceptance that is comprehensive, able to clarify user behavior across a wide array of end-user computing technologies and user groups, while also remaining both concise and theoretically sound (Davis et al. 1989, p. 985). The Technology Acceptance Model (TAM) suggests that two elements influence the acceptance of a computer system by potential users: (1) perceived usefulness and (2) perceived ease of use. The main aspect of this model is its focus on how the potential user perceives things. The model diagram illustrates the process teachers follow when integrating ICT in the Competency Based Education. The weakness of the Technology Acceptance Model is that, factors influencing acceptance vary across different societies and cultures. Secondly, Technology Acceptance Model focus on perceived usefulness and ease of use neglects other important factors that influence technology adoption, such as social influence and system compatibility. The model is not robust enough to explain user's about buying, rejecting or accepting to use technology.



Source: Davis, Bagozzi, and Warshaw (1989)

Figure: 1.1: Technology Acceptance Model (TAM)

1.13 Conceptual framework of the study

A conceptual framework is a representation model that illustrates the connections between variables in the research and displays the relationships visually or through diagrams (Orodho, 2009). A well-defined conceptual framework can aid researchers in interpreting later findings (Johnson & Christensen, 2012). Creswell (2014) considers the conceptual framework as a study aimed at enhancing awareness and comprehension of the situation being examined. Creswell additionally believes that when articulated, a conceptual framework can serve as a valuable

instrument to help a researcher understand the significance of later discoveries. Figure 1.2 illustrates the conceptual framework for the proposed study.

Independent Variables

ICT Integration

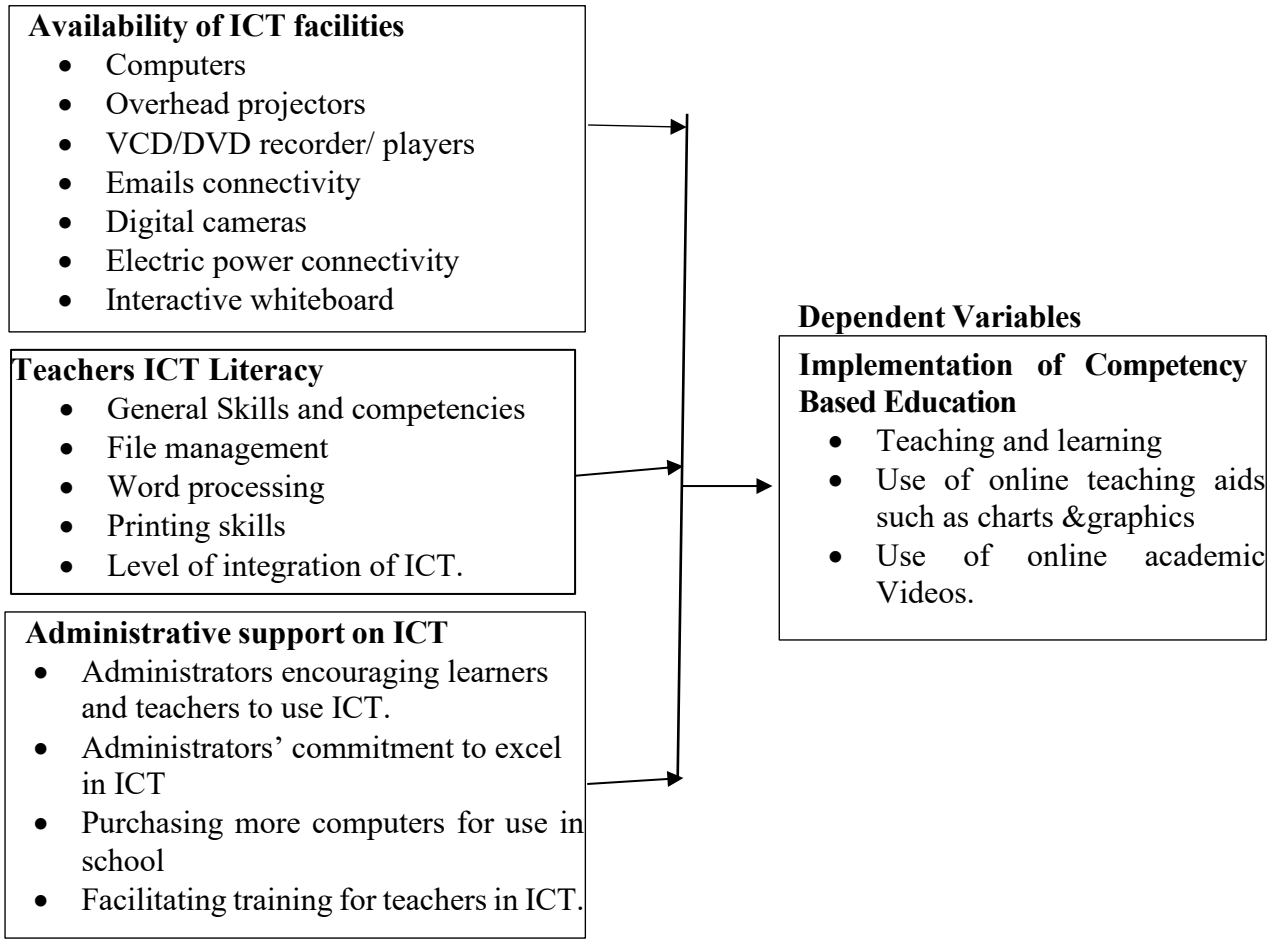


Figure 1.2: Conceptual Framework

This diagrammatic representation illustrates the interaction between assumed elements affecting ICT integration in education. The three independent variables were designed to have a significant and related impact on the degree of ICT integration in teaching and learning in primary schools located in Kajiado North Sub-County. In other terms, it was proposed that teachers' ICT skills, access to ICT resources, and administrative backing of ICT would affect the degree of ICT integration in education. Teaching in primary schools using ICT is shaped by various factors, some of which function independently (independent variables). As illustrated in Figure 1.2, the integration of ICT in private primary school instruction was influenced by both the school environment and the teachers. In this study, the independent variables include teachers' application of ICT in teaching as well as their ICT-related

knowledge and skills. The dependent variable is students' achievement when learning with ICT. According to Volman and Van Eck (2001), "the use of ICT creates a powerful learning environment and transforms the teaching and learning process, enabling students to engage with knowledge actively, independently, and constructively." Omollo (2013) similarly noted that ICT aims to make learning more effective and improve students' grasp of concepts, ultimately contributing to increased knowledge and better examination performance. Additionally, Anna (2012) pointed out that teaching methods have progressed beyond the traditional talk-and-chalk approach.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents the review of literature on the influence of ICT integration in Competency-Based Education (CBE) implementation in schools. The literature is presented in accordance with stated variables or objectives which are Availability of ICT facilities, teachers ICT literacy level, administrative support on ICT, and the Implementation of Competency-Based Education (CBE). The literature it covers both theoretical and empirical literature. This review of related literature consists of views and findings of different writers as documented in published empirical studies, books, encyclopedias and journals, with the aim of identifying the literature gaps.

2.2 Concept of Computer and ICT literacy

Beschorner and Woodward (2019) describe a computer as an electronic device that logically performs the tasks of data input, processing, and output. Foundational Computer Literacy Instruction is necessary before an individual can be effectively introduced to computer use. Despite this, scholars continue to debate the definition and measurement of computer literacy. Ngeno et al. (2020) define computer literacy as the ability to identify and operate computer hardware and software to accomplish a specific objective. In the same vein, Oluwatayo (2012) views computer literacy as the knowledge and skills an individual demonstrates when completing computer-based tasks. Bada et al. (2009) also regard computer literacy as the capability to instruct a computer and interpret its outputs. Although definitions vary, they collectively suggest that computer literacy involves operating a computer by inputting, retrieving, sending, and processing information. Ivancovic et al. (2013) further note that the term “ICT literacy” has increasingly taken the place of “computer literacy.”

According to Sulemana et al. (2018), although computer and ICT literacy are often used interchangeably and share similar meanings, ICT literacy is broader and more comprehensive, encompassing not only computers but also projectors, broadcasting systems, robots, mobile phones, satellites, radios, video equipment, and televisions. Consequently, computer literacy is seen as a foundational component of ICT literacy (Ivankovic et al., 2013). Sulemana et al. (2018) define ICT literacy as the ability to use digital technologies, networks, and communication tools to access, integrate, manage, create, and evaluate information in support of functioning within a knowledge-based society. Similarly, Tekyiwa and Asare (2016)

describe ICT literacy as the skills, knowledge, and abilities required to operate various technologies used for collecting, storing, editing, retrieving, and transferring information in multiple formats to meet educational, personal, and workforce needs. Kuskaya and Kocale (2010) argue that educators use ICT to create, distribute, share, store, or exchange information through technologies such as the internet, television, radio, telephones, videos, DVDs, computers, and satellite systems. From these definitions, it can be concluded that ICT literacy refers to possessing the knowledge, skills, and competencies needed to manage information for a targeted purpose.

2.3 Empirical Literature Review

2.3.1 Availability of ICT Resources and Competency Based Education

According to Oxford Reference, ICT involves the study and application of computers, telecommunication networks, and related devices used for storing, retrieving, and transmitting information (Oxford Reference, 2021). In recent years, increased mobile connectivity and broader access to digital devices have shifted policy emphasis toward developing pupils' digital skills (Trucco & Palma, 2020). Abuya (2019) notes that up-to-date ICT infrastructure and teachers' digital competence are essential conditions for adopting ICT in schools. The availability of ICT resources central to implementation also influences teachers' perceptions and attitudes toward integrating ICT in the learning process (Beri & Sharma, 2019; Kamaruddin et al., 2017; Nzwili, 2017; Sulemana et al., 2018). However, Nzwili (2017) warns that providing ICT resources without onsite technical assistance may lead to financial losses and wasted time when technical failures occur.

Rapid technological advancement and globalization have produced a knowledge-based economy in the 21st century. As a result, governments have invested in ICT integration across all levels of education to equip learners with skills needed for contemporary life and future work (Wambiri & Ndani, 2016). Despite these efforts, Latin American and Caribbean countries vary in their readiness to respond to crises through digital approaches (ECLAC, 2019; Trucco & Palma, 2020). Home access to ICT significantly shapes pupils' educational opportunities and determines the types of resources used during emergencies such as the COVID-19 pandemic. In Italy, emergency measures introduced in March 2020 provided digital platforms for distance learning, offered devices to disadvantaged students, and trained teachers in remote learning methodologies (Republic of Italy, 2020). Further funding was announced in May 2020 to address emerging needs at school and university levels (Republic of Italy, 2020). Although

governments worldwide have increased investments to expand access to digital devices in schools and homes, research shows that merely providing technology does not automatically improve academic performance (Escueta et al., 2017). Digital tools enhance learning primarily when used to complement traditional teaching by extending study time and improving student motivation (Peterson et al., 2018). Many countries now offer digital platforms and remote-access resources, often supported by ministries of education through online content and television or radio broadcasts. Still, few nations in the region have comprehensive digital education strategies that fully exploit ICT (Alvarez Marinelli et al., 2020). Despite progress in expanding digital access—particularly through mobile technology significant disparities in access to digital learning materials persist, affecting participation and learning opportunities. During the COVID-19 pandemic, e-learning tools proved essential in helping educational institutions maintain teaching and learning activities (Subedi et al., 2020).

In Kenya, Obota et al. (2015) examined ICT infrastructure in primary schools in Mumias sub-county, Kakamega County, finding that radios and computers were the main ICT tools. However, radios were insufficient, and the computer-to-learner ratio averaged 30:1, limiting teachers' ability to guide students in interactive computer-based lessons. Similarly, Mbugua et al. (2015) found ICT resources inadequate in primary schools in Nakuru and noted that teachers often lacked basic ICT skills. Teachers perceived usefulness of technology—such as whether digital tools simplify tasks like lesson planning or analyzing student performance—strongly influences their willingness to adopt ICT (Muinde & Mbataru, 2019). Like many sub-Saharan countries, Kenya has integrated ICT into its education policies (Maige et al., 2019). Recognizing ICT's importance for achieving the nation's "Vision 2030," the government distributed tablets to all Grade One learners in public primary schools (Langat, 2015; Mariga et al., 2017; Muinde & Mbataru, 2019). This initiative was followed by curriculum reforms aimed at equipping all learners with core competencies and world-class digital skills suited for the 21st century (Maluei, 2019). Online learning has also enabled students with physical disabilities to participate more freely in virtual learning environments that require minimal movement (Basilaia & Kvavadze, 2020).

2.3.2 Teachers Training in Information Communication Technology and Competency Based Education Implementation

Research on teacher capacity in Kenyan primary schools indicates that, despite the creation of ICT-in-education policies and significant financial investment, the use of

technology in classrooms remains limited (Piper et al., 2015). Langat (2015), for example, reported that many teachers lacked basic computer literacy skills in a study examining obstacles to ICT implementation in Kenyan primary schools. Similar concerns were echoed in Abobo's (2018) survey, which found that two-thirds of respondents were unable to integrate technology into Kiswahili instruction. Omolo et al. (2017) noted that student-teachers were able to apply technology in Kiswahili lessons only after being trained by their tutors. In cases where teachers did receive training, it often focused on basic computer programs such as Microsoft Office and Excel, which did not adequately prepare them for meaningful classroom technology integration (Mwangi & Khatete, 2017). Likewise, Wambiri and Ndani (2016) identified gaps in ICT pedagogical use through their analysis of teacher training documents. Muinde and Mbataru (2019) work in Machakos County reported that 85% of teachers had received ICT training through Kenya's Ministry of Education.

In another context, Omito et al. (2019) surveyed 362 teachers and 85 head teachers in private primary schools in Homabay County to assess teachers' computer skills. Their findings showed that the number of trained teachers remained low, particularly because trained individuals were expected to train their peers. Ngeno et al.'s (2020) research aligns with Sharples and Moldeuss (2014), highlighting teachers' perceptions of technological readiness in public primary schools. Studies on teacher perceptions reveal that attitudes toward technology significantly influence acceptance and classroom use (Wambiri & Ndani, 2016). These authors argue that government investment in digital devices alone is insufficient unless teachers' beliefs, attitudes, self-efficacy, skills, and demographic factors are also addressed. They found, for example, that younger teachers tended to have more positive attitudes toward technology. Given that many schools lack a one-to-one device ratio, Heinrich et al. (2020) recommend promoting collaborative learning so students can share devices. This supports Vygotsky's social constructivist perspective, which emphasizes peer collaboration over individual learning (Waweru, 2018).

Teachers also require assistance to adapt their instructional practices for both planned and emergency remote learning (Mancera et al., 2020). Inequities in teachers' ability to deliver remote instruction vary across regions and socioeconomic groups. In Mexico, for instance, a survey of nearly 4,000 teachers across preschool, primary, and secondary levels showed that around 85% were engaged in distance teaching; however, in the poorest region, only 64% were doing so as of April 2020 (Mancera et al., 2020). The same survey revealed significant differences between private and public schools: 64% of private-school teachers spent seven or

more hours a day on remote teaching, compared with 24% of public-school teachers who spent two hours or less.

In Chile, another survey found that 56% of teachers sent learning materials to students without teaching live classes primarily in private and secondary schools while 22% provided recorded lessons (Educar, 2020). The use of digital technologies still falls short of creating systemic change, instead resulting in isolated "Islands of Innovation" driven by exceptional teachers independently adopting ICT without a structured professional development process (Albion et al., 2015). Teachers are thus compelled to develop creative strategies to overcome the constraints of virtual learning and are increasingly collaborating locally to improve online pedagogy. These circumstances have fostered new opportunities for collaboration, knowledge sharing, and experimentation with digital tools as teachers, parents, and learners navigate shared challenges (Dubey & Singh, 2020). E-learning has also been shown to enhance teachers' knowledge and technical competencies (Dubey & Singh, 2020).

In France, the national digital education advisor network has been mobilized to support the shift from in-person to remote learning (Jacques et al., 2020). These advisors assist teachers and school leaders by providing online training on digital resources, promoting pedagogical practices suited to sustained learning continuity, and coordinating with local authorities to distribute devices and learning materials to students. Other countries have supplemented online instruction by offering televised and social-media-based educational programming. For example, in the United Kingdom, the BBC partnered with teachers and education experts to produce daily lessons for students in Years 1–10, featuring videos and interactive activities aimed at maintaining motivation and supporting socio-emotional development (Carter, 2021).

UNESCO has identified substantial disparities in educational outcomes linked to uneven teacher distribution, particularly in economically disadvantaged areas and rural regions with large indigenous and migrant populations (UNESCO, 2016; Messina & Garcia, 2020). As part of El Salvador's digitalization efforts, ongoing initiatives aim to equip all teachers and students in public schools with digital devices (Ministry of Education, El Salvador, 2020). In Argentina, proposals have been made for low-interest loans through Banco de la Nación Argentina to help teachers purchase computers (Molina, 2020). The pandemic forced many teachers worldwide to begin delivering virtual instruction often for the first time revealing widening educational inequities (Dorn et al., 2020) and adverse socio-emotional effects on students (Colao et al., 2020).

2.3.3 School Administration's support in the use of Information Communication Technology and implementation of Competency Based Education

Ogachi (2015) states that the presence of Information Communication Technology technical assistance greatly impacts how principals utilize ICT in their administrative duties. In a study aimed at assessing the extent to which teachers and principals utilized information technology to enhance educational objectives and identify the elements influencing ICT usage. Gilakjani et al. (2015) noted that the most commonly recurring factors influencing the use of computers include pedagogical challenges, teachers' self-assessment of their computer familiarity, and training for teachers, time constraints, and accessibility of hardware, software-related concerns, and head teachers' perceptions.

Abdelrahman (2015) aimed to explore the present condition of Information Communication Technology application in secondary schools within Khartoum state, Sudan. The research revealed different domains of ICT usage; 83.3% of principals reported utilizing computers for drafting school documents and letters, 54.1% employed spreadsheets, 27% mentioned planning activities, and 23% relied on the internet and email for communication. In contrast, 27% stated that they utilized the internet to look for information. In Kenya, the integration of ICT is increasingly the primary concern of education policymakers to convert management practices into a digital realm. To identify elements affecting the incorporation of Information Communication Technology in management alongside functional ICT infrastructure in Kenya, Mutisya et al. (2017) noted that 70% of principals stated that ICT was greatly utilized for internal examinations, 62.5% of schools automated their accounting, 71.9% in payroll, and 53.1% in budgeting tasks.

The study by Lipesa et al. (2016) aimed to determine how administrative personnel incorporated ICT into their roles. It was noted that the use of ICT in managing examinations and keeping precise student records received a high core rating (mean= 3.93), accounting for 78.6% of participants. Miranji and Letei (2017) contend that, consistent with the practical benefits of ICT in educational settings, it is widely recognized that school leaders play a key role in promoting the implementation and maintenance of ICT utilization. In research aimed at determining the principal's incorporation of ICT in management within Isinya sub-county, Kajiado County, Kenya.

Nyanchoka et al. (2015) found that 75% of participants reported favorable attitudes from principals, and 65% of principals' offices had internet access in the Isinya sub-county. The

presence of internet connectivity offered principals a chance to connect with the outside world. In the Kimilili sub-county of Bungoma, Kenya, Wanjala et al. (2015) investigated teachers' views on ICT application in school administration and found that 72.9% of teachers utilized word processors, 50.7% used spreadsheets, 35.8% had access to PowerPoint, 20.2% employed databases, and 17.1% used other tools. The integration of ICT has positively impacted educational institutions, demonstrating a high success rate in utilizing ICT for planning and management of resources (Oyier et al., 2015). Recently, school administrators have recognized the necessity to incorporate ICT into the administration of the education sector. This is clear with fresh project developments and announcements of ICT education initiatives occurring almost daily in various locations across the continent, as noted by Barakabitze et al. (2019)

In Kenya, the government promotes the use of ICT to transform school management, improve organizational structures, strengthen community connections, and equip learners with the skills needed for self-directed learning. The Kenyan government acknowledges the beneficial role of ICT in transforming the nation into a middle-income economy, as outlined in Kenya Vision 2030 (Mutisya et al., 2017). A school manager of an educational institution wishes to effectively manage institutional resources. Institutional resources can include both tangible facilities and personnel. ICT tools like management information systems (MIS) can facilitate the monitoring and assessment of resource allocation and spending. Furthermore, school administrators can completely monitor the performance and movement of their personnel (Gavua et al., 2016).

Ogachi (2015) observed that the presence of ICT technical support greatly affects how principals incorporate ICT into their administrative responsibilities. Oyier et al. (2015), in their study on the implementation of school information management systems in Nairobi, discovered that 62.5% utilize it for maintaining accounting records, 62.5% for staff record-keeping, 53.1% for scheduling, 71.9% for payroll preparation, 56.2% for student record maintenance, 84.3% for examination record-keeping, 53.1% for budgeting, 68.75% for inventory records, and 78.13% for academic progress documentation. Additionally, 62.5% maintain accounting records, 53.1% focus on scheduling, and 71.9% manage payroll, while 56.25% keep student records.

Muriko (2015) discovered that a majority of administrators expressed strong agreement regarding their enjoyment of learning to operate computers in the Kiambu sub-county, recording a favorable mean of 3.90 on a scale of 1.5, reflecting a substantial level of motivation

and backing from principals and other educators who promote ICT utilization and passion for it. Additionally, Alkahtani (2016) suggests that former attitudes can affect teachers' perspectives on using computers; this is shaped by notions of professionalism, the attitudes of principals, fellow teachers, and parents, as well as by school and national policies.

2.3.4 Influence of Information Communication Technology Integration towards the Competency Based Education Implementation

To strengthen the competence-based education Implementation, several countries have launched online training programs as one way of actively implementing the Competency Based Education. Bolivia introduced Training for Digital Teachers (Direction Departmental de Education La Paz, 2020), while Ecuador developed a self-learning course titled My Online Classroom (Ministry of Education of Ecuador, 2020). Colombia's Plan Padrino initiative has promoted capacity-building and knowledge exchange among higher education institutions on ICT adoption (Ministry of Education of Colombia, 2020). In El Salvador, a cascade training model was implemented to prepare 100 technical specialists to support online education; these specialists are expected to train all 46,000 public-school teachers (Ministry of Education El Salvador, 2020).

Ogachi (2015) examined elements affecting school principals' incorporation of information communication technology in managing public secondary schools in the Isinya sub-county, Kenya. The research found that the majority of principals possessed master's degrees, whereas most deputy principals held bachelor's degrees in education. These results suggest that the participants possessed adequate understanding of the significance of ICT, particularly the head teachers. Ogachi (2015) claims that the presence of ICT technical support greatly impacts how principals incorporate ICT into their administrative responsibilities. Information and communication technology (ICT) have emerged as a crucial driver of innovation and enhanced efficiency for numerous elements worldwide. Using spearman correlation, they found a significance statistical relationship between school administrators' support in ICT and the implementation of the Competency Based Education.

In the education field, ICT has emerged as an essential component of the learning experience for university students, both in and out of the classroom. In the past twenty years, the government and various parties in the education field, including university administrators and researchers, have spent millions on integrating ICT into educational systems (Lawrence & Tar, 2018). The cross-sectional study by (Croteau, 2015) was to assess and monitor the influence

of ICT usage and its influence on education. I was descriptively found out that; the global organization backs the second information technology in the educational research for assessing educational success. Using logistic regression, he found a significance relationship between ICT integration and Competency Based Education implementation. They concluded that ICT integration is the backbone of the Competency Based Education implementation in secondary schools.

2.4 Summary of Literature Review and Research gap

2.4.1 Knowledge Gap: The study reviewed many of the empirical literature which described the situations of ICT integration on the implementation of Competency Based Education elsewhere (Wambiri & Ndani, 2016) in Latin American and Caribbean countries, Escueta et al., 2017) in Italy, (Obota et al. (2015) in Mumias sub-county Kenya, (Mbugua et al. 2015) in Nakuru, (Mancera et al., 2020) in Mexico, (Educar, 2020) in Chile, (Jacques et al., 2020) in France, (Carter 2021) in united kingdom, but there is no empirical study has ever been done in the current study area, hence creating a knowledge since there was known information on how ICT integration influences the Competency-Based Education (CBE) implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya.

2.4.2 Methodological Gap: The literature reviewed showered that each of the scholars used different methods to carry out the similar empirical studies for example Barakabitze et al. (2019) targeted on the teachers and they used descriptive statistics of frequency and percentages together with ANOVA and Chi-squire analysis. Additionally, Miranji and Letei (2017) in their study they targeted secondary administrators whereby the quantitative data was analyzed using descriptive analysis of mean and standard deviations, together with inferential statistics whereby Chi-square analysis was used and logistic regression analysis to give out AOR and the COR. Lastly, Gilakjani et al. (2015) targeted the teachers and they collected qualitative data which was analyzed using narration approach. Therefore, the literature fails to indicate the valid target population and the methodologies which should be used when carrying out this kind of study. Yet the current study has a clear methodological procedure to be followed to address the current study objectives.

2.4.3 Theoretical Gap: Many of the scholars in the literature which was reviewed did not support their empirical studies with relevant theory. Few who supported their findings with a theory used a different theory for example Oyier et al. (2015) used unified theory of acceptance and use of technology, Barakabitze et al. (2019) made use of the Diffusion of innovation theory

while Murithi and Yoo (2021) used constructivism theory of learning. This indicates that there is not uniformity on which theory is suitable for this kind of the studies. Therefore, the current study supported its findings with the Technology Acceptance Model theory (TAM) developed by Fred D. Davis in (1989). The theory states "that peoples' intention to use a technology and ultimately their actual use is driven by perceived usefulness perception (the degree of which a person believes that using a particular technology will improve their performance) and perceived ease of use perception (the degree to which a person believes that using the system will be free of the efforts).

2.4.4 Contextual Gap: The reviewed empirical literature described the situations of ICT integration on the implementation of competent based education in different countries. For example, Escueta et al., 2017) in Italy, (Mancera et al., 2020) in Mexico, (Educar, 2020) in Chile, (Jacques et al., 2020) in France, (Carter 2021) in United Kingdom. These study findings cannot be used to reflect the situation in Kajiado North Sub-County because of the contextual differences in terms of economic status, educational development levels and even social engagement levels. Therefore, this creates a contextual gap which calls for the empirical study to establish how ICT integration influences the Competency-Based Education (CBE) implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the methods that the researcher employed. It includes the research design, location of the study, population of the study, sampling and sampling procedure, research instruments, methods of data collection, validity and reliability of instruments, data collection procedure and data analysis.

3.2 Research Design

A research design is the plan, framework, and methodology for gaining insights into research questions (Mugenda & Mugenda 2010). Kothari (2012) states that a research design is essential for aiding research activities, optimizing efficiency, and producing the greatest amount of information while minimizing the effort, time, and financial resources required. As stated by Gay et al. (2006), descriptive surveys evaluate attitudes, opinions, preferences, demographics, practices, and procedures.

This study employed cross-sectional, descriptive and correlation designs guided by the mixed approach. The cross-sectional study design was used to gather detailed information about a population at a specific point of time, guided by specific objectives, in specified geographical area (Kajiado North Sub-County) and targeting specific group of people (teachers and head teachers) within primary schools in Kajiado North Sub-County.

The descriptive research design was adopted to be used to give the description of the level of ICT integration (in terms of Availability of ICT facilities, teachers ICT literacy level, administrative support on ICT) and Competency Based Education implementation among the primary schools in the study area. Descriptive survey design was used to outlined behaviors and collected individuals' opinions, attitudes, perceptions, and beliefs regarding a present educational issue (Lodico et al., 2006). A descriptive survey approach was appropriate for this research as it aims to assess the effect of technology on education in primary schools within Kajiado North-Sub County.

The correlational design was used because specific objective 1-4 are correlational in nature. Hence, it helped to establish the relationship between the ICT integration indicators and the implementation of the Competency Based Education through the Pearson correlational analysis and the multilinear regression analysis. It also helped to test the null-hypothesis by comparing

the p-value with the alpha value of 0.05 realized after multilinear regression analysis Borg and Gall (2007).

The study made use of the mixed research approach which helped to collect both the quantitative data and the quantitative data. This approach was used because the study has a number of variables which was measured in terms of numbers, analyzed and interpreted with statistical procedures. Qualitative data which is non-numerical data**,** dealt with the attributes of the respondents such as feelings, suggestions and opinions on the subject under study. Qualitative data was obtained using the key informant interview guides.

3.3 Research Location

The study was carried out in public primary schools which are within Kajiado North Sub-County, Kenya. The Kajiado North Sub-County in located in Kajiado County is located in the Rift Valley region. The sub county is located in the northern part of Kajiado County. The sub county is surrounded by Nairobi County from the north, from the east it borders Kajiado East sub county, from the west it borders Kajiado west sub county, and from the south it extends to the Ngong Hills and the parts of the rift valley escarpments. The Kajiado North Sub-County has a total of 212 primary schools, in which there are 93 public primary schools, 109 private primary schools, plus 8 special units, 2 special schools (Kajiado North Sub-County Education Office, 2025). The area was chosen because of the deteriorating level of the Competency Based Education implementation in primary schools. Therefore, the researcher wanted to know how the primary schools in Kajiado North Sub -County has embraced the use of ICT in Curriculum integration. The location has a large number of primary schools which use Information Communication Technology (ICT). Therefore, knowing how the technology in primary schools impacts education is essential.

3.4 Target population

A target population denotes a full collection of individual instances or items sharing certain observable traits (Babbie, 2014). According to the (Kajiado North Sub-County Education Office, 2025) there are 93 public primary schools, plus 8 special units and 2 special schools. The study focused on all 93 head teachers and 876 teachers across the 93 primary schools. The 93 primary schools have 2797 grade 9 learners. The grade 9 learners were selected compared to other grades because the grade 9 learners have more understanding on the use of technology and they use technology more on their research as they learn and do assignments. The head teachers were chosen because they were anticipated to lead the ICT adoption in their schools

and to seek ICT resources from different sources. The educators were singled out as they were the primary executors of the ICT initiative in classrooms. The learners were chosen because they are the primary users of the ICT facilities hence, they can give adequate information concerning the availability and usage of the ICT facilities in their specific schools.

3.5 Study sample and study sample size.

A sample represents a portion of a studied population to provide insights about the whole group (Kothari, 2014). The researcher calculated the sample size out of the target population of 93 head teachers, 876 teachers and 2,797 grade 9 learners. According to Gay et al. (2010) and Mugenda & Mugenda (2003) in an empirical study a sample size between 10% and 30% of the target population is adequate for dependable results. Therefore, the researcher calculated 10% of the target population as sample size, as shown in table 3.1 below.

Table 3.1 Sample Size Distribution

Category of Respondents	Population	Sample	Proportion %
Head teachers	93	9	10
Teachers	876	88	10
Learners (Grade 9)	2,797	280	10
Total	3,766	377	30

Source: Kajiado North Sub- County Education Office, 2025

The study used simple random sampling technique to select the 9 head teachers from the 93 total head teachers. The study used simple random sampling technique to select the 88 teachers from the 876 total teachers. The study used simple random sampling technique to select the 280 learners out of the 2,797 total learners. The simple random sampling technique was used to ensure that respondents have an equal chance to participate in the study. The technique was used because it is easy to use and it reduces biasness (Creswell & Creswell, 2018).

3.6 Data Collection Methods and Instruments

The study made use of questionnaire survey and the interview guides as the main methods of data collections. The questionnaire survey methods were used to collect the quantitative data from the respondents while the interview guide was used to collect the qualitative data from the key informants (Creswell & Creswell, 2018). According to Creswell (2015), a questionnaire is a research instrument that consists of a set of questions (or other types of prompts) for the purpose of gathering information from respondents through survey or statistical study. The questionnaire was chosen because of its associated advantages in terms of data processing and analysis costs which are cheaper in addition to taking little time

(Creswell, 2015). The self-administered questionnaires were used as instruments of collecting the quantitative data from the teachers and the grade 9 learners. A questionnaire is a tool of collecting data where each respondent is asked to give answer to the same set of questions (Kothari et al., 2014). The questionnaire was very appropriate tool for this study because it is flexible, not expensive and not biased; it also provided privacy to the respondents when giving the required information. In this study two sets of the self-administered questionnaires were prepared and used in quantitative data collection. The first questionnaires were for the grade 9 learners and the second set was for the classroom teachers. The key informant interview guides were used as instruments to collect the qualitative data from the head teachers of the primary schools.

3.6.1 Questionnaire for Grade 9 Learners

The first set of the questionnaire was for the grade 9 learners and it was divided into sections: A, B and C. Section A of the questionnaire dealt with learners' demographic information and the nominal and ordinal scales of data measurements were employed. Section B covered contained closed ended questions for the use and the availability of the ICT facilities. The questionnaire was prepared basing in the five-point Likert scale of measurement where code 5 stood for strongly agree, code 4 stood for agree, code 3 stood for not sure, code 2 stood for disagree, and code 1 stood for strongly disagree as shown in Table 3.2. The section C of the questionnaire contained the open-ended questions for the availability and the use of ICT facilities. The open-ended questions allowed for deeper qualitative analysis, are easier to create, offer understanding of emotions, underlying motivations, and interests, and can encourage respondents to share what they view as important (Kombo & Trump, 2011). Since each grade 9 learner was required to answer the same set of questions, the questionnaire provided a competent way of collecting responses from a large group of respondents.

3.6.2 Questionnaires for the Teachers

The second set of questionnaires were for the teachers and it was prepared to include both the closed ended and the open-ended questions. The questionnaire had three sections A, B, and C. Section A of the questionnaire dealt with teachers' demographic information and the nominal and ordinal scales of data measurements were employed as well. Section B covered contained closed ended questions for the teacher's ICT literacy level, administrative support on ICT, and the Implementation of Competency-Based Education (CBE). The questionnaire was prepared basing in the five-point Likert scale of measurement where code 5 stood for strongly agree, code 4 stood for agree, code 3 stood for not sure, code 2 stood for disagree, and code 1 stood

for strongly disagree as shown in Table 3.2. The section C of the questionnaire contained the open-ended questions for the teacher's ICT literacy level, administrative support on ICT, and the Implementation of Competency-Based Education.

Table 3.2: Likert Scale of Measurement

Scale	Mean Range	Response Mode	Interpretation
5	4.20-5.00	Strongly Agree	Very High
4	3.40-4.19	Agree	High
3	2.60-3.39	Uncertain	Moderate
2	1.80-2.59	Disagree	Low
1	1.00-1.79	Strongly disagree	Very Low

Sources: Vagus (2016)

3.6.3 Key Informant Interview Guide

This study considered the use of a key informant interview guide which was administered to the head teachers to provide qualitative data for the study. The interview guide comprised of open-ended questions which were able to help to retrieve vital information on respondents' suggestions, opinions and recommendations. The interview was carried out by the researcher through a face-to-face interaction with the head teachers of the primary schools in Kajiado North Sub-County. Cohen et al. (2018) state that an interview guide serves as an adaptable resource for gathering data, allowing for the utilization of various sensory avenues, including verbal, non-verbal, spoken, and auditory. Interview guide was used in this study because it provides qualitative data for the study which supplemented the quantitative results from the grade 9 learners and teachers. The qualitative approach was appropriate as it provided an opportunity for the study to get the views of head teachers who have relevant knowledge and experience regarding the implementation of the Competence Based Educations in the primary schools in the study area.

3.6.4 Piloting of Research Instruments

As stated by Orodho (2008), piloting is primarily conducted to assess the appropriateness of the research tools utilized in the study. Piloting assists in identifying shortcomings in research tools. By piloting, the clarity of the language is evaluated, the response time is measured, and any improper organization of the items is identified for adjustment. The pilot study was carried out to refine the data collection instrument so as the final project is valid, reliable and feasible. the pilot study was carried out in two public primary schools in Kajiado West subcounty where one head teacher was interviewed, 8 teachers were given the self-administered questionnaires and 20 grade 9 learners were also given the self-administered questionnaires, and according to

Sahu (2013) suggests that a sample size of 10% is adequate for performing a pilot test. The interview guide generally functioned well, but two items were misinterpreted of which were later adjusted and returned. The self-administered questionnaires also performed well, but there were three and six seven items which were misinterpreted by grade 9 learners and teachers respectively. Those items were later adjusted with guided from the supervisors and returned to the self-administered questionnaires. The instructions were very clear because no respondent who asked for clarification in the process.

3.7 Validity and Reliability of Data Collection Instruments

3.7.1 Validity

Validity pertains to the accuracy, significance of interpretations, and reliability of conclusions drawn from the research results (Kothari, 2014; Saunders et al., 2012). According to Kothari, (2014) construct and content validity are tested using the expert judgment. Therefore, the researcher used the two research supervisors to test the content validity of the questionnaire because of their knowledge and skills in questionnaire construction in relation to the research objectives. The self-administered questionnaire was prepared in accordance with the conceptual framework and research objectives; it was given to the two supervisors assigned to the researcher for their review before. The supervisors read the questionnaire whereby they were ticking the right statements and putting X on the wrong statement. Thereafter the Content Validity Index (CVI) was calculated using the formula given below. According to Lynn 1986) as cited in Sutter & Kihara (2019) that any value equal to or greater than 0.7 is validity and the tool can be used for data collection.

$$\text{CVI}=\frac{\textit{Total Number of relevant iterms in the questionaire}}{\textit{total number of the iterms in the questionaire}}$$

$$\frac{(36+34)/2}{41}$$

$$\frac{35}{41}=0.854$$

3.7.2 Reliability

Reliability refers to the extent to which a research instrument yields consistent data or outcomes across multiple attempts (Babbie, 2014). The coefficient of reliability indicates how consistently a specific measurement method produces similar results during repeated assessments (Orodho, 2009). Jackson (2009) describes reliability as the degree of consistency or stability of a measurement tool to yield the same results whenever it is applied. Mugenda and Mugenda (2012) also define reliability as the consistency and dependability of data

gathered through a scientific instrument or data collection method under identical conditions. The internal consistency reliability of the questionnaire was tested through pre-testing. The researcher pretested 15 teachers' questionnaires and 15 learners' questionnaires in two primary schools in Kajiado East Sub-county. This was because the two sub-counties are in the same region and in the same county hence, they have similar economic, educational and social characteristics. They also experience similar challenges in implementing the CBE in primary schools. The two sets of the 15 questionnaires were answered and put into the SPSS version 26. The reliability test was run and the results are as shown in the Table 3.3 below.

Table 3.3: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.896	.875	41

3.8 Data Collection Procedures

After presenting the proposal to the examination panel members, the proposal was approved and an introduction letter from the office of the dean postgraduate studies African Nazarene University was given to the researcher. To introduce her and the purpose of the study as educational to the National Council for Science, Technology, and Innovation (NACOSTI) for the permission to carry out the academic research. After getting the permission from NACOSTI, the researcher continued to Kajiado North Sub-County education office to request for further permission to carry out the study in their primary schools. The Kajiado North Sub-County education office subsequently provided a letter introducing the researcher as a student to the primary schools in Kajiado North Sub-County and be allowed to carry out raw data collection for the study. After getting all the three permission letters she presented them to the head teachers of the targeted primary schools to introduce herself and the purpose of the study and arrange for the convenient day for raw data collection from both the grade 9 learners, teachers and the head teachers.

During the day of data collection, the researcher explained to the respondents the purpose of the study and how they will benefit from the study. She first gave them the informed consent form to read and understand their rights as respondents. After reading those consented freely were told to sign and were given the self-administered questionnaires to answer while those who did not consent were not given the questionnaires.

The research used one full month in data collection process, whereby she used to attend to 4 school per day someday 5 schools depending on the distance from one school to another. The data collected was stored digitally with computers primary storage, secondary storage, tertiary storage and offline storage. The project will use a rigorous data security method to safeguard all acquired data from unwanted access, disclosure, or loss. This was done through ensuring that data is housed in safe, password-protected databases and limit access only to authorized researchers. The grade 9 learner's parents had to fill in the consent forms to allow their children in grade 9 who were below 18 years to participate in answering questions through questionnaire method.

3.9 Data Processing and Analysis

After successful data collection process, the collected data was processed by first being sorted, edited, and cleaned before it was entered into the SPSS computer system. This helped the researcher to detect and eliminating errors and mistakes made by respondents. All the questionnaires were checked for completeness in order to correct minor errors and mistakes such as recording information in wrong places, numerical error and correct answer by reviewing the information that is required in schedule. The data was cleaned and then entered into the Statistical Packages for Social Sciences (SPSS) version 26 for windows for analysis. Using the SPSS software, the data was further cleaned using frequencies and percentages, so as to remove the outliers while the continuous variables such as the respondents' age, education level were transformed and categorized. Thereafter all the questionnaires and consent forms were stored separately to ensure no leakage of identifying information and to ensure the confidentiality of the information given.

The quantitative data was analysed using both the descriptive and inferential statistics; whereby the respondents demographic characterises were analysed using descriptive statistics whereby frequency and percentage tables were used and the findings were displayed using the tables, pie charts, and bar charts. Consequently, additional descriptive statistical analysis was done whereby mean and standard deviation were used to show the level of ICT integration in terms of Availability of ICT facilities, teachers ICT literacy level, administrative support on ICT, and the Implementation of Competency-Based Education in Kajiado North Sub-County. Johnson and Christensen (2012) emphasize that descriptive statistics provide a clear understanding of the circumstances, enabling the researcher to make conclusions and equipping decision-makers with the basis to ground their decisions in the analytical study. Objectives 1, 2, and 3 were

analysed using descriptive statistics and inferential statistics whereby Pearson's Correlation analysis was used to indicate the direction and the strength of the relationship. Objective 4 was analysed using Multilinear Regression analysis to determine the influence of ICT integration indicators towards the Competency Based Education implementation in primary schools Kajiado North Sub-County, Kajiado County, Kenya. The three null hypotheses were tested by comparing the calculated P-value with the alpha value of 0.05. The null hypotheses were rejected when the calculated p-value happened to be less than alpha value of 0.05 (level of significance) meaning that there was a significant relationship. The null hypothesis was upheld when the calculated p-value is greater than alpha value of 0.05 (level of significance) indicating that there was no significant relationship.

The qualitative data from the open-ended section of the questionnaires were using thematic analysis. The qualitative data from the key informant interview guides were analysed using content and narration approach whereby key informants' views were quoted directly as they said or narrated during the interview schedule to support the quantitative data findings.

3.10 Legal and Ethical Considerations

For legal considerations, the researcher followed all the legal procedures whereby she was given an introduction letter from the office of the dean postgraduate studies African Nazarene University. The researcher got written permission from NACCOSTI and from the Kajiado North Sub-County education office to carry out the study in the selected primary schools within Kajiado North Sub-County.

For ethical considerations, researcher explained to the respondents the purpose of the study, how it will of significant to them. The researcher comprehensively elucidated the research to the participants beforehand and debrief them afterward. Additionally, the researcher guaranteed the participants that the information gathered was solely utilized educational research. The researcher presented the consent forms to the participants who were given time to read, understand before signing. Only the respondents who consented were given the questionnaires to answer. The researcher did not force any respondent to answer the questionnaires, observed confidentiality of the information provided by the respondents and assure the respondents utter most privacy. A written and signed agreement was made by the researcher to the respondents to keep the information provided to be kept very secretive.

CHAPTER FOUR
DATA ANALYSIS AND FINDINGS

4.1 Introduction

This section presents the data analysis and the findings of the empirical study on Information Communication Technology integration in competency-based education implementation in primary schools in Kajiado North Sub- County, Kajiado County, Kenya. The study was guided by four specific objectives namely; To examine the influence of availability of ICT resources on Competency Based Education implementation in primary schools in Kajiado North Sub-County, to establish the influence of teachers training in ICT on Competency Based Education implementation in primary schools in Kajiado North Sub-County, to examine the influence of administrative support in integration of ICT in teaching and learning on Competency Based Education implementation in primary schools in Kajiado North Sub- County, and to determine the influence of ICT integration towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. This study employed cross-sectional, descriptive and correlation designs guided by the mixed approach (qualitative and quantitative approach). The study collected the quantitative data using the self-administered questionnaire.

4.1.1 Response Rate

The teachers' respondents were 74 out of 88 teachers and they represented 84.09% response rate. For the grade 9 learners 263 of them consented and answered the self-administered questionnaires out of 280 learners, this represented 93.9% response rate. This response rate was supported by Frankel et al. (2012) who argued that a response rate exceeding 60% is deemed adequate for the research. The study also collected the qualitative data from the 9 head teachers using the key informant interview guides. The unity of analysis for the study were the primary schools in Kajiado North Sub-County while the unity of inquiry were the 74 teachers and the 263 grade 9 learners.

4.2 Respondents' Demographic Information

4.2.1 Learners' Demographic Information

The demographic information of the learners was analyzed through descriptive statistics whereby frequency and percentages tables were used. The findings are presented in terms of Respondents'; gender and age brackets, with the aim of ensuring that there is no biasness when collecting data since respondents' demographic characteristics may determine or influence

their response in the study. The profiles of the respondents are summarized in table. Table 4.1. Learners' Demographic Information

		Frequency	Percent
Respondents gender	Female	121	46
	Male	142	54
Respondents age brackets	13 Years	49	18.6
	14 Years	87	33.1
	15 Years	76	28.9
	16 Years and Above	59	22.4

n=263: Source: Primary Data from Kajiado North Sub-County primary schools 2025

4.2.2.1 Respondents Gender: Concerning the respondents' gender, the findings in table 4.1 shows that the minority 121(46%) of the learners' respondent who participated in the study were female learners. The majority 142(54%) of the learners' respondent who participated in the study were male learners. In summary the response of the male grade 9 learners dominated in the study, this maybe because boy children are given first priority in education in the Maasai land more than the girl children.

4.2.2.2 Respondents Age Brackets: According to the respondents age brackets, the findings in table 4.1 shows that 49(18.6%) of the learners' respondent who participated in the study were learners aged 13 Years, 87(33.1%) of the learners' respondent who participated in the study were learners aged 14 Years, 76(28.9%) of the learners' respondent who participated in the study were learners aged 15 Years, and 59(22.4%) of the learners' respondent who participated in the study were learners aged 16 Years. In summary the learners aged 14 Years dominated in the study.

4.2.2 Teachers' Demographic Information

The demographic information of the teachers was analyzed through descriptive statistics whereby frequency and percentages tables were used. The findings are presented in terms of Respondents'; gender, age brackets, highest education level, and the respondents' level of computer training skills, with the aim of ensuring that there is no biasness when collecting data since respondents' demographic characteristics may determine or influence their response in the study. The profiles of the respondents are summarized in Table 4.2.

Table 4.2: Teachers Demographic Characteristics

		Frequency	Percent
Respondents gender	Male	27	36.5
	Female	47	63.5
Respondents age brackets	Bellow 30 years	10	13.5
	31-40 years	31	41.9
	41-50 years	25	33.8
	51 years and above	8	10.8
Respondents' highest education level	P1 Certificate	35	47.3
	Diploma	12	16.2
	Bachelor's Degree	22	29.7
	Postgraduate	5	6.8
Respondents level of computer training	None	25	33.8
	Certificate	31	41.9
	Diploma	12	16.2
	Degree	6	8.1
	Other levels	0	0

n=74: Source: Primary Data from Kajiado North Sub-County primary schools 2025

4.2.2.1 Respondents Gender: The findings in Table 4.2 shows that majority 47(63.5%) of the respondents were female teachers and the minority 27(36.5%) of the respondents were the male teachers. This suggests that all the male and female teacher were represented in the study and the views of both female and male teachers were represented in the study. However, the response of the female teachers dominated in the study. This implied that most of the primary schools in Kajiado North Sub-County are dominated by the female teachers. The findings are supported by UNESCO GEM Report (2020) global report and Mulenga et. al., (2023) in Zambia, they all reports that women are over-represented among the primary school teachers, with about 66% of the primary school teachers are women.

4.2.2.2 Respondents Age Brackets: The findings in Table 4.2 shows that 10(13.5%) of the teachers who participated in the study were below 30 years. The majority 31(41.9%) of the teachers who participated in the study were aged between 31-40 years. The second majority teachers 25(33.8%) who participated in the study were aged between 41-50 years. The minority 8(10.8%) of the teachers who participated in the study were aged 51 years and above. The findings reflect that all the age groups were represented in the study, however the response from the teachers aged between 31-40 years and 41-50 years dominated in the study. This implies that most of the primary schools in Kajiado North Sub-County are dominated with teachers aged between 30-50 years old. The findings are supported by Bulut (2022) in Turkey found that primary school teachers aged between 30-50 years form 75% of all the teachers in primary schools.

4.2.2.3 Respondents highest education level: The findings in Table 4.2 revealed that majority 35(47.3%) of the teachers who participated in the study were having P1 Certificate. The second majority 22(29.7%) of the teachers who participated in the study were having bachelor's degree in education. The 12(16.2%) of the teachers who participated in the study were having diploma certificate in education. Lastly, the minority 5(6.8%) of the teachers who participated in the study were having postgraduate degrees. The study found out that majority of the teacher in primary schools are having P1 certificate and others bachelors' degree with minority having diploma and postgraduate. The findings this study is being supported by Nyang'ara (2025) who found that in Kisii County 44.4% of the primary teacher held a P1 certificate and 23.9% of the primary teacher held a bachelor's degree.

4.2.2.4 Respondents level of computer training: The findings in table 4.1 illustrates that 25 (33.8%) of the teachers who participated in the study did not have any computer training, this implied that they don't integrate ICT in their teaching to help in the implementation of the Competency Based Education in their primary schools. The majority 31(41.9%) of the teachers in primary schools within Kajiado North Sub-County have certificate in computer training. The few 12(16.2%) of the teachers who participated in the study had diploma in computer training. Lastly, the minority 6(8.1%) of the teachers who participated in the study had bachelors' degree training in computer application. The findings indicated that the majority primary teachers in Kajiado North Sub-County have at least certificate level of computer training. This implies that they can be in better position of integrating ICT in their teaching which can help in the implementation of the CBE curriculum in study area.

4.3 To examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County.

The first objective of the study was to examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County. The objective was analyzed using both descriptive statistics and inferential statistics. The quantitative data of the objective was supported by the qualitative data as shown in the sub-sections below.

4.3.1 Descriptive Statistics

The descriptive statistics was done using frequency and percentage, and also mean and standard deviation tables were used. The Mean and standard deviations were measured based on a 5-point Likert scale of; 1.00-1.79 (Very low), 1.80-2.59 (low), 2.60-3.39 (moderate), 3.40-4.19 (high) and, 4.20-5.00 (very high). The standard deviation of >1 indicated homogeneous

respondents who were able to provide responses with a minimal variance. The standard deviation of <1 indicated heterogeneous respondents who provided response with high variance.

Table 4.3: Descriptive Statistics for Availability of ICT Resources

Availability of ICT Resources	Agree	Neutral	Disagree	Mean	Std. D
The ICT equipment which are available in our school they adequately meet the needs of all the pupils and teachers.	45(60.8 %)	20(27%)	9(12.2%)	3.2297	.76833
The power connected to our school is always stable.	42(56.8 %)	18(24.3%)	14(18.9%)	3.0811	.87204
Our school always has strong internet connectivity.	19(25.7 %)	36(48.6%)	19(25.7%)	3.1892	.71531
In our school always there are enough computers for students to use in the computer laboratory.	10(13.6 %)	30(40.5%)	34(45.9%)	2.8378	.81134
The school computers are enough for all the teachers to use.	15(20.3 %)	45(60.8%)	14(18.9%)	3.0676	.84935
Always the school has enough overhead projectors to use in and every lesson.	49(66.2 %)	5(6.8)	20(27%)	3.5541	.74285
Always our school has enough, reliable and functioning photocopier.	49(66.2 %)	13(17.6%)	12(16.2%)	3.7162	.80274
In our school there are enough Flash disks for each teacher to store the work.	49(66.2 %)	11(14.9%)	14(18.9%	3.7703	.82008
Our school computers are regularly maintained and updated.	11(14.9 %)	53(71.6%)	10(13.5%)	3.9595	.60679
Our school computers have all the software required in teaching and learning.	54(73%)	6(8.1%)	8(10.8%)	3.7432	.86104
In our school ICT equipment are often used in teaching and learning.	11(14.9 %)	42(56.8%)	21(28.4%)	2.7568	.93356
Aggregate Mean and Standard Deviation				**3.355**	**0.798**

Legend: Very High (4.20-5.00), High (3.40-4.19), Moderate (2.60-3.39), Low (1.80-2.59), Very Low (1.00-1.79).

The findings in Table 4.3 indicates a high level of Availability of ICT Resources (Aggregate Mean=3.355, SD=0.798). This shows that majority of the respondents agreed that: ICT equipment which are available in their schools they adequately meet the needs of all the pupils and teachers 45(60.8%), the power connected to their schools is always stable 42(56.8%); always their school has enough overhead projectors to use in and every lesson 49(66.2%); their school has enough, reliable and functioning photocopier 49(66.2%); in their school there are enough Flash disks for each teacher to store the work 49(66.2%); and their school computers have all the software required in teaching and learning 54(73%). Some respondents neither agreed nor disagreed with the statement that; their school always has strong internet connectivity 36(48.6%), their school computers are enough for all the teachers to use 45(60.8%), their school computers are regularly maintained and updated 53(71.6%), and in their school ICT equipment are often used in teaching and learning 42(56.8%). Lastly minority of the respondents disagreed

with the statement that; in their school always, there are enough computers for students to use in the computer laboratory 34(45.9%),

4.3.2 Inferential Statistics

Additional inferential statistics was done using Pearson's correlational analysis to derive the Pearson correlational coefficient (r) which measures the strength, direction, and significance of the of the relationship between availability of ICT Resources and the Competency Based Education Implementation as shown in Table 4.4. The interpretation of the degree of linear correlation strength was made using measures as given by Creswell (2015): r = 0.00–0.199 (indicating a very low/very weak linear correlation), 0.20–0.399 (indicating a low correlation/weak linear correlation), 0.40 – 0.599 (indicating an average/medium linear correlation), 0.60–0.799 (indicating a high/strong linear correlation), and values exceeding 0.799 indicate a very high/very strong linear correlation between the two variables

Table 4.4: Pearson Correlational Analysis Showing Relationship Between ICT Integration Indicators and the Competency Based Education Implementation

Correlations		
		Competency Based Implementation
availability of ICT resources	Pearson Correlation	.659*
	Sig. (2-tailed)	.017
	N	74
*. Correlation is significant at the 0.05 level (2-tailed).		

Source: Primary Data from Kajiado North Sub-County primary schools 2025

The Pearson's correlation analysis results in Table 4.4 indicates existence of a strong significant positive linear relationship between availability of ICT resources and Competency Based Education implementation in primary schools in Kajiado North Sub-County at a correlational coefficient r= 0.659*, P Value 0.017<0.05. The results indicate a direct significant positive relationship because R-value is positive, and the P=value of 0.017 is less that alpha value of 0.05.

4.3.3 Qualitative Data

The qualitative findings derived from the head teachers regarding the ICT integration and Competency Based Education implementation in primary schools in Kajiado North Sub-County supported the quantitative results provided by the teachers' respondents. When head teachers were asked how they describe the availability of the ICT facilities and equipment for CBE implementation in their school, it was revealed that availability of the ICT facilities are the challenges to the implementation of Competency Based Education. The views given by the key informants included;

> *"....in this school there is low speed internet. We don't have the latest ICT resources such as software. The school does not have any other computer experienced personnel to assist in maintenance of the computers apart from two teacher who has certificate in IT and another a diploma in IT. Also, our computer laboratory is small with few computers to occupy all the learners, other learners sit without computers during class. The school is planning to buy five computers by the end of this term to add on the few we have.... (**Source Head Teacher KI-9 2025**).*
>
> Another key informant who was interviewed said "….*in this school we only have challenges with ICT resources such as computers and printers because the school has few computers which are being used by both the teachers and the learners when they are doing their assignments. The school has one print which is not working by now, hence we usually print and photocopy our work from outside**…. (Source Head Teacher KI-3 2025).***

When the head teachers were asked to what are some of the challenges encountered by the teachers in ICT integration in curriculum implementation. How were those challenges solved? Or what are the plans put forward to solve those challenges? One head teacher said;

> *".... the school depends on electricity supply which is usually unstable as sometimes it can go off when learners are in class and there is no any standby generator. The school has insufficient computer hard wares, soft wares. The school has also unsupported software (operating systems) and incompatible software. Due to limited resource for technical support and training difficulty upgrading of outdated ICT equipment the Competency Based Education Implementation in the school is at low level..." (Source ICT Teacher KI-3 2025).*

4.4 To establish the influence of teachers training in ICT on Competency Based Education Implementation in primary schools in Kajiado North Sub-County.

The second objective of the study was to establish the influence of teachers' ICT literacy on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County. The objective was examined using both descriptive statistics and inferential statistics. The quantitative data of the objective was supported by the qualitative data as shown in the sub-sections below.

4.4.1 Descriptive Statistics

The descriptive statistics of frequency, percentage, mean and standard deviation tables were used to analyze the objective. The mean and standard deviation were measured based on a 5-point Likert scale of; 1.00-1.79 (Very low), 1.80-2.59 (low), 2.60-3.39 (moderate), 3.40-4.19 (high) and, 4.20-5.00 (very high). The standard deviation of >1 indicated homogeneous respondents who were able to provide responses with a minimal variance. The standard deviation of <1 indicated heterogeneous respondents who provided response with high variance.

Table 4.5: Descriptive Statistics for Teachers Training in ICT

Teachers Training in ICT	Agee	Neutral	Disagree	Mean	Std. D
I am able to use basic computer applications such as Microsoft Word, Excel, Access, and PowerPoint when preparing notes and storing students' performance records.	20(27.1%)	46(62.2%)	8(10.8%)	3.1757	.74683
I can connect and use peripheral devices such as printers, projectors, and speakers without assistance.	15(20.3%)	45(60.8%)	14(18.9%)	3.0135	.89891
I can access the internet and search for instructional materials effectively.	50(67.6%)	11(14.9%)	13(17.6%)	2.9730	.70172
I can integrate digital tools such as educational software or online platforms into my teaching.	15(20.3%)	41(55.4%)	18(24.3%)	2.9459	.90496
I can troubleshoot minor ICT problems such as software freezing, slow internet, or device connection issues.	10(13.6%)	53(71.6%)	11(14.9%)	2.9730	.64048
I can use multimedia tools (e.g., videos, animations, audio) to support classroom instruction.	12(16.2%)	47(63.5%)	15(20.3%)	2.8919	.85316
I am able to use digital learning platforms (e.g., Google Classroom, Microsoft Teams) when required.	16(21.7%)	46(62.2%)	12(16.2%)	3.0000	.79381
I am confident in teaching pupils how to use basic ICT tools responsibly.	14(18.9%)	49(66.2%)	12(16.2%)	3.0000	.68246
I regularly update my ICT skills through training, online tutorials, workshops, or peer learning.	48(64.9%)	14(18.9%)	12(16.2%)	3.0405	.80135
I can use a digital camera and a computer to produce a Video for a classroom presentation.	14(18.9%)	18(24.3%)	42(56.8%)	3.0946	.76156
Aggregate Mean and Standard Deviation				**3.011**	**0.779**

n=74: Source: Primary Data from Kajiado North Sub-County primary schools 2025
Legend: Very High (4.20-5.00), High (3.40-4.19), Moderate (2.60-3.39), Low (1.80-2.59), Very Low (1.00-1.79).

The findings in Table 4.5 indicates a moderate level of Teachers' ICT Literacy (Aggregate Mean=3.011 0, SD=0.779). This shows that majority of the respondents neither agreed nor disagreed on the statement that: they are able to use basic computer applications such as Microsoft Word, Excel, Access, and PowerPoint when preparing notes and storing students' performance records 46(62.2%); they can connect and use peripheral devices such as printers, projectors, and speakers without assistance 45(60.8%); they can integrate digital tools such as educational software or online platforms into my teaching 41(55.4%); they can troubleshoot minor ICT problems such as software freezing, slow internet, or device connection issues

53(71.6%); they can use multimedia tools (e.g., videos, animations, audio) to support classroom instruction 47(63.5%), they are able to use digital learning platforms (e.g., Google Classroom, Microsoft Teams) when required 46(62.2%); and they are confident in teaching pupils how to use basic ICT tools responsibly 49(66.2%). Minority of the respondents agreed with the statement that they can access the internet and search for instructional materials effectively 50(67.6%); and they regularly update their ICT skills through training, online tutorials, workshops, or peer learning 48(64.9%). Lastly, very few respondents disagreed with the statement that they can use a digital camera and a computer to produce a Video for a classroom presentation 42(56.8%).

4.4.2 Inferential Statistics

A further Pearson Correlational analysis was done to derive the Pearson correlational coefficient (r) which measures the strength, direction, and significance of the of the relationship between ICT integration indicators and the Competency Based Education Implementation as shown in Table 4.6. The interpretation of the degree of linear correlation strength was made using measures as given by Creswell (2015): r = 0.00–0.199 (indicating a very low/very weak linear correlation), 0.20–0.399 (indicating a low correlation/weak linear correlation), 0.40 – 0.599 (indicating an average/medium linear correlation), 0.60–0.799 (indicating a high/strong linear correlation), and values exceeding 0.799 indicate a very high/very strong linear correlation between the two variables

Table 4.6: Pearson Correlational Analysis Showing Relationship Between Teachers Training in ICT and the Competency Based Education Implementation

Correlations

		Competency Based Implementation
Teachers Training in ICT	Pearson Correlation	.439*
	Sig. (2-tailed)	.041
	N	74

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

n=74: Source: Primary Data from Kajiado North Sub-County primary schools 2025

The Pearson's correlation analysis results in Table 4.6 indicates existence of an average/medium significant positive linear relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.439*, P Value 0.041<0.05. The r value of 0.439* shows that there is an average relationship, while the p-value of 0.041 which is less than the alpha value of 0.05 shows that there is a significant relationship.

4.4.3 Qualitative Data

The qualitative data from the key informant revealed that teachers' ICT literacy is another major challenge influencing Competency Based Education implementation in schools. When head teachers were asked to describe their classroom Teachers' ICT literacy levels for Competency Based Education implementation in their schools, it was revealed that most of the schools have few teachers who have trained on computer applications. The views given by the key informants included;

> *"...in our school the classroom teachers have been trained on ICT through seminars and other private trainings but very few have mastered computer applications and this has greatly hindered the use of digital teaching material. In the whole school we have three teachers who at least have computer skills...."* ***(Source ICT Teacher KI-4 2025)***.
>
> In another school the head teacher said*; "...in this school there in only one teacher who as diploma in computer science and information technology. He is the who is helping us with computer work in the whole school. He is the one who trains learners during computer skills lesson...."* ***(Source ICT Teacher KI-3 2025)***.

4.5 To examine the influence of administrative support in integration of ICT in teaching and learning of Competency Based Education implementation in primary schools in Kajiado North Sub- County.

The third objective of the study was to examine the influence of administrative support in integration of ICT in teaching and learning of Competency Based Education implementation in primary schools in Kajiado North Sub-County. The objective was analyzed using both descriptive statistics and inferential statistics. The quantitative data of the objective was supported by the qualitative data as shown in the sub-sections below.

4.5.1 Descriptive Statistics

To analyze the objective descriptive statistics of frequency, percentage, mean and standard deviation tables were used. The mean and standard deviation were measured based on a 5-point Likert scale of; 1.00-1.79 (Very low), 1.80-2.59 (low), 2.60-3.39 (moderate), 3.40-4.19 (high) and, 4.20-5.00 (very high). The standard deviation of >1 indicated homogeneous respondents who were able to provide responses with a minimal variance. The standard deviation of <1 indicated heterogeneous respondents who provided response with high variance.

Table 4.7: Descriptive Statistics for Administrative Support in Integration of ICT

Administrative Support in ICT	Agree	Neutral	Disagree	Mean	Std. D
The administration regularly encourages teachers to integrate ICT into classroom activities.	17(23%)	44(59.5%)	13(17.6%)	3.2973	.75362
School leaders allocate sufficient time for teachers to prepare ICT-supported lessons.	12(16.2%)	35(47.3%)	27(36.5%)	3.0676	.84935
The administration organizes and facilitates regular ICT-related training for teachers.	12(16.2%)	11(14.9%)	51(68.9%)	3.2297	.71284
The school administration provides adequate technical support when ICT equipment breaks down or fails.	55(74.3%)	10(13.5%)	9(12.2%)	3.0405	.58378
The administration ensures that ICT resources (computers, projectors, and internet) are readily accessible to teachers and pupils.	6(8.1%)	56(75.7%)	12(16.2%)	2.8784	.72059
The school leadership allocates financial resources to maintain and expand ICT facilities.	14(18.9%)	31(41.9%	29(39.2%)	3.0541	.80906
The administration monitors and evaluates the progress of ICT integration in teaching.	11(14.9%)	16(21.6%)	47(63.5%)	2.3243	.76046
School leaders acknowledge and reward teachers who effectively use ICT in their lessons.	19(25.7%)	17(23%)	38(51.4%)	2.3649	.93008
The administration collaborates with ICT service providers to support ICT implementation in our school.	10(13.5%)	30(40.5%)	34(45.9%)	2.5676	.86136
The leadership promotes a positive attitude and culture towards ICT use among staff and learners.	13(17.6%)	12(16.2%)	43(58.1%)	2.3514	.93939
Aggregate Mean and Standard Deviation				**2.818**	**0.792**

n=74: Source: Primary Data from Kajiado North Sub-County primary schools 2025
Legend: Very High (4.20-5.00), High (3.40-4.19), Moderate (2.60-3.39), Low (1.80-2.59), Very Low (1.00-1.79).

The findings in Table 4.7 indicates a moderate level of administrative support in ICT (Aggregate Mean=2.818, S. D=0.792). This shows that majority of the respondents did not agree or disagree that: the administration regularly encourages teachers to integrate ICT into classroom activities 44(59.5%), school leaders allocate sufficient time for teachers to prepare ICT-supported lessons 35(47.3%), the administration ensures that ICT resources (computers, projectors, and internet) are readily accessible to teachers and pupils 56(75.7%), and the school leadership allocates financial resources to maintain and expand ICT facilities 31(41.9%). Consequently, other respondents disagreed with the statements that; the administration organizes and facilitates regular ICT-related training for teachers 51(68.9%), the administration monitors and evaluates the progress of ICT integration in teaching 47(63.5%), school leaders acknowledge and reward teachers who effectively use ICT in their lessons 38(51.4%), the administration collaborates with ICT service providers to support ICT implementation in our school 34(45.9%), and leadership promotes a positive attitude and culture towards ICT use among staff and learners 43(58.1%).

4.5.2 Inferential Statistics

The Pearson Correlational analysis to derive the Pearson correlational coefficient (r) which measures the strength, direction, and significance of the of the relationship between ICT

integration indicators and the Competency Based Education Implementation as shown in Table 4.5. The interpretation of the degree of linear correlation strength was made using measures as given by Creswell (2015): r = 0.00–0.199 (indicating a very low/very weak linear correlation), 0.20–0.399 (indicating a low correlation/weak linear correlation), 0.40 – 0.599 (indicating an average/medium linear correlation), 0.60–0.799 (indicating a high/strong linear correlation), and values exceeding 0.799 indicate a very high/very strong linear correlation between the two variables.

Table 4.8: Showing Relationship Between Administrative Support in ICT and the Competency Based Education Implementation

Correlations

		Competency Based Implementation
administrative support in ICT	Pearson Correlation	.831**
	Sig. (2-tailed)	.000
	N	74

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

The Pearson's correlation analysis results in Table 4.5 indicates existence of a very strong significant positive linear relationship between administrative support in ICT and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.831**, P Value 0.000<0.01. Due to the fact that 0.000 p-vale of was less than alpha value of 0.01 indicates a significant relationship.

4.5.3 Qualitative Data

The qualitative findings derived from the key informants regarding the ICT integration on the Competency Based Education implementation in primary schools in Kajiado North Sub-County supported the quantitative results provided by the teachers' respondents. The head teachers agreed that factors such as the availability of the ICT facilities, teachers' ICT literacy levels and school administration support highly influence the Competency Based Education implementation in primary schools in Kajiado North Sub-County. When the Head teachers were asked the challenges encountered by the teachers in ICT integration in curriculum implementation, how those challenges solved or what we are the plans put forward to solve those challenges. The views given by the key informants included;

> *"…in this school the challenges that we are facing includes few computers which do not have all the required software. Accessing internet is another problem because without strong internet learners cannot do their researches well. Most of our teachers they do not know how to use the computer effectively, but we have three teachers one*

*with diploma in IT and other two with certificate in IT. Those are the only teachers who are helping the learners…" (**Source Head Teacher KI-1 2025**)*

Qualitative data from the head teacher of the schools shows financial challenges are the main threat to school administration in integrating ICT in the Competency Based Education implementations.

*"…. In this school there is a challenge of finance for proper computer management, this is due to the fact that learners and parents have not yet appreciated the importance of ICT. The school has limited software which are being installed in the computers because the school has no money to buy other software. Some computers are running without antiviruses to mane the viruses…" **(Source Head Teacher KI-7 2025).***

*"…. some of the computers are not working and the school does not have money to repair them but we are planning to commit ourselves and repair them next term when we get money…." **(Source Head Teacher KI-6 2025).***

4.6 To determine the influence of ICT integration towards the Competency Based Education implementation in primary schools in Kajiado North Sub- County, Kajiado County, Kenya.

The fourth objective of the study was to determine the influence of ICT integration towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. It was analyzed to a certain the individual influence of each indicator of ICT integration on Competency Based Education implementation in primary schools Kajiado North Sub-County, Kajiado County, Kenya. To arrive at this, the multilinear regression analysis was used which resulted in the calculation of the Beta coefficient (β), as displayed in Table 4.9.

Table 4.9: Multilinear Regression Analysis

Coefficients					
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.365	5.585		4.721	.000
	availability of ICT resources	.151	.046	.252	3.311	.001
	teachers' ICT literacy	.215	.056	.284	3.820	.000
	administrative support in ICT	.218	.045	.369	4.873	.000

a. Dependent Variable: CBE curriculum implementation
b. Predictors: (Constant), administrative support in ICT, availability of ICT resources, teachers' ICT literacy
R=.834a,
R Square =.695
Adjusted R Square=.682
F=53.244
Sig.=.000b

Source: Primary Data from Kajiado North Sub-County primary schools 2025

According to this study, the multiple regression model summary results indicate an adjusted R square of 0.682 which implies that ICT integration influence CBE implementation in primary schools Kajiado North Sub-County by 68.2%. The remaining 31.8% is explained by other factors not included in the current model including class size, school infrastructure, parental involvement, workload and time constraints, assessment practices, learners' characteristics and others.

4.6.1 Availability of ICT Resources

According to results in Table 4.6, based on the findings (b=.252, t=3.311, p=.001<0.05), the findings suggests that Availability of ICT Resources has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The results indicate that there is adequate evidence that availability of ICT resources has a significant positive influence towards the Competency Based Education c implementation in primary schools in Kajiado North Sub-County.

4.6.2 Teachers' ICT Literacy

According to results in Table 4.6, based on the findings (b=.284, t=3.820, p=.000<0.05), the findings suggests that the teachers' ICT literacy has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The results indicate that there is adequate evidence that

the teachers' ICT literacy has a significant positive influence towards the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

4.6.3 Administrative Support in ICT

According to results in Table 4.6, based on the findings (b=.369, t=4.873, p=.000<0.05), the findings suggests that the school administrative support in the ICT has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The results indicate that there is adequate evidence that the school administrative support in the ICT has a significant positive influence towards the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

4.7 Hypothesis Testing

The study was guided by the following null-hypothesis:

$H0_1$: There is no statistically significant relationship between availability of ICT resources and Competency Based Education implementation among the primary schools in Kajiado North Sub-County.

$H0_2$: There is no statistically significant relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub-County.

$H0_3$: There is no statistically significant relationship between administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

Table 4.10: Hypothesis Testing

Hypothesis	Test/Result	Conclusion
$H_0$1: There is no statistically significant relationship between availability of ICT resources and Competency Based Education curriculum implementation among the primary schools in Kajiado North Sub-County.	b=.252, t=3.311, p=.001<0.05 A significant relationship	Rejected $H_0$1
$H_0$2: There is no statistically significant relationship between teachers' ICT literacy and Competency Based Education curriculum in primary schools in Kajiado North Sub-County.	*b=.284, t=3.820, p=.000<0.05 A significant relationship*	Rejected $H_0$2
$H_0$3: There is no statistically significant relationship between administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County.	*b=.369, t=4.873, p=.000<0.05 A significant relationship*	Rejected $H_0$3

Source: Primary Data from Kajiado North Sub-County primary schools 2025

Null hypothesis 1 ($H_0$1): The hypothesis stating that " there is no statistically significant relationship between availability of ICT resources and Competency Based Education implementation among the primary schools in Kajiado North Sub-County" was rejected as the P-value of 0.001 was less than the alpha value of 0.05 (P-value 0.001<α 0.05). These results implied that there was enough statistical evidence that availability of ICT resources have statistically significant relationship with Competency Based Education curriculum implementation among the primary schools in Kajiado North Sub-County.

Null hypothesis 2 (H02): The hypothesis stating that "there is no statistically significant relationship between teachers' ICT literacy and CBE curriculum implementation in primary schools in Kajiado North Sub-County" was rejected as the P value of 0.000 was less than the alpha value of 0.05 (P-value 0.000<α 0.05) implying that teachers' ICT literacy have a significant relationship with the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

Null hypothesis 3 ($H_0$3): The hypothesis stating that "there is no statistically significant relationship between administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County" was rejected as the P value of 0.000 was less than the alpha value of 0.05 (P 0.000<α 0.05) implying that school administrative support in ICT have a significant relationship with the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

CHAPTER FIVE
SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1: Introduction

This chapter provides the summary, conclusion and recommendations on the Information and Communication Technology (ICT) Integration in Competency Based Education Curriculum Implementation in Primary Schools of Kajiado North Sub- County, Kajiado County, Kenya. The study was guided by four specific objectives namely; To examine the influence of availability of ICT resources on Competency Based Education Implementation in primary schools in Kajiado North Sub-County, to establish the influence of teachers training in ICT on Competency Based Education implementation in primary schools in Kajiado North Sub-County, to examine the influence of administrative support in integration on ICT in teaching and learning on Competency Based Education implementation in primary schools in Kajiado North Sub- County, and to determine the influence of ICT integration towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. This study employed cross-sectional, descriptive and correlation designs guided by the mixed approach (qualitative and quantitative approach). The study collected the quantitative data using the self-administered questionnaire from the 74 teachers out of 88 teachers (representing 84.09% response rate), 263 grade 9 learners out of 280 (representing 93.9% response rate). This response rate was supported by Frankel et al. (2012) who argued that a response rate exceeding 60% is deemed adequate for the research. The study also collected the qualitative data from the 9 head teachers using the key informant interview guides. The unity of analysis for the study were the primary schools in Kajiado North Sub-County while the unity of inquiry were the 74 teachers and the 263 grade 9 learners.

5.2: Discussion of the Findings

5.2.1 To examine the influence of availability of ICT resources on Competency Based Education implementation in selected primary schools in Kajiado North Sub-County.

The descriptive statistics findings of objective one in Table 4.3 indicated a high level of Availability of ICT Resources which can be used in the implementation of the in selected primary schools in Kajiado North Sub-County (Aggregate Mean=3.355, SD=0.798). The majority 50(67.1%) of the respondents agreed that ICT resources such as stable electricity connection, enough overhead projectors, reliable and functioning photocopiers, Flash disks for each teacher to store the work, and computers with all the software required in teaching and learning are available in selected primary schools in Kajiado North Sub-County. While the

minority of the respondents disagreed with the availability of the ICT resources for the implementation of the CBE in their schools.

The descriptive statistics findings are in-line with the inferential statistics findings, where the Pearson's correlation analysis results in Table 4.4 indicates existence of a strong significant positive linear relationship between availability of ICT resources and Competency Based Education implementation in primary schools in Kajiado North Sub-County at a correlational coefficient r= 0.659*, P Value 0.017<0.05. This direct linear relationship implied improvement in the availability of the ICT resources in the in selected primary schools in Kajiado North Sub-County leads of the high improvement in the Competency Based Education implementation.

The study findings are in-line with adopting technology acceptance model theory, revealing that availability of ICT resources would have a linear positive and a curve slope upward from left to right with straight upward-sloping line relationship with Competency Based Education implementation. The strong positive relationships indicate that when availability of the ICT resources increases Competency Based Education in primary schools strongly improves or positively affected.

The findings of this study agree with the previous empirical study findings by Novatus and Mrema (2025) who found out that availability of the ICT resources highly affects the Competency Based Education implementation in Moshi primary schools. They concluded that there is significant positive relationship between availability of the ICT resources and the Competency Based Education implementation in Moshi primary schools. Ochogo (2024) in his empirical study found a significant positive relationship between availability of the ICT resources and the Competency Based Education implementation in Public primary schools in Ndhiwa Sub-county of Homa-Bay County Kenya.

In summary as per the findings, majority of the selected primary schools in Kajiado North Sub-County they have the ICT resources which they can use in the Competency Based Education implementation in the area. Even though some schools face challenges such as weak internet, computer software required in teaching and learning and unstable electrical power supply still they are in the position of implementing Competency Based Education.

5.2.2 To Establish the Influence of Teachers Training in ICT on Competency Based Education Implementation in primary schools in Kajiado North Sub-County.

The descriptive statistics findings for objective two in Table 4.5 indicates a moderate level of Teachers' ICT Literacy (Aggregate Mean=3.0110, SD=0.779). This shows that majority 45(60.22%) of the respondents neither agreed nor disagreed on their literacy in ICT. This means that they have average skills on basic computer applications, computer connection to other devices, integration of digital tools, troubleshooting minor ICT problems, and use of multimedia tools to support classroom instruction. This indicated that there in need for ICT training among the teachers in primary schools in Kajiado North Sub-County.

The descriptive statistics analysis findings are in-line with the inferential statistics findings from the Pearson Correlational analysis in Table 4.6 indicates existence of an average/medium significant positive linear relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub- County, at a correlational coefficient r= 0.439*, P Value 0.041<0.05. The average positive significant relationship implies that improvement in one unity of the teachers' ICT literacy will lead to average improvement in the Competency Based Education implementation in primary schools in Kajiado North Sub- County.

In relation to the Technology Acceptance Model (TAM) theory, this result indicates that teachers' ICT literacy would have a linear positive and a straight up-ward sloping line relationship with Competency Based Education implementation. The average positive relationships indicate that when teachers' ICT literacy increases Competency Based Education in primary schools averagely improves or positively affected.

The findings of this study agreed with previous empirical study findings by Kyakulumbye and Katono (2013) who found out that teachers' ICT literacy positively affects the curriculum implementation of primary schools in Masaka Uganda. They concluded that there is significant positive relationship between teachers' ICT literacy and the curriculum implementation in primary schools Masaka Uganda. Also, Bartilol et. al., (2025) in their studies they concluded that there is significant relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kenya.

The study findings indicate that there is average ICT literacy among the teachers in primary schools in Kajiado North Sub- County. Even though teachers try to attend ICT seminars and other ICT teachings but still many of them have not yet grasped well the ICT skills. Other

teachers have certificate level in ICT and very few of them have Diploma level in ICT. This brings a challenge when it comes to integration of ICT in the implementation of the Competency Based Education in public primary schools in Kajiado north subcounty. This calls for improvement in teachers training in ICT.

5.2.3 To examine the influence of administrative support in integration of ICT in teaching and learning of Competency Based Education implementation in primary schools in Kajiado North Sub- County.

The objective three descriptive statistics analysis findings in Table 4.7 indicates a moderate level of administrative support in ICT (Aggregate Mean=2.818, S. D=0.792). This shows that majority 42(56.36%) of the respondents were not sure with the administrative support in integration of ICT in teaching and learning. Many of the respondents were not sure if school administrations encourage ICT integration, allocate sufficient time for ICT preparation, availability of ICT resources, and allocates finance for ICT facilities. This shows that school administration support to ICT integration is not clearly determined in many primary schools.

This descriptive statistic finding was in-line with the inferential statistics as the Pearson Correlational analysis results in Table 4.5 indicates existence of a very strong significant positive linear relationship between administrative support in ICT and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.831**, P Value 0.000<0.01. This finding implied that one unity increase in administrative support in ICT will be led to very high improvement in Competency Based Education implementation in primary schools in Kajiado North Sub-County. This indicated that administrative support in ICT is the main factor which very highly influence the CBE implementation.

In relation to the Technology Acceptance Model (TAM) theory, this result indicates that administrative support in ICT would have a linear positive and the points of the lie very close to a straight upward-sloping line with little or no scatter around the trend line implying very strong relationship with Competency Based Education implementation. The very strong positive relationships indicate that when administrative support in ICT increases Competency Based Education in primary schools increases in a constant way.

These objective findings are in agreement with the previous empirical study findings by Murithi and Yoo (2021) whose study found out that 47.9% of the teachers uses ICT due to the availability of ICT Resources, their level of ICT Literacy, and the schools' administrative support in ICT in the implementation of the competency-based curriculum in Kenya public primary schools. They also found strong positive linear relationship between school administration support and CBC implementation in public primary schools in Kenya. They argued that when the school administration support the ICT integration teachers feels motivated to integrate ICT in teaching and learning. They concluded that school administration support significantly influences the Competency Based Education implementation in public primary schools in Kenya.

The study findings reveal that majority of the school administration are averagely involved in the integration of ICT in teaching and learning, because of their support to the program. On the other hand, inferential statistics revealed that school administration support in ICT integration is the major factor influencing Competency Based Education implementation. This is because School administrations are the once behind availability and to some extent teachers training in ICT. Therefore, there is a need for the primary school administrators to strongly supports the integration of ICT in the Competency Based Education implementation in the primary schools in Kajiado north subcounty.

5.2.4 To determine the influence of ICT integration towards the Competency Based Education implementation in primary schools in Kajiado North Sub- County, Kajiado County, Kenya.

The multilinear regression analysis findings for objective four the results indicate an adjusted R square of 0.682 which implies that ICT integration influence CBE implementation in primary schools Kajiado North Sub-County by 68.2%. The remaining 31.8% is explained by other factors not included in the current model including class size, school infrastructure, parental involvement, workload and time constraints, assessment practices, learners' characteristics and others. This implied that if primary schools in Kajiado North Sub- County can improve on ICT integration in teaching and learning the CBE implementation can improve by 68.2%.

Concerning the availability of ICT Resources, findings in Table 4.6 suggests that Availability of ICT Resources has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The positive significant influence on Competency Based Education implementation means that

when ICT resources such as computers are available it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County. The beta value of 0.252 implies that when other factors in the model are kept constant availability of the ICT resources influence 25.2% of the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

As per the Teachers' ICT Literacy, the findings in Table 4.6, suggests that the teachers' ICT literacy has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The positive significant influence on Competency Based Education implementation means that when the teachers' literacy on ICT is improved it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County. The beta value of 0.284 implies that when other factors in the model are kept constant the teachers' ICT literacy influence 28.4% of the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

Consequently, administrative support in ICT findings in Table 4.6, suggests that the school administrative support in the ICT has significant influence towards the Competency Based Education implementation in primary schools Kajiado North Sub- County, Kajiado County, Kenya. The positive significant influence on Competency Based Education implementation means that when the school administrative support in the ICT is increased or improved it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County. The beta value of 0.369 implies that when other factors in the model are kept constant the school administrative support in the ICT influence 36.9% of the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

The study findings are consistent with Fred D. Davis in (1989)'s Technology Acceptance Model theory (TAM), which posits that "peoples' intention to use a technology and ultimately their actual use is driven by the degree of which a person believes that using a particular technology will improve their performance and the degree to which a person believes that using the system will be free of the efforts". The theory explains that technologies such as computers are intricate, leading to ambiguity in people's perceptions regarding their effective utilization: individuals develop attitudes and intentions toward attempting to learn technology usage. The negative perceptions threats to jo security, distrust in technology, reduction of autonomy and

fear of change due to comfort with old processes erode this sense of belonging increasing psychological distress towards the ICT use in primary schools. Therefore, building positive perception about ICT's usefulness and ease to use among teachers, school administration and learners is essential for Competency Based Education implementation in primary schools of Kajiado North Sub-County in Kajiado County.

5.2.4.1 Hypothesis Testing

The hypothesis stating that " there is no statistically significant relationship between availability of ICT resources and Competency Based Education implementation among the primary schools in Kajiado North Sub-County" was rejected as the P-value of 0.001 was less than the alpha value of 0.05 (P-value 0.001<α 0.05). These results implied that there was enough statistical evidence that availability of ICT resources have statistically significant relationship with Competency Based Education curriculum implementation among the primary schools in Kajiado North Sub-County. The results are in-line with the previous study findings of Gronlund & Islam (2020) whose study revealed a positive significant contribution of availability of ICT resources towards the implementation of Competency Based Education in secondary schools.

The hypothesis stating that "there is no statistically significant relationship between teachers' ICT literacy and CBE curriculum implementation in primary schools in Kajiado North Sub-County" was rejected as the P value of 0.000 was less than the alpha value of 0.05 (P-value 0.000<α 0.05) implying that teachers' ICT literacy has a significant relationship with the Competency Based Education implementation in primary schools in Kajiado North Sub-County. The results are supported by previous study results of Komis and Jimoyinnis (2018) whose study revealed a positive significant relationship between the teachers' computer skills and Competency Based Education implementation in secondary schools. Tondeur & Valckle (2018) empirical study they concluded that there is a positive significant influence of teachers' technical competencies towards the Competency Based implementation in secondary Schools in Ghana.

The hypothesis stating that "there is no statistically significant relationship between administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County" was rejected as the P value of 0.000 was less than the alpha value of 0.05 (P 0.000<α 0.05) implying that school administrative support in ICT have a significant relationship with the Competency Based Education implementation in

primary schools in Kajiado North Sub-County. The results are supported by a previous study result of Kozma (2020) who found a positive significance influence of school administrative support in ICT towards the Competency Based Education implementation in primary schools. He added that ICT was one of the strategies to achieve the maximum implementation of the Competency Based Education in primary schools.

The findings indicated a statistically significant positive relationship between availability of ICT resources, teachers' ICT literacy, school administrative support in ICT and the Competency Based Education implementation in primary schools in Kajiado North Sub-County, suggesting that availability of ICT resources, teachers' ICT literacy, and school administrative support in ICT were realized to substantial positive influence on the Competency Based Education implementation in primary schools in Kajiado North Sub-County.

5.3: Summary of the Findings

In objective one, the descriptive analysis findings indicated a high level of Availability of ICT Resources (Aggregate Mean=3.355, SD=0.798) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of a strong significant positive linear relationship between availability of ICT resources and Competency Based Education implementation in primary schools in Kajiado North Sub-County at a correlational coefficient r= 0.659*, P Value 0.017<0.05. The results suggest that when the school has ICT resources, its level of Competency Based Education implementation is highly positively influenced. The strong positive relationships indicate that when availability of the ICT resources increases CBE curriculum in primary schools strongly improves or positively affected.

In objective two, the descriptive analysis findings indicated a moderate level of Teachers' ICT Literacy (Aggregate Mean=3.011 0, SD=0.779) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of an average/medium significant positive linear relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.439*, P Value 0.041<0.05. The results suggest that when the teachers' ICT literacy increases in the school its level of Competency Based Education implementation is averagely positively influenced. The average positive

relationships indicate that when teachers' ICT literacy increases Competency Based Education in primary schools averagely improves or positively affected.

In objective three, the descriptive analysis findings indicated a moderate level of administrative support in ICT (Aggregate Mean=2.818, S. D=0.792) in public primary schools in Kajiado North Sub-County. The Pearson's correlation analysis results indicate existence of a very strong significant positive linear relationship between administrative support in ICT and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient r= 0.831**, P Value 0.000<0.01. The results suggest that when the administrative support in ICT increases the level of Competency Based Education implementation is very highly influenced positively. The very strong positive relationships indicate that when administrative support in ICT increases Competency Based Education implementation in primary schools increases in a constant way.

In objective four, the multiple regression analysis results indicate an adjusted R square of 0.682 which implies that ICT integration influence Competency Based Education implementation in primary schools Kajiado North Sub-County by 68.2%. The remaining 31.8% is explained by other factors not included in the current model including class size, school infrastructure, parental involvement, workload and time constraints, assessment practices, learners' characteristics and others. The results indicated adequate evidence that availability of ICT resources has a significant positive influence towards the Competency Based Education implementation (b=.252, t=3.311, p=.001<0.05), this means that when ICT resources such as computers are available it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County. The results indicated adequate evidence that the teachers' ICT literacy has a significant positive influence towards the Competency Based Education implementation (b=.284, t=3.820, p=.000<0.05), this means that when the teachers' literacy on ICT is improved, it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County. The results revealed an adequate evidence that the school administrative support in the ICT has a significant positive influence towards the Competency Based Education implementation (b=.369, t=4.873, p=.000<0.05), this implied that when the school administrative support in the ICT is increase or improved it leads to improvement on Competency Based Education implementation in primary schools in Kajiado North Sub-County.

5.3 Conclusion

There exists a high level of Availability of ICT Resources (Aggregate Mean=3.355, SD=0.798) and a strong significant positive linear relationship between availability of ICT resources and Competency Based Education implementation in primary schools in Kajiado North Sub-County at a correlational coefficient r= 0.659*, P Value 0.017<0.05, implying when the school increases ICT resources, its level of Competency Based Education implementation is highly and positively improving or positively affected.

There is a moderate level of Teachers' ICT Literacy (Aggregate Mean=3.011 0, SD=0.779) and an existence of an average/medium significant positive linear relationship between teachers' ICT literacy and Competency Based Education implementation in primary schools in Kajiado North Sub- County, at a correlational coefficient r= 0.439*, P Value 0.041<0.05, implying that when the teachers' ICT literacy increases in the school, the level of CBE curriculum implementation is averagely and positively improved or affected.

There is a moderate level of administrative support in ICT (Aggregate Mean=2.818, S.D=0.792) and a very strong significant positive linear relationship between administrative support in ICT and Competency Based Education implementation in primary schools in Kajiado North Sub-County, at a correlational coefficient (r= 0.831**, P Value 0.000<0.01), implying that when the administrative support in ICT increases the level of Competency Based Education implementation is very highly improves in a constant way.

The ICT integration influence Competency Based Education implementation in primary schools Kajiado North Sub-County by 68.2%. The remaining 31.8% is explained by other factors not included in the current model including class size, school infrastructure, parental involvement, workload and time constraints, assessment practices, learners' characteristics and others. The ICT integration indicators such as availability of ICT resources, teachers' ICT literacy, and school administrative support in ICT were realized to significant positive influence on the Competency Based Education implementation in primary schools in Kajiado North Sub-County. This implied that when ICT integration is improved or increased through availability of ICT resources, teachers' ICT literacy, and school administrative support in ICT it leads to improvement on Competency Based Education curriculum implementation in primary schools in Kajiado North Sub-County.

5.4 Recommendations

Out of the study findings and conclusion the researcher recommended the following:

The availability of ICT resources was realized to have a significant positive influence on the Competency Based Education implementation in primary schools in Kajiado North Sub-County, therefore school administration together with other administrators in the education sector they should provide ICT resources such as computers, reliable internet, reliable electricity and other resources to the primary schools for better Competency Based Education implementation.

The teachers' ICT literacy was realized to have a significant positive influence on the Competency Based Education implementation in primary schools in Kajiado North Sub-County, thus the education office at Kajiado North Sub-County together with Kajiado county should invest more on teachers' ICT literacy by encouraging and sponsoring more teacher to attend ICT organized seminars and enrolling in ICT related short courses. By having more teachers who are literate in ICT will lead to improvement in implementation of the Competency Based Education in primary schools.

The school administrative support in ICT was realized to have a significant positive influence on the Competency Based Education implementation in primary schools in Kajiado North Sub-County, therefore school administration from the school to the ministry of education science and technology should support the implementation of the Competency Based Education implementation through ICT integration in providing the ICT resources and equipping teachers with ICT skills.

5.4.1 Areas of Further Research

This study focused on public primary schools only in Kajiado North Sub-county, other researchers should carry out similar empirical studies in public secondary schools in Kajiado North Sub-county and in other sub-counties within Kajiado County to identify best practices and areas for further enhancement in the implementation of Competency Based Education Implementation curriculum.

REFERENCES

Abbasi, M. et al (2015). *ICT integration in Education*. The Greek and Spain perspectives amidst an economic crisis. Eden Annual Conference 2015, Barcelona, 9-12.

Abdelrahman, A. (2015). *Managing Information and Communication Technology in Sudanese Secondary School*. In the Journal of Education and Practice, ISSN 2222-1735 (PAPERS) TSSN 2222- 288X (Online), 6(32), pp. 1-8. Available on www.iiste.org.

Abobo, F.C (2018). Influence of Technology Education on Kiswahili achievement in classrooms among Primary School Pupils in Kisii County, Kenya. *European Journal of Literature and Linguistic Studies,* 2(3), 135-146.

Aina, J. K. (2012). *Factors affecting student's performance in science in Nigerian schools*.

Olanipekun, S. S. (2013). Students' proficiency in English language relationship with academic performance in science and technical education. *American Journal of Educational Research,* 1(9), 355-358.

Alazam, A.O., Baker, A. R., Hamzar, R., & Asmiran, S. (2012). *Teachers' ICT skill and ICT integration in the classroom: The case of vocational and technical teachers in Malaysia. Scientific Research,* 3 (1), 70-76. Doi; 10.4236/ce.2012.38b016

Albion, P.R., Tondeur, J., Forkosh Baruch, A., & Peeraer, J. (2015). Teachers' Professional Development for ICT Integration: Towards a reciprocal relationship between research and practice. *Education and Information Technologies*, 20, 655-613.

Alvarez Marinelli, H. et al., (2020). *La Educación en Tiempos del - Coronavirus: Los -Sistemas de América. Latina- y- el- Caribe- ante- Covid -19". Documento para Discussion, No*. 1DB – OP-00768, Washington, D.C; Inter-American Development Bank (DB), https://publications.iadb.org/es/la-educacion-en-tiempos-del-coronavirus-los-sistemas- educativos-de-america-latina-y-el-caribe-ante-Covid-19.pdf.

Babbie, E. (2014). *The basics of social research* (6th Ed). Belment, OA: Wadworth, Cengage learning.

Bada, T, Adewole A, &Olalekan, O. (2009). Uses of Computer and its relevance to teaching and learning in Nigerian Educational System. *Educational Research Review*, 4(10), 443-447.

Bago, J.L, Ouédraogo, M., Akakpo, K., Lompo, M.L., (2020). Early Childhood Education and Child Development: New Evidence from Ghana. *Children and Youth Services Review*, 108, 124620.

Barakabitze, A. A., et al, (2019). Transforming African Education Systems in Science, Technology, Engineering, and Mathematics (STEM) using ICTs: Challenges and opportunities.'' *Education Research International*.

Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-COVID-19Pandemic in Georgia. *Pedagogical Research*, 5(4), 10.

Beri, N., & Shama, L. (2019). Teachers" attitude towards integrating ICT in teacher education. *International journal of innovative Technology and Exploring Engineering*, 8(8), 285-295.

Beschorner, B., & Woodward, L. (2019). Long-term planning for technology in literacy instruction. *The Reading Teacher*, 73(3), 325-337.

Best, J. W., & Kahn, V. K. (2006). Research in Education. New Delhi: Prentice Hall of India.

Bonilla-Molina, L. (2020). *Covid-19 on route of the fourth industrial revolution. Post-digital Science and Education,* 2(3), 562-568.

Brand S.P., Aziza, R., Kombe I.K., Agoti, C.N., Hilton, J, Rock, K., S., & Barasa, E. (2020). *Forecasting the Scale of the COVID-19 Epidemic in Kenya*. MedRxiv.

Brown, A. & Otieno, B. (2020, May 7). *Learning from Home in Kibera during Covid-19. UNICEF Kenya.*

Bryman, A., & Bell, E. (2015). *Business Research Methods*. London; Oxford university press.

Bryson, J.R., & Andres, L. (2020). COVID-19 and Rapid Adoption and Improvisation of Online teaching: Curating resources for extensive versus online learning experiences. *Journal of Geography in Higher Education*, 1-16.

Carter, L. (2021). Rhoda Power, BBC Radio, and Mass Education, 1922-1957. Revue Française de Civilisation Britannique. *French Journal of British Studies*, (XXVI-1).

Cohen, L., Marison L. & Morrison K. (2018). *Research methods in education* (8th Ed). Routledge.

Colace F., De Santo M., Pietrosanto, A. (2019). Evaluation Models for E-Learning Platform: An AHP Approach*. Frontiers in Education Conference*, 36 Annex San Diego, Institute of Electrical & Electronics Engineering; 1- 6.

Colao, A., Piscitelli, P., Pulimeno, M., Colazzo, S., Miani, A., & Giannini, S. (2020). Rethinking the role of the school after COVID-19. *The Lancet Public Health*, 5(7), e370.

Cresswell, J. (2014). *Research Designs: Quantitative, Qualitative, and mixed methods approach*. Sage Publications Inc.

Cresswell, J. W and Miller, G.R. (2002). *Research designs: Quantitative, qualitative and mixed methods approach. California*: Sage publications Inc.

Cresswell, J.W. (2014). *Research design: Qualitative, quantitative and mixed methods approach (5tth Ed).* Sage publishers.

Croteau, A. M., Denktash, V., Beaudry, A., & Rabah, J. (2015). *The role of information and communication technologies in university students' learning experience: The instructors' perspective,"* In proceedings of the 48th Hawaii International Conference on System Sciences (HICSS 2015), (pp. 111-120), IEEE, Kauai, HI, USA.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management science*, 35(8), 982-1003.

Deb S. (ed.) (2018). *Positive Schooling and Child Development: International Perspectives. Springer.*

Delcker, J., & Ifentheler, D. (2020). Teachers' perspective on school development at German vocational schools during the Covid -19 pandemic. *Technology, pedagogy and Education,* 30(1), 121-135.

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technological Systems*, 49 (1), 5 – 22.

Dorn, E., Hancock, B; Sarakatsannis J., & Virulg, E., (2020). *COVID-19 and Learning Loss-Disparities Grow and Students Need Help*. Mickensey & Company.

Dubey, D.B., & Singh, D. S., (2020). Perception of teachers on online teaching in higher education during COVID-19 lockdown. *International Journal of Creative Research Thoughts* (IJCRT), 8(5), 1017 – 1022

ECLAC (Economic commission for Latin America and the Caribbean). (2020 a). *Latin America and the Caribbean and the COVID-19 Pandemic Economic and Social effects. Special Report Covid-19*, 1, Santiago.

Enu, J., Nkum, D., Ninsin, E., Diabor, C.A., & Korsah, D.P. (2018). Teachers' ICT skills and ictusage in the classroom. *The case of basic school teachers in Ghana journal of education and practice*, 9(20), 35-38. Retrieved from www.iiste.org

Escueta, M., et al. (2017). *Education Technology: An Evidence- based review*. NBER Working, Paper No. 23744, http://dx.dos.org/10.3386/w23744

Erumit, S. (2020). The distance education process in K-12 schools during the pandemic period: Evaluation of implementations in Turkey from the students' perspective. *Technology, pedagogy and education*, 30(1), 71-90.

Gay, L., Mills, G. E, & Airasian. (2010). *Educational research Competencies for analysis and application* (10th Ed). Pearson Education.

Gay, R., Mills, G Airasia, P. (2006). *Educational Research: Competences for Analysis and Application:* 8th Ed.). Prentice Hall.

Gilakjani, P. A., Sabouri, B. N., & Zabihniae Mran, A. (2015). *What are the barriers in the use of computer technology in EFLL instruction? Review of European Studies*, 7(110), 173-181.

Heinrich, C.J., Aduana, J.D., & Martin C. (2020). The Potential and Prerequisites of effective tablet integration in rural Kenya. *British Journal of Educational Technology*, 51(2), 498- 514.

Henn, M., Weinstein, M., & Foard, N. (2009). *A critical introduction to social Research*, 2nd. Sage Publications Ltd.

Hwang, D.J. Yang, H., & Kim, H. (2010). *E-Learning in the Republic of Korea*. Moscow: UNESCO Institute for Information Technology in Education.

Jackson, L. S. (2009*). Research methods and statistics: A critical thinking approach*. Macmillan Publishing Solutions.

Jacques, S., Ouahabi, A., & Lequeu, T. (2020). *Remote Knowledge Acquisition and Assessment*. During the COVID-19 Pandemic. Int. J. Eng. Pedagog., 10(6), 120-138.

Johnson, R. B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches* (2nd Ed) Boston; Pearson Education.

Kaur N., Dwivedi D., Arora J., Gandhi A. (2020). Study of the Influence of E-Learning to Conventional Teaching in Medical Undergraduates amid COVID-19 Pandemic. *National Journal of Physiology, Pharmacy and Pharmacology*, 10 (7), 1.

KICD (2017). *Basic Education Curriculum Framework Government Printer.*

Kombo, D.K. & Tromp, D.L.A. (2006). T*hesis writing. An introduction. Nairobi. Pauline's publication.*

Kombo, D. K. & Tromp, D. L. A. (2011). *Proposal and thesis writing: An introduction. Nairobi: Acts Press.*

Kothari, C. R. (2014). *Research Methodology: Methods and Techniques (3rd. Ed.).* New Delhi: Wiley Publications.

Kothari, C.R. (2008). *Research Methodology, Research and Techniques*. New Delhi: New Age international publishers.

Kuskaya, F. M., & Kokale, Y.U. (2010). *ICT in vocational and technic-as schools: teachers' instructional managerial and personal use matters*. TOJET: The Turkish Online Journal of Educational Technology, 9(1), 107-113.

Langat A.C. (2015). Barriers Hindering Implementation, Innovation and Adoption of ICT in Primary Schools in Kenya. *International Journal of Innovative Research and Development,* 4(1-11).

Lawrence, J. E., & Tar, U. A. (2018). Factors that influence teachers' adoption and integration of ICT in teaching/learning process. *Educational Media International*, 55(1), 79-105.

Lipesa, A.H. Anyona, J. & Kanga, A. (2018). Influence of Integrating Information Communication Technology in Enabling E-Leadership in Public Secondary Schools, Busia County, Kenya. Busia County, Kenya. *International Journal of Scientistic and Engineering Research*, Vol.9, Issue 9 pp. 1-27. (1)

Lodico, G., Spaulding, D., & Voegtle, K. (2006). *Methods in Educational Research: From theory to practice U.S.A*: Jossey Bass.

Mahmood, S. (2021). Instructional strategies for online teaching in COVID-19 pandemic. *Human behavior and emerging technologies*, 3(1), 199-203.

Maluei, K.S. (2019). Implementation of the New Curriculum (2-6-3-3-3) in Kenya. IQSR *Journal of Business and Management*, 21(5), 67-71.

Mancera Corusera, C., L. Serna Hernández L., & M. Barrios Belmonte (2020). *Pandemia: Maestros, tecnología. Desigualdad.* Nexos, https://educacion.nexos.com.mx/pandemia- maestros-tecnologia-y-desigualdad/.

Maniar, V. (2019). Towards a Theory of Schooling for good Life in Post-Colonial Societies. *Journal of Human Values*, 25(3), 166-176

Mariga G., Ogenga, S. Shikali C., & Muliaro, J. (2017). Computer laptop project Strategy for basic education schools in Kenya. *International Journal of Information and Communication Technology Research*, 7(5).

Marylin. K, S., & Goes, J. (2013). *Dissertation and scholarly research; Recipes for success*. Seattle, WA: Dissertation Success LLC.

Masaviru, M. (2020). *From Physical Classrooms to E-Learning and Online Teaching: A Case Study of Light International School, Mombasa*.

Mbithe, F. (2016). *Factors influencing teacher participation in integration of ICT in teaching and learning in public secondary schools in Machakos Sub –County* (Unpublished M.Ed. Thesis). South Eastern Kenya University.

Mbogo, R. W. (2020). Leadership Roles in Managing Education in Crises: The Case of Kenya during COVID-19 Pandemic. *European Journal of Education Studies*, 7 (9).

Messina, D & L. Garcia (2020). Estudio diagnostico sobre decentes, en America Latina, el Caribe. *Documento de Trabajo, Santiago, United Nations Educational, Scientific and Cultural Organization* (UNESCO).

Mhlanga P., Moloi T. (2020). *COVID-19 and the Digital Transformation of Education: What Are We Learning in South Africa? Education Sciences*, 10(7).

MOE. (2020). *Kenya Basic Education Sector COVID-19 Emergency Response Plan 2020. Nairobi, Kenya.*

MOE. (2018). *Kajiado County Schools Census report. County Education office. Kajiado County, Kenya.*

Mohammed, T. A. & Abuldughani, A. A (2017). Impact of students' use of technology on their learning achievements in physiology courses at the University of Dammam. *Journal of Taibah, University Medical Sciences,* 12(1), 82-85. Retrieved from http:// www. Science direct.com

Molina M. (2020). *Educación: La Brecha Digital Profundiza Las Desigualdadesen La Pandemia. Pagina,* https://www.pagina12.com.ar/266370-educacion-la-brecha-digital-profundiza- las-desigualdades-en-.

Morrison, F.J., Kim M.H., Connor, C. M., & Grammer, J. K. (2019). The Causal Impact of Schooling on Children's Development: Lessons for Developmental Science. *Current Directions in Psychological Science,* 28(5), 441-449.

MUA University, (2020, October 11). *What is Education and Development? (Kathyla, D.N., 8 Munyao L.M., Eds). Nairobi, Nairobi County Kenya: unpublished*

Mugenda, A. G., & Mugenda, O. M. (2012). *Research methods: Dictionary*. Nairobi, Acts Press.

Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi, Acts press.

Mugenda, O., & Mugenda, A. (2010). *Research Methods. Quantitative and Qualitative Approaches*. Nairobi: Acts Press.

Muinde, S.M. & Mbataru, P. (2019). Determinants of Implementation of Public Sector Projects in Kenya; a Case of Laptop Project in Primary Schools in Kangundo Sub-County, Machakos County. *International Academic Journal of Law and Society*, 1(2), 328 – 352.

Mukhtar K., Jared K., Arooj M., & Seth A., (2020). Advantages, limitations and recommendations for online learning during COVID-19Pandemi era. *Pakistan Journal of Medical Sciences,* 36(4), doi: 10.12669/pjms.36.

Mulenga, E.M., Marbán, J.M., (2020). Is COVID-19 the Gateway to Digital Learning in *Mathematics Education? Contemporary Educational Technology*, 12(2), ep 269.

Mutisya, A.M., Mwania J.M. & D. M. Mulwa, (2017). The influence of school related factors on ICT integration in the management of public secondary schools in Kitui County, Kenya. *European Journal of Education Studies*, 5(11), 193-204.

Mutwiri, L.M., Kafwa, W.N., & Kyalo, M. (2017). The role of principals in Information and Communication Technology (ICT) policy formulation in public secondary schools in Kenya. *Kabarak Journal of research & Innovation*. 5(1). 118-128.

Murithi, J., & Yoo, J.E. (2021). Teachers' use of ICT in the implementing the competency-based curriculum in Kenya public primary schools. *Innovation and Education*, 3,5.

Mwangi, M. & Khatete D. (2017). Teacher professional development needs For Pedagogical ICT Integration in Kenya: Lessons for transformation. *European Journal of Education Studies*, 3(6), 634 - 648

Ngeno, B. Sang, H., Chemosit, C. (2020). Teachers' Computer Literacy in Selected Public Primary Schools in Ainamoi Sub-County in Kericho County, Kenya. *East African Journal of Education Studies*, 2(1), 1-7.

Njathi, S. N., Ngaruiya, B., & Maithya, P. (2018). Influence of principals' perception of computer on their use in administration of public secondary schools in Kiambu County, Kenya. *European Scientific journal*. 14(31). 178-190.

Nyanchoka, M.D., Matula, P, D, & kalai, J.M. (2015). *Factors Influencing Principals ICT integration in Administration of Public Secondary Schools in Isinya Sub-county, Kenya.* Masters, Unpublished: University of Nairobi.

Ogachi, N.M. (2015). *Factors influencing principals' integration of information communication technology in administration of public secondary schools in Isinya sub-county, Kenya*. Master's Thesis

Ogula, P. A. (2010). *A guide to research proposal and report writing. Nairobi; 2010. The Catholic University of Eastern Africa press*.

Oluwatayo, J.A. (2012). A. (2012). *Assessment of complete literacy of secondary school teachers in Elati State, Nigeria. Educational Research and Reviews*. 8(2), 1-8. Retrieved from www.Journals.cluteonline.com/index.php/JIER/articles/download/6904.

Omito, O. Kembo, J., Ayere, M., & Ali A. (2019). Teachers' Computer Capacity in Public Primary Schools in Homabay County, Kenya: The Case of the Digital Literacy Programme. *European Scientific Journal* 15(19), 301-325

Omollo, D, Indoshi, F. C., & Ayere, M. A. (2013). Attitude of teachers and students toward use of information and communication technology in the implementation of Biology Curriculum in selected secondary schools. *Research journal in organizational psychology and educational studies: Emergency Academy Resources*.

Omolo, R., Kandago M. & Wanami, S. (2011). Assessment of Benefits of ICT Integration in teaching Kiswahili in Public Primary Teachers colleges in Kenya, the case of Rift Valley region. *International Journal of Engineering Science Invention*, 6 (10), 01-07.

Onyema, E.M., Eucheria, N.C. Obafemi, F. A., Sen, S., Atonye, F.G., Sharma, A., & Alsayed, A. O. (2020). *Impact of Coronavirus Pandemic on Education*.

Orodho, J. A. (2004). *Techniques of writing research proposals and reports in education and social sciences*. Nairobi: Masola Publishers.

Orodho, J. A. (2008). *Techniques of Writing Research. Proposal and Reports in Education and Social Sciences.* Kanezja. Maseno. Kenya.

Orodho, J. A. (2009). *Elements of Education and Social Science Research methods*. Maseno: kanezja publisher.

Oxford Reference. (2021). *Information Technology – definition*. Oxford Reference, https://www.oxfordreference.com/view/10.93/0:/authority.20110803100003879

Oyier, C., Odundo, P., Ganira, L., Kahiga. R. (2015). Effects of ICT Integration in Management of Private schools in Nairobi County, Kenya: Policy Options and Practices. *World Journal of education* 5(6).

Parmigiani, D., Benigno, V., Glusto, M. Silvaggioi, C., & Sperandio, S. (2020). E-inclusion: online special education in Italy during the Covid -19 pandemic. *Technology, pedagogy and Education*, 30(1)107-120.

Peters, M. A., Jandrić, P., & McLaren, P. (2020). Viral modernity? Epidemics, infodemics, and the 'bioinformational' paradigm. *In Pandemic Education and Viral Politics* (pp. 9-40). Routledge.

Peterson, A. Et al. (2018.) "Understanding innovative pedagogies: Key Themes to analyse new Approaches to teaching and learning", *OECD Education Working Papers*, No. 172 https://doi.org/10.1787/gf843abe_en.

Piper, B, Jepkemei, E. Kwayumba, & K. Kibukho, (2015). Kenya's ICT Policy in Practice: The Influence of Tablets and E-readers in Improving Student Outcomes. *Forum for International Research in Education* 2(1), 3-18

Rapanta, C, Botturi, L, Goodyear, P, Guàrdia, L, & Koole, M. (2020). Online University Teaching During and after the COVID-19Crisis: Refocusing Teacher Presence and Learning Activity (Published Online ahead of print, 2020 July 7). *Post digital Science & Education,* 1-23.

Republic of Italy. (2020). Misure of Potenziamento del Servizio Sanitario Nazionale e di Sostegrio Economico per Famiglie, Lavoratori e Imprese Connesse all'emergenza Epidemiologica da Covid-19. (Law Decree 17th March 2020 No.18). *Gazetta Ufficiale Della Republica Italiana,* 161 (70).

Republic of Kenya, (2019). *Policy framework for reforming Education and training for sustainable development in Kenya*. Nairobi: Government Printer.

Sahu, P.K. (2013). *Research Methodology: A guide for research in agricultural Science, Social Science and other related fields*. Tata McGraw Hill.

Scully, D, Lehane, P., & Scully, C. (2021). 'It is no longer scary': Disity learning before and during COVID-19pandemic in Irish secondary schools. *Technology, pedagogy and Education,* 30(1), 155-177.

Sharma, S.R (2008). *Encyclopedia of modern educational research*. New Delhi: Anmol Publication.

Simba, J., Sinha, L., Mburugu, P., Agweyu, A., Emadau, C., Akech, S., & English, M. (2020). *Is the Effect of COVID-19on Children Underestimated in Low- and Middle- Income Countries*? Acta Paediatrica.

Simon, M.K., & Goes, J. (2014). *Dissertation and scholarly research: Recipes for system. Dissertation Success LLC.*

Simon, M. K. (2011). *Dissertation and scholarly research: Recipes for success, scattle, W.A, Dissertation Success, LLC*.

Singh V., & Thurman A., (2019). How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). *American Journal of Distance Education*, 33(4), 289-306

Subedi, S., Nayaju. S., Subedi S.K. Shah J.M (2020). Impact of e-Learning during COVID- 19 Pandemic among Nursing Students and Teachers of Nepal. *International Journal of Science & Healthcare Research,* 5(3), 9.

Sulemana, A., Anyanful, V.K., & Abdulai, I.B., (2018). The relationship between teachers' ICT knowledge and availability of ICT facilities in the junior high schools: A case study in the Savulugu District in the Northern Region of Ghana. *The International Journal of Innovative Research and Development.* DOI:10.24940/ijird/2019/v7/16/JUN 18006.

Sutter, F., & Kihara, A. (2019). Determinants of successful implementation of digital literacy project in public primary schools in Baringo County, Kenya. *Journal of entrepreneurship and project Management*, 4(1), 96-117. Retrieved from www.carijournals.org.

Swarts, R., & Wachira, E., M. (2010). Tanzania: ICT in education situational analysis. *Ministry of Education and Vocational Training.*

Tanui, M. (2013). *Principals' role in promoting the use and integration of information and communication technology in public secondary schools in Wareng Sub- County, Kenya*. (Unpublished M.Ed. Thesis)

Tekaya, E., & Asaye, Y. (2016). A Survey of Information Communication Technology Literacy among lectures. *Information and Knowledge Management*, 6(8), 1-7.

Trucco, D. & A. Palma (2020). *Childhood and adolescence in the digital age: A comparative report of the Kids Online surveys on Brazil, Chile, Costa Rica and Uruguay*. Project Documents (LC/TS. 2020/18/ Rev. 1), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).

UNESCO (2020). COVID-19 *Educational Disruption and Response*. UNESCO, https://en.unesco.org/news/Covid-19/educational-disruption-and-response/.

UNESCO, (2018). *UNESCO ICT Competency, Framework for Teachers, Paris*. UNESCO, https://unedoc.unesco.org/ark:/48223/pf0000371024

UNESCO. (2016). *Informe de resultados Terce: factores asociados. Santiago, Regional de Bureau for Educación in Latin America and the Caribbean* (OREALC/UNESCO, Santiago).

Volman, M., & van Eck, E. (2001). Gender equity and Information Technology in Education: The Second Decade. *Review of Educational Research*, 71(4), 613-634.

Wambiri, G., & Ndani M.N. (2016). Preparation in ICT Teaching: Teacher Beliefs, attitudes, self -efficacy, Computer competence, and age. *African Journal of Teacher Education*, 5(1), 1 -16

Wang, X. Y., Li, G., Malik, S., & Anwar, A. (2022). Impact of COVID-19 on achieving the goal of sustainable development: E-learning and educational productivity. *Economic Research-Ekonomska Istraživanja,* 35(1), 1950-1966.

Wanjala, A. S., Adhiambo, J. M., & Ngumbi, E. (2015). *Teachers Perceptions on Use of ICT in Administration of Public Secondary Schools in Kimilili District, Bungoma County, Kenya*. Unpublished M ED Thesis, Catholic University of East Africa

Wanzala, D., & Nyamai, F. (2018). *Big hurdles thwart Jubilee's Laptops plan*. Nation, https: www.nation.co.ke/news/Big-hurdles,twart-jubilee-s.

Waweru, J. W. (2018*). Influence of Teacher Preparedness on Implementation of Competency Based Curriculum in Public Primary Schools in Nyandarua- North Sub-County, Kenya* (Master Thesis). University of Nairobi.

WHO (2020). *Coronavirus Disease (Covid-19) Situation Reports. world health organization* (WHO),

APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Dear Respondent,

I am a postgraduate student at Africa Nazarene University pursuing a master's degree in 0education. I am currently carrying out research titled: THE INFLUENCE OF ICT ON COMPETENCY BASED EDUCATION IMPLEMENTATION IN PRIMARY SCHOOLS IN KAJIADO NORTH SUB COUNTY, IN KENYA, as part of the course requirement. Due to that, your school has been chosen for the study, and you have been identified as a respondent. Please answer the different items on the questionnaire as honestly as you can. Kindly be aware that there are no correct or incorrect responses. Refrain from placing your name anywhere in the questionnaire. The findings of this research will be utilized solely for educational reasons.

Yours Faithfully,

Agnes Gitau

Email: agnesgitau5@gmail.com

APPENDIX II: INFORMED CONSENT FORM

Introduction: Dear Respondent, you have been invited to participate in a study being conducted by Madam. **AGNES WAMBUI GITAU** a Master student, Africa Nazarene University. This study is intended to establish the influence of the ICT integration in competency-based education curriculum implementation in primary schools of Kajiado North Sub- County, Kajiado County, Kenya. You have been purposely selected because of your well positioned to provide information that very crucial and it may be recorded for purposes of accurate record.

Study Objective: This study is set to establish the influence of the ICT integration in competency-based education curriculum implementation in primary schools of Kajiado North Sub- County, Kajiado County, Kenya so as to provide information that can be used to formulate strategies to improve on the Competency Based Education implementation in primary schools of Kajiado North Sub- County.

Study Procedure: If you agree to participate in this study, you will be asked some questions and for each question, you will give an appropriate response. The process of answering the different questions in questionnaire will take you approximately 30 minutes.

Risks /Discomforts: Your participation in this study will attract no physical or psychological harm. Given the efforts that will be taken to maintain confidentiality herein, no risks will be associated with this research.

Benefits: This research will result in generation of information that can be used to guide the development of policies/strategies and /interventions for Competency Based Education implementation in primary schools of Kajiado North Sub- County. The community may also understand their role in education and be more supportive in the development of ICT infrastructure to help in Competency Based Education implementation in the primary schools more especially in the rural area.

Your Rights to participation in this Study: As a respondent, your participation in this study is voluntary and you can withdraw consent at any time of your choice. There are no penalties for non-participation or withdrawal. You are free to withdraw from this for any reason if you feel so at any time. The researcher will not force you to provide more information than that which you feel comfortable sharing.

Confidentiality: Your responses in this study will be treated as anonymous. Every effort will be made by the researcher to preserve your confidentiality by assigning codes/numbers instead of your names. Nowhere will your identification be used on all research notes and documents. The information you will give here will be treated with highest level of confidentiality. With exceptions of where the researcher is legally obligated to report specific incidents, your data will be kept confidential and even the computer systems to be used in the data management will be password secured.

Contact Information: if you will have any questions at any time about this study, or should you experience adverse influences, bad memories that are dilapidating to your health as the result of participating in this study, you may contact the researcher at agnesgitau5@gmail.com or by calling 0722453760. Thank you.

The Researcher herein Madam. **AGNES WAMBUI GITAU** has described to me what is going to be done, the risks, the benefits involved and my rights regarding participation in this study. I understand that my decision to participate in this study will not alter my usual care. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time of my choice. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form was provided to me.

_____ _____/_____/_____

Participant's Signature/ Thumbprint Date

_____ _____/_____/_____

Researcher's Signature Date

APPENDIX III: LEARNERS QUESTIONNAIRES

SECTION A: Demographic Characteristics of Respondents

Tick (√) where appropriate

1. Respondent's Gender: (a) Female ( ), (b) Male ( ).
2. Respondents' age range?

(a) 13 years (), (b) 14 years ( ), (c) 15 years (), (d) 16 years ( ).

SECTION B: Availability of ICT Facilities

Please tick the box which suits your answer where 1= Strongly Disagree, 2= Disagree, 3=Not Sure, 4=Agree, 5=Strongly Agree.

Availability of ICT Facilities	1	2	3	4	5
1. Our school it is only teachers who uses computers					
2. Always out teacher gives us notes from the computer					
3. Our school it is students are not allowed to uses computers					
4. In our school some computers in the computer laboratory are spoiled and have not been working.					
5. In our school computers do not have all the programs we require.					
6. Some times in our school we don't use computers because of power shortage.					
7. Our school has projectors that we use when learning in class.					
8. The school where I study there is no internet connectivity in the computer laboratory.					
9. In our school we use computers, printers, and scanners when we are learning.					
10. Each and every day out teachers use computers to prepare teaching and learning materials.					
11. Some times our teachers give use assignment that we do using the computer.					
12. In our school teachers tell use to download notes to read.					

SECTION C

According to you does your school provide all the ICT equipment/facilities you need to study?

If not which ICT equipment your school does to provide to you?

……

……

……

……..…..

APPENDIX IV: TEACHERS QUESTIONNAIRE

You are expected to respond to all questions by ticking (✓) commenting or providing Information as requested.

Section A: Demographic data

1. Respondents' Gender: Male ( ), Female ( ).
2. Respondents' age bracket: Bellow 30 years ( ), 31-40 years ( ), 41-50 years ( ), 51 years and above ( ).
3. Highest level of education attained in the teaching profession;

   P1 Certificate ( ), Diploma ( ), Bachelor's Degree ( ), Postgraduate ( ).

4. Have you attended formal computer training? None ( ), Certificate ( ), Diploma ( ), Degree ( ) . Others (specify)……

SECTION B: ICT INTEGRATION

Please tick (✓) the box which suits your answer where 1= Strongly Disagree (SD), 2= Disagree (D), 3=Not Sure (NS), 4=Agree (A), 5=Strongly Agree (SA).

Availability of the ICT facilities	**SD**	**D**	**NS**	**A**	**SA**
1. The ICT equipment which are available in our school they adequately meet the needs of all the pupils and teachers.					
2. The power connected to our school is always stable.					
3. Our school always has strong internet connectivity.					
4. In our school always there are enough computers for students to use in the computer laboratory.					
5. The school computers are enough for all the teachers to use.					
6. Always the school has enough overhead projectors to use in and every lesson.					
7. Always our school has enough, reliable and functioning photocopier.					
8. In our school there are enough Flash disks for each teacher to store the work.					
9. Our school computers are regularly maintained and updated.					
10. Our school computers have all the software required in teaching and learning.					
11. In our school ICT equipment are often used in teaching and learning.					
Teachers' ICT literacy level	**SD**	**D**	**NS**	**A**	**SA**
12. I am able to use basic computer applications such as Microsoft Word, Excel, Access, and PowerPoint when preparing notes and storing students' performance records.					
13. I can connect and use peripheral devices such as printers, projectors, and speakers without assistance.					
14. I can access the internet and search for instructional materials effectively.					
15. I can integrate digital tools such as educational software or online platforms into my teaching.					

16. I can troubleshoot minor ICT problems such as software freezing, slow internet, or device connection issues.					
17. I can use multimedia tools (e.g., videos, animations, audio) to support classroom instruction.					
18. I am able to use digital learning platforms (e.g., Google Classroom, Microsoft Teams) when required.					
19. I am confident in teaching pupils how to use basic ICT tools responsibly.					
20. I regularly update my ICT skills through training, online tutorials, workshops, or peer learning.					
21. I can use a digital camera and a computer to produce a Video for a classroom presentation.					
School Administrative Support on ICT	**SD**	**D**	**NS**	**A**	**SA**
22. The administration regularly encourages teachers to integrate ICT into classroom activities.					
23. School leaders allocate sufficient time for teachers to prepare ICT-supported lessons.					
24. The administration organizes and facilitates regular ICT-related training for teachers.					
25. The school administration provides adequate technical support when ICT equipment breaks down or fails.					
26. The administration ensures that ICT resources (computers, projectors, and internet) are readily accessible to teachers and pupils.					
27. The school leadership allocates financial resources to maintain and expand ICT facilities.					
28. The administration monitors and evaluates the progress of ICT integration in teaching.					
29. School leaders acknowledge and reward teachers who effectively use ICT in their lessons.					
30. The administration collaborates with ICT service providers to support ICT implementation in our school.					
31. The leadership promotes a positive attitude and culture towards ICT use among staff and learners.					
Implementation of Competency-Based Education	**SD**	**D**	**NS**	**A**	**SA**
32. Using ICT during teaching has made it easier for me to assess and track learners' progress in competency attainment.					
33. I integrate ICT tools (computers, tablets, projectors, etc.) to support competency-based learning activities in my lessons.					
34. ICT enables learners to participate actively in hands-on, learner-centered tasks required in the Competency Based Education Implementation.					
35. I use digital learning materials (videos, simulations, e-books) to enhance competency development.					
36. I regularly incorporate ICT-based formative assessments such as quizzes, digital rubrics, and online exercises.					

37. I am confident in using ICT tools to facilitate performance-based tasks in line with Competency Based Education requirements.					
38. Learners use ICT devices to explore, create, and demonstrate competencies during lessons.					
39. I design ICT-supported learning activities that relate to real-life problem-solving, as required by Competency Based Education.					
40. ICT integration improves the development of core competencies such as communication, collaboration, and critical thinking among students.					
41. The school provides adequate ICT resources to support the implementation of competency-based learning.					

Section C Respondents Suggestions

According to you, how can you rate the availability of the ICT facilities for the implementation of the Competency Based Education in your school?

……

……

……

In general, how can you describe level of Teachers ICT literacy level for the implementation of the Competency Based Education in your school?

……

……

……

Specify other initiatives your school administrators have taken towards integrating ICT in teaching and learning in your school.

.....

.....

.....

APPENDIX V: INTERVIEW GUIDE FOR HEADTEACHER

DEAR HEAD TEACHERS,

I am **AGNES WAMBUI GITAU**, a student of Africa Nazarene University Nairobi. I am conducting academic research on: **ICT INTEGRATION IN COMPETENCY BASED EDUCATION IMPLEMENTATION IN PRIMARY SCHOOLS IN KAJIADO NORTH SUB- COUNTY, KAJIADO COUNTY, KENYA**. I kindly ask you to help in providing data for this study. The study is meant for academic purposes and the information you provide was treated confidential.

Thank you for your time.

1. How many teachers do you have trained in ICT in your school? What is their level of training?

2. How have can you describe the availability of the ICT facilities and equipment for Competency Based Education implementation in your school?

3. How have can you describe your classroom Teachers' ICT literacy levels for Competency Based Education implementation in your school?

4. How to you rate and describe school administrative support on ICT for Competency Based Education implementation in your school?

5. According to you how can you explain the level of Competency Based Education implementation in your school?

6. According to you what are some of the challenges encountered by the teachers in ICT integration in curriculum implementation. How were those challenges solved? Or what are the plans put forward to solve those challenges?

APPENDIX VI: WORK PLAN:

Activity			2024								2025								
	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
Proposal Writing																			
Piloting																			
Data collection																			
Data Analysis																			
Report Writing																			
Submission																			

APPENDIX VII: BUDGET

Cost Item	Description	Amount
Travelling expenditure	Fare & Subsistence Expenses	60,000
Production of proposal copies	Printing, photocopy & binding	50,000
Research	Data bundles& phone airtime	40,000
Production of Thesis copies	Printing, Photocopy & Hardcover binding	50,000
Miscellaneous		30,000
Total		**230,000**

APPENDIX VIII: INTROCUTION LETTER FROM AFRICAN NAZARENE UNIVERSITY

AFRICA NAZARENE
UNIVERSITY

P.O.Box: 53067 – 00200
Nairobi, Kenya.
Tel: 020 252 7170/1 – 5
Email: vc@anu.ac.ke
www.anu.ac.ke

18th February 2025

TO WHOM IT MAY CONCERN

RE: RESEARCH PERMIT: AGNES WAMBUI GITAU

Agnes Wambui Gitau Reg. No. (17MO1DMED009) is a Bonafide postgraduate student at Africa Nazarene University, pursuing a master's degree in education. This program entails Coursework and Thesis. She has successfully completed her coursework and defended her thesis proposal entitled: -

"Influence of information technology communication on implementation of curriculum in Primary Schools in Kajiado North Sub- County, Kajiado County, Kenya".

Any assistance accorded to her to facilitate data collection and complete her thesis will be highly appreciated.

Sincerely,

Prof. Orpha K. Ongiti
Dean, Postgraduate Studies & Director, Institute of Research

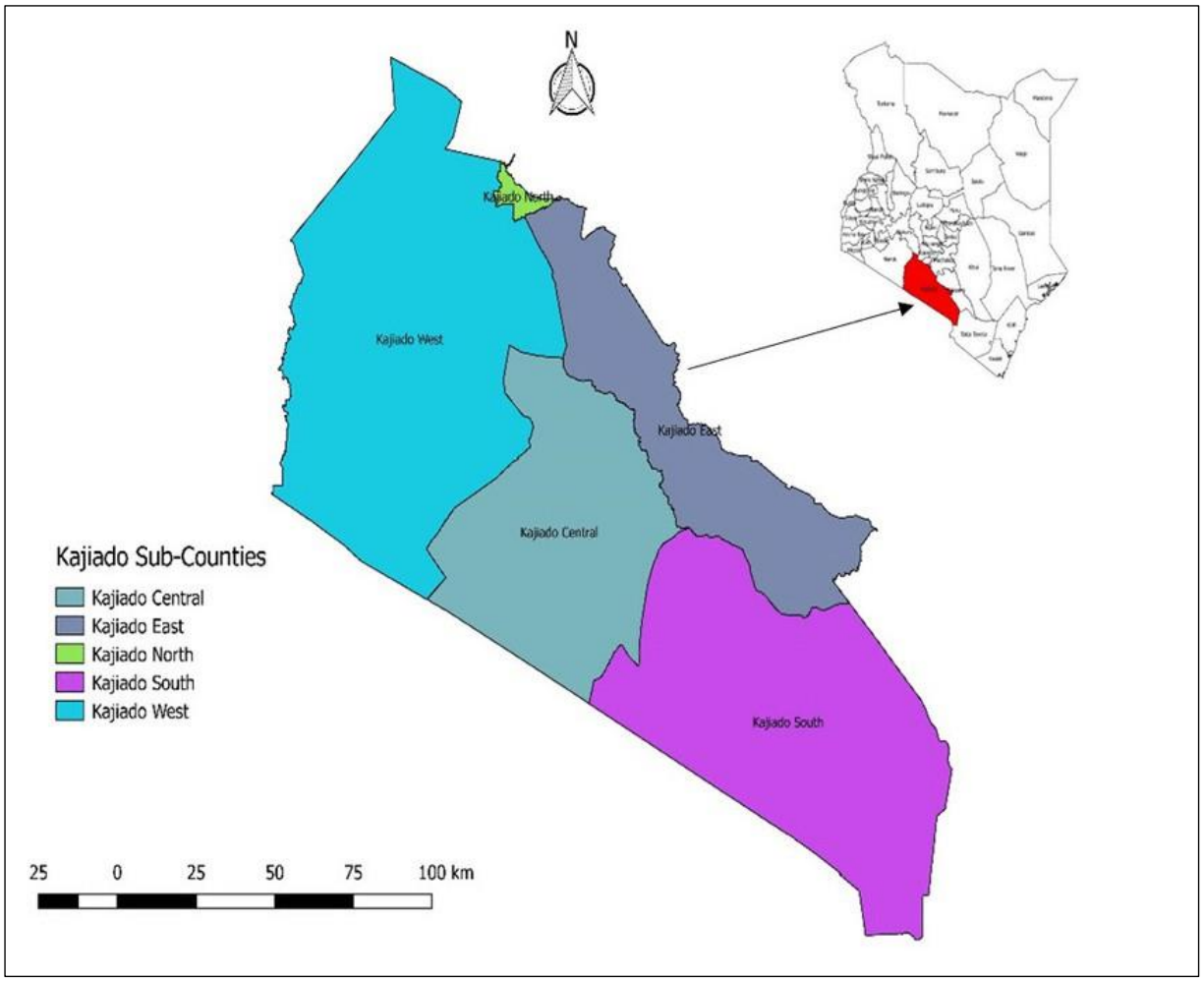
APPENDIX IX: MAP OF KENYA SHOWING KAJIADO COUNTY



KEY:

Kajiado County

APPENDIX X: MAP OF KENYA SHOWING KAJIADO NORTH SUB-COUNTY



APPENDIX XI. INFERENTIAL STATISTICS

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834[a]	.695	.682	.21350
a. Predictors: (Constant), administrative support in ICT, availability of ICT resources, teachers' ICT literacy				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.281	3	2.427	53.244	.000[b]
	Residual	3.191	70	.046		
	Total	10.471	73			
a. Dependent Variable: Competency Based Education implementation						
b. Predictors: (Constant), administrative support in ICT, availability of ICT resources, teachers' ICT literacy						

APPENDIX XII: PLAGIARISM REPORT

Agness

ORIGINALITY REPORT

23%	19%	13%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

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3	Submitted to Bugema University Student Paper	1%
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APPENDIX XIII: NACOSTI LETTER

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **826369**

Date of Issue: **06/January/2026**

RESEARCH LICENSE



This is to Certify that Miss.. AGNES WANGUI GITAU of Africa Nazarene University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kajiado on the topic: ICT INTEGRATION IN COMPETENCY BASED CURRICULUM IMPLEMENTATION IN PRIMARY SCHOOLS. A CASE STUDY OF KAJIADO NORTH SUB- COUNTY, KAJIADO COUNTY, KENYA for the period ending : 06/January/2027.

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2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
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15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

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