

**SELECTED FACTORS INFLUENCING INTEGRATION OF ICT IN THE
IMPLEMENTATION OF THE COMPETENCE BASED CURRICULUM IN PUBLIC
PRIMARY SCHOOLS IN NDHIWA SUB COUNTY, HOMA BAY COUNTY, KENYA**

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DECLARATION AND APPROVAL

This research project is my original work and has never been submitted to any university for the award of Degree .

Declaration of the student

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APPROVAL BY THE SUPERVISOR.

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DEDICATION

This research project is dedicated to the members of my family



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I sincerely want to give glory and honour to our kind and everlasting master for the opportunity to successfully finish this piece of work this work .Want thankthe overwhelming financial, moral support received from my family members, Dad, Mum, Wife, brothers, and sisters who kept on urging me to move on, never to give up. To my supervisor **Dr. Evans Apoko Monda** ,I say thank you, for your guidance, and scholarly advice throughout this project, God bless you abundantly.



ABSTRACT

Integration and adoption of ICT by both the teachers and learners is essential in acquisition of competencies and skills (Republic of Kenya 2005b) and the general improvement of quality of education. Despite the global shift towards the integration of Information and Communication Technology (ICT) in education to enhance academic instructions in public primary schools in Ndhiwa Sub-County, Homa Bay County, Kenya, have faced challenges in effectively implementing ICT within the Competence-Based Curriculum (CBC). The main aim of the study to analyse selected factors influencing ICT integration in the implementation of the competency-based curriculum in public primary schools in Ndhiwa Sub County, Homa bay county. The study objectives were to; establish how the level of ICT knowledge of teachers influences ICT integration on implementation of CBC in public primary schools, to establish the how availability of ICT instructional materials influences implementation of CBC in public primary schools and determine the extent to which attitude of the teacher to use ICT during CBC learning and teaching influences its integration in curriculum implementation. The three models that guided the study were; the transmission model, the learners centred model and participative model. The population of the study comprised of all 32 public primary schools drawn from Ndhiwa Sub County, from which 32 head teachers and 542 teachers and 1 Sub County Director of Education (SCDE) were the target population. The study sampled out 160 teachers through simple random sampling, while all the head teachers were involved in the study through census approach. The study used both questionnaire and interview schedule to gather both quantitative and qualitative data respectively. Quantitative data was analysed through descriptive statistics (9 frequencies, percentages, mean and standard deviation), while qualitative data was analysed through thematic content analysis. The study found that lack of proper ICT infrastructure, such as insufficient computers, limited access to the internet, and unreliable electricity supply, significantly hampers the effective integration of ICT in CBC implementation. Many schools in Ndhiwa Sub County lack the necessary technological tools and infrastructure to support digital learning. A key factor affecting ICT integration in CBC teaching and learning is the insufficient training and preparedness of teachers. Many educators lack the skills required to effectively use ICT tools in the classroom, which reduces their ability to deliver lessons using technology. Inadequate professional development programs and ongoing support hinder the smooth adoption of ICT. Positive attitudes toward the use of ICT from teachers and school administrators can enhance the integration of ICT. However, in Ndhiwa Sub County, the study reveals mixed perceptions, with some teachers embracing the potential of ICT while others remain resistant due to discomfort or a lack of exposure to digital technologies. The Ministry of Education should offer regular and comprehensive ICT training for teachers to enhance their skills in using digital tools and resources for teaching. The teaching colleges should introduce mandatory ICT training modules in teachers' continuous professional development programs. The ministry of education should invest in ICT infrastructure, adequate computers, internet access, and digital learning resources.

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LIST OF ABBREVIATIONS AND ACRONYMS

CBC	Competence Based Curriculum
UNESCO	Nations Education Science and Cultural Organization.
ICT	Information Communication Technology
KICD	Kenya Institute of Curriculum Development.
SPSS	Statistical Package for Social Sciences.
QUASO	Quality Assurance and Standards Officer.
KNUT	Kenya National Union of Teachers
DVD	Digital Versatile Disk
ICT-TPD	Information Communication Technology for Teacher Professional Development.
KICD	Kenya Institute of Curriculum Development
KUPPET	Kenya Union of Post Primary Education Teachers
MOE	Ministry of Education
NACOSTI	National Council for Science and Technology and Innovation.

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CHAPTER ONE: INTRODUCTION

1.1 Background

The best process to equalize mankind in the current generation is modern knowledge acquisition, according to Breen, (2014), it is a key process in economic progression. Globalization and the 21st century digital skills has continued to influence the process involved in the dissemination and acquisition of knowledge thus new competencies among the learners is envisioned for their personal and socio-economic development (Pmamia,2017). In the opinion of (Sarage,1993), Kenya is in the right direction in transformation and creation of skills needed in the job market making CBC an area of interest since its inception and actualization by the USA (Richard Rodgers, 2001)

Significantly, the competency-based curriculum was adopted by Australia in the early nineteen ninety and adopted by different nations, this was occasioned by the emerging technologies and demands for change in the global market trends. In the opinion of (Doering and Robleyer, 2010), technology offers the best opportunity for knowledge acquisition though could only be used by knowledgeable teachers.

To effectively adopt to new trends, knowledge and training plays a vital role (Baylor, Briteline,2002); Tondeur et al. 2008) and that this in ICT influences its integration knowledge acquisition process. Skills in pedagogy has an inverse relationship on teachers' preparedness and lesson delivery (Mukuna, 2013) and also relates to attitude in the application of ICT devices (Demetriadis et al. 2003) and other instructional materials (Selwyn, Dawes and Mercer, 2001). In the developing world and Kenya in particular, ICT literacy and application is still below the required standards and that trainings are geared towards skills other than the usage of devices in enhancing and blending content delivery in learning environment (Muriithi, 2005).

The education system in Kenya has undergone significant changes in recent years, particularly with the introduction of the Competence-Based Curriculum (CBC) in 2017. This shift from the traditional content-based curriculum to the CBC aims to equip learners with the skills, knowledge, and competencies required in the emerging world of technology today. Central to this transformation is the adoption and infusing of digital contents in learning and teaching processes in public primary schools. The use of ICT in education is seen as a critical component of the CBC's success, as it enhances the development of digital literacy, fosters innovation, and prepares learners for a technology-driven global economy. However, despite the recognized importance of ICT in education, the integration of ICT into the CBC implementation in Kenyan public primary schools has encountered various challenges. Understanding the factors that influence the effective adoption and use of ICT in this context is vital for policymakers, educators, and stakeholders to address the gaps and ensure successful implementation.

1.1.1 Historical Context of ICT in Kenyan Education

In the early stages of education in Kenya, ICT usage was minimal. Before the 2000s, many schools, especially those in rural areas, lacked the basic infrastructure needed to implement ICT in classrooms. This period was marked by significant disparities between urban and rural schools, with the latter suffering from limited access to both technological infrastructure and digital literacy resources (Mureithi, 2002). The Kenyan government relied heavily on international organizations and donors such as the World Bank and UNESCO to support initiatives aimed at equipping schools with computers and basic ICT training (Nduati & Bowman, 2005).

One of the most significant milestones in the history of ICT in Kenya's education system was the introduction of the National ICT Policy in 2006. This policy aimed to streamline the integration of ICT in various sectors, including education, as a response to global technological advancements. The policy recognized the need for ICT to enhance access, equity, and quality in education. A notable objective was to bridge the digital divide between urban and rural schools by improving infrastructure and providing schools with necessary resources (Republic of Kenya, 2006). The policy led to a more structured approach to ICT development in schools, laying the groundwork for future projects. It also underscored the importance of training teachers to ensure they could effectively integrate ICT tools in their teaching methodologies.

In the years following the introduction of the National ICT Policy, the Kenyan government launched several initiatives aimed at boosting digital literacy in schools. One of the most notable projects was the Digital Literacy Programme (DLP), commonly known as the Laptop Project. Launched in 2013, the program aimed to provide every primary school child with a laptop to enhance their learning experience through digital platforms (Ngugi & Were, 2020). Despite the ambitious nature of the project, it faced significant challenges, including funding constraints, logistical issues, and infrastructural deficiencies, particularly in rural areas (Wamuyu, 2021). In addition to the DLP, the National Broadband Strategy of 2013-2017 aimed to expand internet connectivity across the country, with a particular focus on educational institutions (Ministry of Information, Communications, and Technology, 2013). This strategy has played a critical role in increasing access to digital resources in schools, though its impact has been uneven due to disparities in infrastructure development between urban and rural areas.

1.1.2 ICT integration in the implementation of the competency-based curriculum

With the commencement of new curriculum in Kenya a major shift from the traditional knowledge-based education system to a skills-based model has been experienced. The goal of CBC is to equip learners with competencies necessary for the 21st-century job market, including critical thinking, problem-solving, and digital literacy. A critical component of this educational reform is infusing the digital content in learning and teaching. ICT plays a transformative role in curriculum delivery, resource management, and teacher training, but its implementation in public primary schools faces numerous challenges.

ICT has revolutionized teaching and learning by providing tools that enhance educational delivery and improve student engagement. In the context of CBC, ICT enables personalized learning, where learners can progress at their own pace using digital content (Wambui, 2021). The digital literacy component of CBC emphasizes the importance of learners acquiring basic ICT skills, which are crucial for lifelong learning. Furthermore, ICT integration facilitates collaborative learning, fostering teamwork and critical thinking among students. Technology also improves access to resources for both teachers and students. Teachers can access a wealth of teaching materials online, including lesson plans, e-books, and educational videos, making the learning process more interactive and engaging (Muthoni & Wachira, 2020). For students, ICT provides access to a variety of learning tools that cater to different learning styles, enabling a more inclusive education system.

Despite the potential benefits of ICT integration in CBC, public primary schools in Kenya face several challenges. One of the primary barriers is inadequate infrastructure. Most rural schools lack reliable electricity and internet connectivity, limiting access to digital tools and resources

(Ngigi, 2022). Even in urban areas, the ratio of computers to students is often insufficient, hindering effective ICT integration. Another challenge is the lack of adequate teacher training in ICT use. Many teachers in public primary schools have not received proper training on how to incorporate ICT tools into their teaching methods (Onguko & Were, 2019). This skill gap hinders the effective delivery of CBC, as teachers may be reluctant or unable to utilize digital resources in the classroom. Financial constraints also play a significant role in impeding ICT integration. The high costs of purchasing ICT equipment, maintaining the infrastructure, and providing training are often beyond the budgetary limits of public primary schools (Kiboro, 2021). Additionally, technical support for ICT equipment is often unavailable, leaving schools ill-equipped to handle any technical issues that arise.

1.2 Statement of the problem

Integration and adoption of ICT by both the teachers and learners is essential in acquisition of competencies and skills (Republic of Kenya 2005b) and the general improvement of quality of education. In the opinion of (Perterson and Peterson, 2006) for an effective learning process quality in terms of teaching ability is key thus promoting education reforms and that those who offer instructions to impart various expected competencies. According to Eggen and Salak, 2001, achievement of desired quality in education systems is subjective to quality assurance on instructional resources for positive development and staff establishment (Gongera et al,2013) opined that head of institutions are key in provision of materials and equipment necessary for ICT integration and in line with Vision 2030 that emphasises STEM

The provision of UNESCO, 2006 laid emphasis on individual skills and advanced labour force for implementation of CBC and better skills, it's worth noting that since the introduction of CBC in Kenya in 2018 CBC, myriad of challenges have been faced by all stakeholders. Labour unions

including KNUT and KUPPET, Parents – Teachers Association, the general public have raised concern on the challenges affecting the CBC such as inadequate qualified human resources handling the CBC to competently administer the ICT components of the curriculum. Therefore, the challenges in the new curriculum have prompted this investigation.

The Competence Based Curriculum (CBC) in Kenya was introduced to enhance learners' skills, creativity, and problem-solving abilities, with ICT integration identified as a key enabler of its successful implementation. However, despite the government's efforts to support the use of ICT in education, the integration of ICT in public primary schools remains inconsistent and faces numerous challenges. Factors such as inadequate infrastructure, limited access to digital resources, insufficient teacher training, and varying levels of ICT literacy among educators have been identified as barriers to effective ICT adoption. Furthermore, disparities in ICT resources between urban and rural schools widen the digital divide, hindering equal access to quality education for all learners. Additionally, issues related to policy implementation, lack of technical support, and the readiness of schools to embrace ICT in teaching and learning processes are concerns that have not been adequately addressed. This study sought to examine the factors influencing the integration of ICT in the implementation of the CBC in public primary schools. It will explore the extent to which infrastructure, teacher preparedness, government support, and access to digital resources affect the successful adoption of ICT in the curriculum. The findings will contribute to policy discussions and provide recommendations for enhancing ICT integration to improve educational outcomes in Kenya's CBC framework.

1.3 Purpose of the study

To analyse selected factors and ICT integration in the implementation of the competency-based curriculum in public primary schools in Ndhiwa Sub County, Homa bay county.

1.4 Study objectives

The objectives of this study are to;

- i. To examine how the level of ICT knowledge of teachers influences ICT integration on implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county.
- ii. To establish how availability of ICT instructional materials influences implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county
- iii. To determine the extent to which attitude of the teacher to use ICT during teaching influences its implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county.
- iv. To establish various modes of assessment using ict in teaching and learning during the implementation of CBC in Ndhiwa Sub County,Homa Bay County

1.5 Research questions

- i. How does the level of ICT knowledge of teachers influences ICT integration on implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county?
- ii. How does availability of ICT instructional materials influence implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county?
- iii. To what extent does attitude of the teacher to use ICT during teaching influences its implementation of CBC in public primary schools in Ndhiwa Sub County, Homa bay county?

- iv. How does the use of various modes of assessment influences teaching and learning in the implementation of CBC in public primary schools in Ndiwa Sub County,Homa- bay County?

1.6 Significance of the study

Many schools in Kenya, particularly in rural and under-resourced areas, face challenges related to ICT access. Therefore, a study focusing on institutional factors will help in highlight disparities in ICT access and use across schools, shedding light on the digital divide. The findings will therefore inform policymakers and education stakeholders on how to bridge these gaps will provide equitable information on the best standards of education required by all students.

In addition,the research findings will provide clear guidance on the formulation of educational policies related to the implementation of competence based curriculum that promote ICT integration in education. The Ministry of Education and other stakeholders may use the insights of the current study to improve resource allocation, training programs, and infrastructure development in schools. It will also support the broader agenda of digital transformation in Kenya's education sector.

ICT integration in education requires teachers to have adequate training and skills. A study on institutional factors may uncover the need for better professional development programs that equip trainers with the applicable skills and attitude in order to implement the curriculum effectively using ICT tools. This is essential to ensure that teachers are prepared to use technology in innovative ways to improve student learning outcomes.

It is established that a great research findings have been carried out in order to address this gap and the role of ICT in education in Kenya. However, institutional-based factors that affect this integration are still underexplored. The study is expected to join other related academic literature by providing a basis for future research on educational reforms and technology in Kenyan schools.

1.7 Limitations of the Study

The targeted specifically public primary schools within Ndhiwa Sub County which limited the researcher in generalising the study results to other areas in Kenya and beyond. Educational contexts and ICT infrastructure sometimes differ significantly across different counties. Also, the sample size was small or not representative of all targeted population under study in Ndhiwa Sub-county, the findings therefore might have provided an accurate picture of the broader situation in the region. Some schools or educational officers might have restricted access to some data related to ICT implementation, such as funding details, teacher training records, or administrative decisions, which could affect the depth of analysis. Also, teachers' attitudes and ICT skills could vary, and if the study doesn't capture the full range of teacher competency levels, it might overlook some critical factors influencing ICT integration. Studies conducted over a short period may not fully capture the long-term impact of ICT integration or the ongoing challenges schools face, especially with the evolving nature of technology. Moreover, since CBC is a relatively new curriculum, some schools may still be in the early stages of adapting to it. This can create challenges in assessing the full extent of ICT integration.

Delimitation of the study

The research concentrated in Ndhiwa Sub County, which is within Homa Bay County. The findings were relevant to the schools in this specific region and is not applicable to other regions

with unique socioeconomic or infrastructural status. Also, research will only include public primary schools in Ndhiwa Sub County. It will exclude private schools, secondary schools, and other educational institutions, even if they are in the same geographical area. Public primary schools are selected due to their unique characteristics, such as government funding and standardized administrative structures.

The study focuses specifically on the ICT integration on the implementation of the Competency-Based Curriculum (CBC). Other curriculums, such as the 8-4-4 system or other international curricula, are not within the scope of this research. Based on study respondents, the study involved school administrators, teachers, and SCDE of the region. The study did not engage other stakeholders such as students, parents, or policy-makers at the county or national levels. The research focused on institutional-based components like school infrastructure, ICT resources availability and usage, teacher training, and policies. Non-institutional factors like student attitudes or home environments was not addressed.

The study considered data from a specific period, potentially from 2023–2024, when the implementation of the CBC was either in progress or nearing full adoption in primary schools. Moreover, the research only explored ICT integration in relation to the CBC, without addressing broader ICT issues or other unrelated technological interventions in education. On data collection tools, the study was confined to data collection methods like questionnaires, interviews, and observation checklist from the selected schools. It did not include experimental or longitudinal data collection methods.

1.9 Assumption of the study

- i. It is assumed that schools in Ndhiwa Sub County have some level of ICT infrastructure, such as computers, internet access, and electricity, which would affect the ability to integrate ICT in education.
- ii. The study also assume that teachers have varying degrees of ICT skills and are either trained or require training to effectively use ICT in implementing the CBC.
- iii. It could be assumed that the school leadership, such as headteachers and administrative staff, play a critical role in facilitating or hindering ICT integration. Their support in terms of policy, funding, and strategic planning is considered vital.
- iv. The study also assumed that the design of the CBC and national policies on ICT in education have provisions for integrating ICT in teaching and learning, but challenges might arise due to local implementation issues.

1.10 Definition of Significant Terms

Information technology (IT): Ideas that are formulated to provide a relation between human character and those manipulated in electronic form (Ajagun,2003).

Information Communication Technology (ICT) processing information and communication using artificial intelligence (Aneakwe,2008)

ICT integration –this involves copying that which is challenging to physical or manual application electronically.

Curriculum Implementation –enabling the pupils to acquire and conceptualize knowledge.

Teacher’s perception how instructors view and understand concepts

Attitude - Is an individual feeling caused by certain characteristics on behavioural change of a person according to (Cole and Scior,2016) in this study it refers to how teachers perceive and think about the application of ICT in learning and teaching.

ICT literacy - It indicates that all knowledge, experience and skills acquired by an individual towards executing the digital world using the technologies in order to achieve personal, educational and labour market needs (Tekyiwa and Asare,2016)

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This introduces and revises and analyses other related research study. how integration of ICT knowledge and curriculum implementation among the teachers, readiness and provision of ICT infrastructure, mode of assessment, teachers attitude in Public Primary Schools in Ndhiwa Sub – County, Homabay County, Kenya.

2.2 Integration of ICT Knowledge in Curriculum Implementation

The competency of teachers in ICT plays an important part towards the realization of the general objectives of the CBC. Wekesa (2019) examined how teachers' knowledge of ICT impacts their ability to deliver the CBC in public primary schools in Nairobi County. His findings indicate that while many trainers recognize the importance of ICT, few are proficient in using it for instructional purposes. A major issue identified is the lack of continuous professional development and training, leading to a gap between policy expectations and classroom realities. This study suggests that improving ICT knowledge among teachers is crucial for effective curriculum delivery. Further, Otieno and Wanjala (2020) explored the readiness of teachers to integrate ICT in the implementation of the CBC in rural primary schools. Their research found that many teachers had not received adequate ICT training and, in some cases, lacked access to basic digital devices such as computers or tablets. The study highlights the need for targeted government intervention to bridge the gap between urban and rural schools in terms of ICT infrastructure and teacher training.

In knowledge acquisition and development of skills related to ICT for purposive professional and vocational training in the opinion of (Drent and Meelissen, 2007) is called information communication technology. It promotes teaching and learning and this being key in enhancing

understanding of concepts in the newly implanted curriculum in Kenya, therefore, teachers should appreciate the modern science in education and assume the role of change agents of technology in the classroom. Various factors in the opinion of (Tella Odeyinka and others 2007) would show how significant the role of teachers would be in cooperating new design in addition to all other processes involved. Since a bigger percentage of teacher are not fully ICT compliant, this could be a mirage to achieve in their teaching.

Some scholars argue that integrating technology and knowledge acquisition in classroom should be a cross cutting process rather than being done independently, Flaragan and Jacobsen., (2003) and (UNESCO 2008) explains that the responsibility lies with the teachers in creating a conducive atmosphere for learning to take places though this can only be achieved when there was adequate knowledge among the teaching force. According to Huggins and Moseley, (2011) teachers are incapacitated in handling ICT integration processes since Teacher training modules only offer more about the what rather than the how in ideal classroom environment. Mukuna (2013) attest that many attempts have been made to reform curriculum in Kenya though this has always been attributed to lengthy periods of time to be put to use. The other school of thought is that resistance by teachers to implement the new design has been due to inadequate knowledge and inexperience which could have resulted to poor motivation (Bingimlas, 2009).

Researchers have revealed that a good percentage of the government employees are not well acquainted with skills to accurately and competently use computer as a teaching resource during teaching and learning process, (TSC Survey,2021) effort in streamlining systems towards improving teacher quality knowledge of ICT for effective implementation. Recent and current publications propose a sustained professional development programme in empowering teachers' capacity on the ICT skills, innovations and creativity (Deaney, 2009, and Bolhuis, 2007) though

it is however scanty to which level the teachers have the requisite ICT competence to integrate the new design. This made occasioned the intention to investigate the level of awareness in order to gauge the gains in the curriculum.

2.3 Instructional Resources in the Implementation of the Design

The successful integration of ICT in schools is essential for implementing the CBC, as the curriculum emphasizes skills such as problem-solving, creativity, and digital literacy. However, studies show that the integration of ICT in the CBC implementation remains inconsistent across schools. Oloo and Wanyonyi (2022) observed that while some schools in urban areas have integrated ICT into teaching practices, rural schools often lag due to a lack of resources and infrastructure. Kamau and Karanja (2022) explored the ICT integration process and highlighted that even where schools have access to ICT equipment, its usage is often limited to basic administrative tasks rather than instructional purposes. Their findings indicate that teachers feel overwhelmed by the demands of the CBC, especially in integrating ICT due to their limited technical expertise. Without proper training, teachers are unable to exploit the full potential of ICT in fostering the competencies envisioned in the CBC. In another study, Chege and Ouko (2021) revealed that some schools with adequate ICT infrastructure are better positioned to integrate technology into lesson planning, but this is still not universal. The study concluded that ICT integration is highly dependent on school leadership, with more proactive and technologically-savvy school leaders driving the agenda forward.

According to Otieno and Awino (2021), many public primary schools in Kenya face a significant shortage of ICT instructional materials such as computers, projectors, and educational software. The Kenyan government has made efforts to provide devices through the Digital Literacy

Programme (DLP), but these resources are insufficient to meet the growing demand driven by the CBC implementation. In their study, Mugambi and Gikunda (2020) found that, while some schools had received laptops through government initiatives, many of these devices were outdated, and the teachers lacked the technical skills to use them effectively in lesson delivery. Further, educational software specifically designed to support the CBC is rarely available, meaning that teachers often rely on improvised solutions. A similar sentiment is echoed by Mutua and Njoroge (2019), who argue that the lack of access to up-to-date ICT materials limits the ability of teachers to integrate technology into their classrooms effectively.

The lack of reliable infrastructure and internet connectivity is also a major barrier to ICT integration in many Kenyan public primary schools. A study by Ndung'u and Otieno (2020) found that rural schools often face severe limitations in terms of access to electricity and internet, which are crucial for the effective use of ICT in classrooms. These schools are also disadvantaged due to a lack of technical support and maintenance for ICT equipment. The findings are supported by Mwangi and Njoroge (2021), who noted that while some urban schools enjoy reliable internet access and electricity, most rural schools are unable to access these essential services, hampering efforts to integrate ICT into the curriculum.

A study by Ndiokubwayo et al. (2021) on ICT integration in East African schools noted that the lack of ICT infrastructure, particularly in rural schools, remains a significant barrier. Many schools lack computers, stable internet connections, and adequate power supply. Consequently, this limits the scope of ICT usage in classrooms, even in instances where teachers are trained and willing to implement technology in teaching. Another challenge that affects ICT integration is the lack of technical support and maintenance for the devices provided by the government

through initiatives such as the Digital Literacy Programme (DLP). According to a study by Wamuyu (2020), many public primary schools have received ICT devices, but technical issues such as device malfunction and lack of maintenance render them ineffective over time. The study suggests that providing ongoing technical support and establishing maintenance structures are essential for the sustained integration of ICT in public schools.

Bingimlas (2009) identified gaps that teachers experience their day-to-day processes of imparting knowledge. Wastiau et. al., (2013) argues that school managers and assistants considered that low mobilization of resources inhibit success. Similarly, OZden (2007) and other asserts that the said appliances should be prioritised in budgets to support the use of technology. According to Kenya data profile (2006), a few schools have the privilege of owning equipment. However, some have installed few for office routine in the school laboratory. It also indicates low number for teachers and learners and the pupil– ratio of 150:1 (Kenya data profile, 2006). Notably, Kenya’s connectivity and network infrastructure could also be a challenge, different institutions could be able to have network readily available while other may not, generally there could be limitation based on spread and allocation of resources in Public Primary Schools towards the implementation of competence based curriculum.

2.4 Mode of Assessment Using ICT in CBC Implementation

ICT integration in education has long been recognized as a catalyst for enhancing learning outcomes. Globally, it is viewed as a tool that can make education more inclusive, accessible, and efficient. Studies in various parts of the world indicate that ICT can be effectively used for formative and summative assessments (Tarus, Gichoya, & Muumbo, 2015). According to Wong et al. (2020), countries like Finland and Singapore have made significant strides in using

technology to automate assessments, provide instant feedback, and facilitate individualized learning.

In the African context, the integration of ICT in education has been met with mixed results. While ICT holds promise for transforming education systems, infrastructure challenges, lack of teacher training, and limited access to digital resources have hampered its widespread adoption (Tarus et al., 2015). In Kenya, the ICT infrastructure in most public primary schools is still underdeveloped, with many schools lacking basic facilities like reliable electricity, internet access, and computers (Nyambura & Kamau, 2020).

According to Mc Millans' (2000); essentially proper insight on modern technology is progressive to better prepare the workforce on methodological and delivery approaches as this would enhance deep understanding in integrating teaching, learning and transformation of technology in learning. Providing required equipment empowers the instructors to involve the learners and improve ability including the cognitive and psychological level of the learner, Furtak and Herodia (2014) for the purpose of drawing conclusion about. Sudha (2018) believes that empowering teachers to come up with the rubrics of assessment, therefore, it is crucial for teachers to embed formative assessment using ICT during the assessment process of the learner such as using digital portfolios, grading, scoring guides. This will provide reasonable procedures to a given curriculum as well as the learners' abilities in performing different tasks. Formulating rubrics using ICT components is a serious task and therefore requires teachers to be properly trained, guided and given feedback.

According to sources at the curriculum development (2017) competencies could be gained through proper assessment rubrics accurately and effectively administered to give the syllabi and

the learners an understanding to undertake assignments. Kelly (2011) suggests a variation to evaluation which is coded in varied levels of instructions using ICT indicating the next procedures and involves the class in providing solutions about attitude of technology. Instructors are gather scientific information on a learners understanding of concepts from both levels of learning process including observation, questioning, prefects, portfolios, flipped classrooms and development of success criteria and rubrics (Jengere, 2017) Therefore, this seeks to investigate the teachers' evaluation criteria using ICT in implementation.

2.5 Teacher Attitude Towards the Use of ICT Implementation of CBC

Porter (2015) argues that teachers are critical and significant in finding out the extent to which the school implements design policies. This fact depends on their attitude and thinking on the curriculum. The new curriculum could not be good enough and is demanding to teachers according to Luhambati, 2013) and in the wisdom of Eggen and Sahaki (2001) instructors should be capable of giving direction for the learners' success. Barr in Banning (1954) asserts that social reaction of the teachers is significant in transformation and equally its implementation. This is reflected in their views, likes, way of thinking and attitudes towards any change must be considered in order to ensure evidence-based action in the transformation. The reason is that teachers make decisions based on thinking, expectations and way of life upon responsibilities in the school. In the arguments of (Ozaji 1998 and Obami 2002) opposition to transformation could be due to inability to factor in better arrangements for success of the program and this creates fear in them since they consider themselves not well prepared and equipped to undertake their duties.

In Canada, Handy (2003) suggested that educators felt the need for effective preparation so that they could handle the curriculum with the use of ICT integration of CBC. (Albirin, 2007)

proposed that most teachers have been very reluctant to change involving technology evolution, integration and incorporation. (Buabeng, 2012) also believed that social characteristics in individuals such as academic standards and attitude may impact the acceptance, the age of the teacher may not allow them to cope up with digital transformation being witnessed in the educational sector. However, ideas such as character of learners, experience and personal determination have a bearing on the innovative use of technology (Afshari et.al..2009) Therefore, teachers' attitude towards any competent and effective learning process is very crucial to the implementation.

Olafare, Adeyanju, and Fakorede (2018) studied the attitudes of Nigerian professors about the use of ICT in COE. For this project, a detailed cross sectional survey approach was used. Eleven07 lecturers—602 men and 505 women—who were chosen from eleven south-western Nigerian colleges of education comprised the respondents. Data were gathered via a questionnaire created by the researcher titled "Lecturers' Attitude and Proficiency in ICT Use." The study's conclusions demonstrated that educators were very effective when they engage the use of ICT; no significant differences were found in general both in first-degree holders and higher-degree holders felt differently about their attitudes; less-experienced lecturers felt differently about their attitudes, with the less-experienced lecturers faring better; and lecturers in different areas of specialization felt differently about their attitudes. The research found that COE professors were somewhat adept in using ICT and had a good attitude regarding it. The suggestion is that students who have a good outlook and are adept at using technology may be encouraged to incorporate it into their academic work. It was suggested that provisions be provided for COE professors to get ongoing IT training. Oloo and Wanyonyi (2022) observed that while some schools in urban areas have integrated ICT into teaching practices, rural schools

often lag due to a lack of resources and infrastructure. Kamau and Karanja (2022) explored the ICT integration process and highlighted that even where schools have access to ICT equipment, its usage is often limited to basic administrative tasks rather than instructional purposes. Their findings indicate that teachers feel overwhelmed by the demands of the CBC, especially in integrating ICT due to their limited technical expertise. Without proper training, teachers are unable to exploit the full potential of ICT in fostering the competencies envisioned in the CBC. In another study, Chege and Ouko (2021) revealed that some schools with adequate ICT infrastructure are better positioned to integrate technology into lesson planning, but this is still not universal. The study concluded that ICT integration is highly dependent on school leadership, with more proactive and technologically-savvy school leaders driving the agenda forward.

According to Otieno and Awino (2021), many public primary schools in Kenya face a significant shortage of ICT instructional materials such as computers, projectors, and educational software. The Kenyan government has made efforts to provide devices through the Digital Literacy Programme (DLP), but these resources are insufficient to meet the growing demand driven by the CBC implementation. In their study, Mugambi and Gikunda (2020) found that, while some schools had received laptops through government initiatives, many of these devices were outdated, and the teachers lacked the technical skills to use them effectively in lesson delivery. Further, educational software specifically designed to support the CBC is rarely available, meaning that teachers often rely on improvised solutions. A similar sentiment is echoed by Mutua and Njoroge (2019), who argue that the lack of access to up-to-date ICT materials limits the ability of teachers to integrate technology into their classrooms effectively.

Ikwuka et al., (2020) examined the attitudes of public primary school teachers in Onitsha North, within the Municipality of Anambra State, Nigeria, concerning the use of technology during teaching and learning for high-quality instruction delivery.. The results showed that teachers are proficient and at ease using ICT. Most of the teachers confirmed that they were not familiar with other ICT tools, such as data management, network connectivity, developing digital contents using Microsoft windows programmes such as math test results. The results led to the conclusion that instructors had a favorable attitude toward the use of ICT for high-quality teaching and that there was no big difference in towards the teachers overall view towards this the application of ict skills in teaching and learning regardless of the gender,age and the level of literacy in adopting technology use. Makhoulf & Bensafi (2021) looked at the link between five independent variables—personal traits, computer qualities, cultural perspectives, computer proficiency, and computer access—and teachers' attitudes about computers. Quantitative and qualitative research methodologies were used in mixed methods research. The data was gathered using a semi-structured interview and a questionnaire. The data were analyzed using content analysis, descriptive statistics, and inferential statistics. The results showed that EFL instructors had favorable opinions about the use of ICT in the classroom. Teachers' attitudes toward ICT and the five previously indicated independent variables showed statistically significant positive associations. Additionally, it was shown that attitudes showed a negative correlation with age and educational attainment. Regarding the use of ICT for teaching and learning in the classroom, the study's findings provide insightful data about teachers and legislators. In conclusion, the study offered suggestions for future research that would improve teachers' use of ICT in the

classroom as well as some implications for policy and practice. In the Kilimanjaro Region of Tanzania, Mwila (2018) evaluated the opinions of secondary school teachers about the incorporation of ICT into the classroom. There was use of a cross-sectional survey design. Both descriptive and inferential approaches in statistical process were used to examine the data. The results indicated that teachers, , had supportive arguments on the application of ICT during learning and teaching processes. The research suggested that curriculum designers use ICT into their materials while providing an explanation of the educational, political, social, cultural, educational, and catalytic justifications.

In Mosoriot and Kericho Teacher Training Colleges, Rono, Koross, and Okari (2023) evaluated the attitudes of instructors and learners on the use of ICT in teaching and acquiring spoken English language skills. The computer-Supported Collaborative Learning (CSCL) educational method, which promotes learning via social interaction with computers and the Internet (ICT), served as the study's direction. The Rift Valley's Mosoriot and Kericho Public Teacher Training Colleges provided the sample. Using a stratified selection approach, 210 respondents were chosen from 2000 students and 16 respondents were chosen from a target group of 32 English trainers. Questionnaires were used to gather data, which was then shown using bar graphs, pie charts, and tables. Half of the respondents acknowledged students' extremely positive attitude toward networking through social media, which presents an opportunity for engaging language learning experiences. However, the majority of trainers perceived negative attitudes towards ICT applications in oral language skills, signifying challenges in incorporating technology for communication development. It is necessary to make sure that students have enough access to ICT resources in order to close the experience gap with computers. Modern equipment and digital resources should be made available to students at public teacher training institutes so they

may practice using a variety of ICT tools. Additionally, creating a welcoming and stimulating learning environment may have a good impact on views about the incorporation of technology. Teachers should foster a culture that recognizes the advantages of technology in language learning and offers students continuous assistance as they navigate the process of successfully using ICT tools.

2.6 Theoretical Literature Framework

2.6.1 The transmission model

The transmission model, often referred to as the sender-receiver model, views communication as the process of transmitting information from one source to a recipient. According to Shannon and Weaver (1949), who pioneered this model, effective communication occurs when information is encoded by the sender and accurately decoded by the receiver. The sender, message, medium, and receiver are central components in this model, and disturbances or barriers to transmission are seen as "noise." In the context of educational reform, such as the competency-based curriculum, the transmission model provides a framework to analyze how information (the new curriculum) is transmitted through various institutional systems (schools, teachers, and policies) and how barriers (institutional challenges, lack of ICT resources, and infrastructure) hinder the effective transmission and implementation of CBC.

One of the significant institutional-based factors affecting ICT integration in public primary schools is inadequate infrastructure. Many schools, particularly those in rural and underprivileged areas, lack the basic ICT infrastructure needed to support CBC implementation. This includes insufficient computer labs, unreliable internet connections, and outdated hardware (Wainaina & Murungi, 2021). According to the transmission model, the medium through which

the message (CBC) is transmitted is as crucial as the message itself. If the infrastructure (medium) is inadequate, the effective transmission of the curriculum content is compromised, leading to poor student outcomes.

Teacher readiness is also critical institutional factor in implementing CBC. According to Wambugu, Mwaura, and Mutisya (2020), the success of any curriculum reform depends significantly on teachers' preparedness to adopt and integrate new methodologies, including ICT. Teachers act as the primary communicators of the CBC content, and their ability to integrate ICT effectively into their teaching methods directly impacts the transmission of the curriculum to students. The lack of training and professional development opportunities for teachers to adapt to ICT in teaching has been identified as a major impediment to CBC implementation (Ndibalema, 2020). In the transmission model, this represents a "noise" or barrier that disrupts the effective transmission of the curriculum.

Institutional leadership and policies within schools also significantly influence the integration of ICT in the curriculum. Leadership, particularly at the administrative level, is responsible for setting the vision and priorities of ICT adoption within the school's curriculum. According to Otunga (2019), the role of school leaders in providing infrastructure, facilitating teacher training, and allocating resources for ICT integration cannot be overstated. The transmission model reflects this leadership as the sender, whose ability to clearly and effectively "transmit" the importance of ICT to both teachers and students is crucial for its success. Without strong institutional leadership, ICT integration remains fragmented, which in turn hinders the effective transmission of CBC. The availability of ICT-compatible instructional materials is another key factor in ICT integration during CBC implementation. According to Mumo and Njagi (2020), the

lack of adequate digital content aligned with the CBC has led to the reliance on traditional methods of teaching, which limits the full potential of ICT in enhancing learning outcomes. The transmission model identifies this as a failure in message encoding, where the curriculum content fails to be transmitted effectively due to inadequate alignment with ICT tools.

In its application to the present study, the transmission model provides a valuable framework for understanding the role of institutional-based factors and ICT integration in implementing the competency-based curriculum in public primary schools. Key factors such as teacher preparedness, school leadership, infrastructure, funding, and instructional materials serve as critical components in the transmission process. However, institutional barriers and inadequate ICT resources disrupt the transmission of CBC, leading to challenges in its effective implementation. Addressing these challenges requires a comprehensive approach to teacher training, resource allocation, and infrastructure development to ensure that ICT integration plays a transformative role in the successful implementation of CBC in Kenya's public primary schools.

2.6.2 The learners centred model

The learner-centered model is a pedagogical approach that changes the entire focus from the traditional teacher centred to a more learner centred learning process. This model emphasizes active participation, critical thinking, and collaboration, positioning students as active agents in their own education. By fostering environments where students take responsibility for their learning, the learner-centered model aims to enhance engagement, motivation, and ultimately, educational outcomes (Weimer, 2013).

The shift toward learner-centered education is rooted in the work of progressive educators such as John Dewey. Dewey emphasized the importance of experiential learning, where students actively engage with their environment and participate in activities that stimulate critical thinking and problem-solving (Dewey, 1938). This philosophy laid the groundwork for modern educational reforms that prioritize the learner's experience, cognitive development, and individual needs. In recent decades, educational psychology research has increasingly supported the idea that students learn best when they are actively involved in constructing knowledge. For example, constructivist theories, as advocated by Piaget (1950) and Vygotsky (1978), emphasize the importance of students building their understanding through interaction with peers and their environment. These theories underscore the critical role of the learner as the center of the educational process, rather than a passive recipient of knowledge.

In the realm of education, the learner-centred model has emerged as a transformative approach that prioritizes the needs, abilities, interests, and learning styles of students. This model shifts the focus from the traditional teacher-centred methodology to one that actively involves students in their own learning processes. Research indicates that the learner-centered approach yields numerous benefits for students. One of the primary advantages is an increase in student engagement. When students are given more control over their learning, they are more likely to be motivated and invested in the outcomes (Prince, 2004). Furthermore, the emphasis on active learning encourages critical thinking and problem-solving skills, which are essential for success in the modern workforce (Jonassen, 1999). Moreover, the collaborative nature of learner-centered education helps students develop social skills and emotional intelligence. Working in groups and learning from peers fosters a sense of community and mutual respect, which can improve both academic and personal outcomes (Johnson & Johnson, 1989).

The integration of Information and Communication Technology (ICT) in the implementation of the Competency-Based Curriculum (CBC) is an essential component of this pedagogical shift. The learner-centered model of education is grounded in the belief that learning should be tailored to the unique needs, interests, and abilities of each student (Weimer, 2013). It emphasizes active participation, collaboration, and problem-solving, where learners take responsibility for their own learning. Teachers in this model serve as facilitators, guiding learners in developing the skills necessary for lifelong learning. In the context of the CBC, the learner-centered approach aligns with the curriculum's focus on practical and hands-on learning experiences that foster critical thinking, creativity, and collaboration (Omulando & Ongaki, 2020).

The model recognises the interest of learners as a key theme to discover and exploit concepts for development, it also encourages active engagement for personalised and individual growth. The learner-centered model provides a comprehensive framework for understanding how institutional-based factors and ICT integration influence the implementation of the Competency-Based Curriculum in public primary schools. Institutional factors, such as infrastructure, teacher preparedness, leadership, and resource availability, play a critical role in creating an environment that supports learner-centered teaching. Additionally, ICT integration enhances personalized learning, collaboration, and creativity, which are key components of the CBC. In Ndhiwa Sub County, public primary schools are striving to adapt to this new paradigm, and understanding the institutional-based factors that influence ICT integration is crucial for the successful implementation of the CBC. However, for the learner-centered approach to be fully realized, significant investments in infrastructure, teacher training, and technology resources are necessary. In the realm of education, the learner-centred model has emerged as a transformative approach that prioritizes the needs, abilities, interests, and learning styles of students. This model

shifts the focus from the traditional teacher-centred methodology to one that actively involves students in their own learning processes. Research indicates that the learner-centered approach yields numerous benefits for students. One of the primary advantages is an increase in student engagement. When students are given more control over their learning, they are more likely to be motivated and invested in the outcomes (Prince, 2004). Furthermore, the emphasis on active learning encourages critical thinking and problem-solving skills, which are essential for success

2.6.3 Participative model

The activities that scale up environmental learning (Bottino, 2004) and the relationship existing in the arrangement and the use of technology in the classroom to be promoted. According to (McCormick and Scrimshaw, 2001) knowledge transformation could be developed in stages involving ICT such as improving the efficiency and effectiveness, improvement in learning with ICT accessible and transforming the concepts. This motivates learners and provides teachers with accurate and efficient tools including spreadsheet for graphical data and word processing documents, the use of internet also contributes to increase of resources found in the teaching environment and updated information. In the argument of (Becta,2005) to improve viability of teacher and their work is to be well informed in undertaking their duties.

Institutional factors significantly affect the adoption and integration of ICT in schools, particularly within the framework of the CBC. Institutional-based factors include the availability of resources, administrative support, teacher training, and the readiness of the school environment. For CBC to be effectively implemented, these factors must be aligned to support a collaborative and participatory approach. The participative model advocates for the involvement of key stakeholders—teachers, school leaders, policymakers, and the community—in decisions concerning resource allocation, training, and curriculum design. This model is particularly useful

in addressing challenges that arise in institutional structures. In many public primary schools, limited funding and infrastructure have been cited as major barriers to ICT integration (Mwangi & Mbatia, 2021). Through the participative model, schools can pool resources from various stakeholders and leverage partnerships to improve their capacity for ICT-based education.

One of the main institutional-based factors influencing ICT integration in CBC implementation is teacher training. Without adequate training, even schools with access to ICT tools may struggle to integrate them effectively into the curriculum. The participative model stresses collaborative efforts between government agencies, teacher training institutions, and schools to develop comprehensive training programs that equip teachers with the necessary skills to integrate ICT into their teaching practices (Oduor, 2021). In this model, teacher professional development is not a top-down process. Instead, it is a collaborative effort where teachers themselves participate in identifying the skills they need to enhance ICT integration in their classrooms. This approach ensures that training programs are tailored to the specific needs and challenges of each school, improving the overall effectiveness of CBC implementation (Kariuki, 2020).

Another institutional factor crucial to the integration of ICT in the CBC is administrative support and leadership. School leaders play a pivotal role in creating an environment that supports the adoption of ICT. The participative model encourages a leadership style that is inclusive and collaborative, where administrators work closely with teachers and other stakeholders to ensure that decisions about ICT use are made collectively (Wanyama, 2021). This approach ensures that all voices are heard, and the school can develop strategies that address the unique challenges they face in ICT adoption. For example, in many rural schools, the lack of adequate infrastructure may hinder ICT integration. Through participatory decision-making, school leaders can engage

with local communities and government bodies to find innovative solutions, such as leveraging mobile technologies or setting up shared digital learning spaces (Achieng, 2022).

The participative model also highlights the importance of involving the wider community in the implementation of the CBC and ICT integration. In many cases, public primary schools face financial constraints that limit their ability to invest in ICT infrastructure. By adopting a participative approach, schools can mobilize resources from parents, local businesses, and government programs to support ICT initiatives (Odhiambo, 2021). Community involvement ensures that CBC implementation is not viewed as solely the responsibility of the school but as a collective effort aimed at improving educational outcomes for all learners.

In its application for the current study, the participative model provides a robust framework for explaining the institutional-based factors and ICT integration in the implementation of the Competency-Based Curriculum in public primary schools. Therefore, involving all stakeholders in decision-making processes, the model addresses critical challenges related to resource allocation, teacher training, leadership, and community support. Ultimately, the success of the CBC and ICT integration in public primary schools depends on a collaborative approach where the voices of teachers, administrators, policymakers, and the community are heard and valued.

2.7 Conceptual Framework

This framework discusses the connection between the variables (independent) and the (dependent) namely: instructional infrastructure, knowledge of ICT, assessment criteria and attitude towards the use of ICT integrating in CBC(Jabareen,2009)

INDEPENDENT VARIABLES

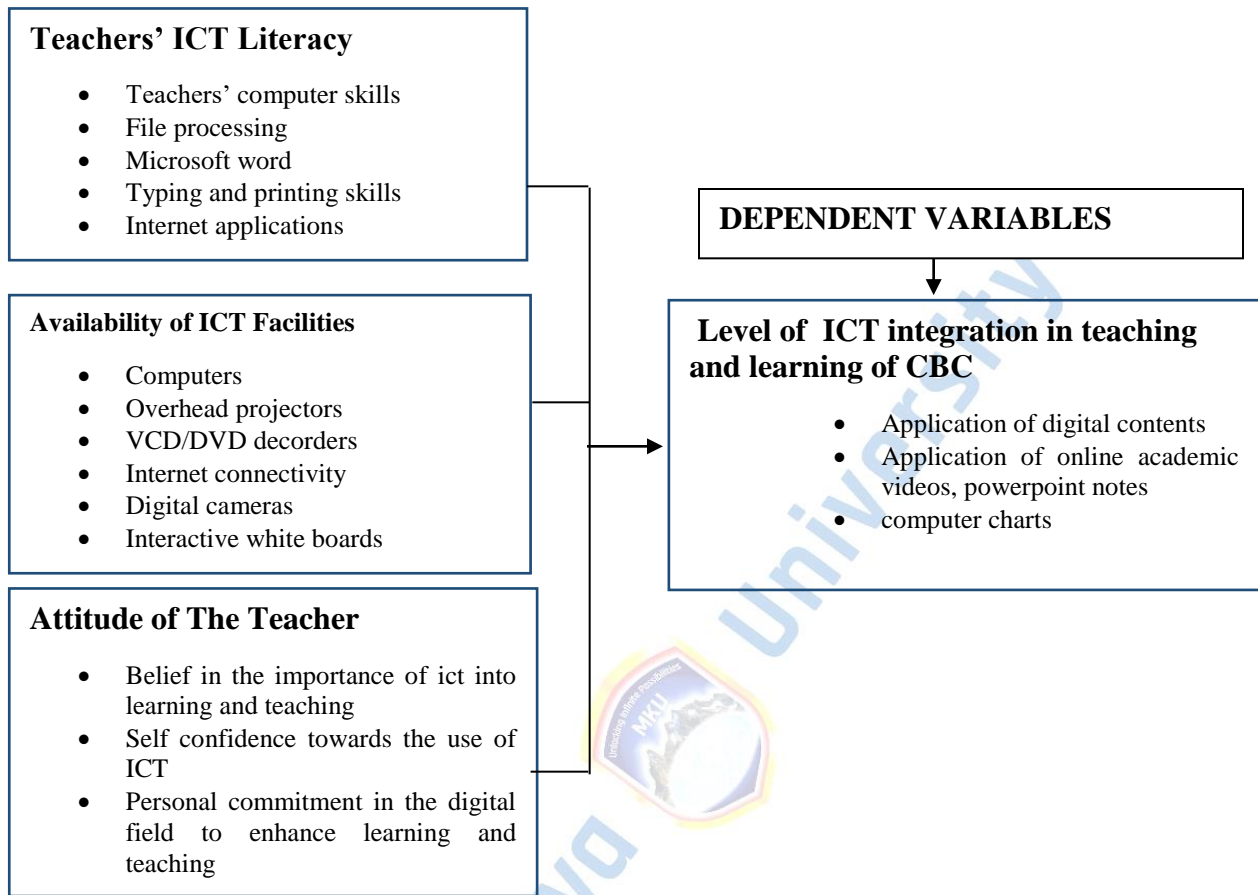


Figure 1.1 Shows the conceptual framework

(Source: Researcher, 2024)

It is important to ensure provision and access to ICT infrastructure by both the teachers and the pupils in school. The basic requirements include computer hardware and software's. Although some schools may have the ICT infrastructure successful transformation depends on the teacher's knowledge, interests and hands on use of these facilities and in order for them to effectively deliver, teachers must also have the necessary skills acquired during training, in service and induction programmes . the ultimate use of the ICT will also depend on the attitude of the teacher and his or her willingness to accept and personality in the course of subject

delivery. All the independent variables could have a bearing on ICT transformation towards curriculum implementation in grade six in public primary schools.

2.8 Knowledge Gap

It is adequate to inform that the limited ideas on those selected factors influencing ICT integration in curriculum implementation in public primary schools thus inherent for the researcher to identify the gap and will investigate the selected factors in order for the instructors to fully integrate ICT in curriculum.

2.9 Summary of Literature Review

In the review, the specific objectives: knowledge of ICT, availability of infrastructure, mode of assessment and attitudes towards the use of and their relationship with integration in schools' syllabi. It has therefore suggested that the identified selected factors relate directly to the integration and curriculum implementation, it also indicates that there is no tangible reason that would encourage conclusion.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The part discusses problems with techniques and protocols used to gather data for this investigation. The design in research, target population, sampling designs to be adopted, sample size, research tools, reliability and validity of the tools or instruments, data collection process, data analysis methods, and ethical considerations for the study.

3.2 Research Design

The term "methodology" refers to the overarching theories, tactics, and processes that direct the progress of research (Creswell & Creswell, 2018). Research design functions as the structural plan that outlines the precise details of data gathering and analysis methods (Patten, 2016). This encompasses detailed information regarding the selection of sampling procedures, the determination of sample size, the utilization of measurement tools, and the application of analytical methodologies. The researcher used descriptive survey design. Descriptive survey design facilitates carrying out of research at a particular point of time as well as helps in characterizing different strategies and the extent teachers are engaged in student affairs like student discipline in public primary schools. Shield and Rangarjan (2013) opines that descriptive survey provides detailed description on research feature. Furthermore, descriptive research design permits the study to gather and scrutinize both quantitative and qualitative data through the application of both descriptive and inferential statistics.

3.3 Population and Sampling Design

3.3.1 Population

In research, the term "population" is a complete group of persons, entities, or instances that have a specific attribute in common. This group is used to produce a sample for study (Bryman,

2016). The term "population" is the whole group or collection of units or elements that are being studied, and it serves as the foundation for reaching research results (Trochim & Donnelly, 2008). The population sampled for this study comprised of 32 public primary schools drawn from Ndhiwa Sub County. From these schools, there are 32 head teachers and 542 Teacher Service Commission (TSC) and 1 SCDE.

Table 3.1 Sample Frame and Sample Sizes

Category	Population	Sample	Piloting
Head teacher	32	32	3
Teacher	542	160	16
SCDE	1	1	0

3.3.2 Sampling Procedure

The sampling technique involves coming up with a certain group of individuals, items, or events from the entire group mainly to help the researcher in making inferences about that population. In selecting of the public primary schools, the study used census approach to involve all the 32 public primary schools in the study. In sampling the teachers, the study adopted simple random sampling approach, of which 5 teachers were selected from every primary school in study until the required sample size is attained. Simple random sampling eliminates biasness as it gives every respondent equal opportunity to be selected.

3.4 Sample Size

Sampling size, often referred to as sample size, is a crucial concept in statistics and research. It refers to the total observations or replicates included in a statistical sample. The sample size has significant implications for the accuracy and reliability of research findings. According to Kothari (2003), an optimum sample is the one that fulfils the requirements of efficiency, representativeness, reliability and flexibility. This sample should be in a range of 10%-30%. For

the present study, the researcher used 29.5% to calculate the sample size, which translate to 160 respondents (teachers). As for head teachers, the study involved all the 32 head teachers in the study through census approach.

3.5 Data collection Instrument

The research tools that were used are; questionnaires and interview schedules.

3.5.1 Questionnaires

In order to guarantee that the research outcome that can be interpreted and generalised, it is crucial to ensure that the questionnaire is accurately designed. Sileyew (2019) defines questionnaires as a tool with a sole intention of collecting opinions, and knowledge of the respondents on a subject matter. A questionnaire is a very suitable approach of collecting information from a big sample size within a period of time. The questionnaires were administered to teacher respondents and sought teachers' opinions and views on selected factors influencing ICT integration in the implementation of the competency-based curriculum in public primary schools in Ndhiwa Sub County. The self-administered questionnaire for the teachers were structured into 5 segments with a 5-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree). Section A collected demographic data about the respondents, while the subsequence sections still structured in a 5-point Likert, sought the information on the study objectives. In these sections, respondents selected in a scale of 1 to 5 showing the degree at which they agree or disagree with statements on the level of ICT knowledge of teachers influences ICT incorporation on implementation of CBC in Ndhiwa Sub-County, how availability of ICT instructional materials influences implementation of CBC, evaluation procedures using ICT in implementation of CBC and the level at which attitude of the

teacher to use ICT during learning and teaching influences integration in curriculum implementation.

3.5.2 Interview Schedules

The researcher used Interview Schedule guide to conduct interviews with the 32 head teachers of primary schools in order to gather qualitative data for the study. The interviewees were given the chance to choose a convenient time and location for carrying out the interview, after which they were informed of the study's objectives and significance. The researcher then requested permission to participate in the interview, guaranteeing the respondent's confidentiality, and the interview lasted approximately 20 to 30 minutes.

3.5.3 SCDE Interview Schedules

In order to collect qualitative data from the SCDE, the researcher utilised the Interview Schedule. They had the option to choose the most convenient time and location for them to answer the questions. The interviewee was guided through the purpose and importance of the research. After that, the researcher asked for permission to join the session and guarantee the respondent's anonymity. The interview took averagely 20 minutes. The interview schedule questions sought to assess institutional based factors influencing ICT integration in the implementation of the competency-based curriculum in public primary schools in Ndhiwa Sub-County.

3.6 Validity and Reliability of the instruments

3.6.1 Validity

This can be described as the degree at which a research tool or instrument measures what it claims to measure (Amin, 2005). In the present study, the construct validity was adopted. Construct validity, according to Kothari and Grag (2019), is a measurement of how well data

from a research tool accurately, correctly and meaningfully reflects or denotes a theoretical idea. Therefore, research experts such as supervisors and other departmental lecturers of Mount Kenya University scrutinised the research instrument in order to confirm their validity as well as raise the calibre of these instruments.

3.6.2 Reliability of the Research Instrument

A measurement instrument is considered reliable if it consistently yields the same findings (Sürücü & Maslakçi, 2020). The reliability of the instrument was examined using the Cronbach alpha test, given that our questionnaires are structured in Likert scales format. The reliability of the research tools were deemed satisfactory if its Alpha (α) value is equal to or higher than 0.7 (Mellinger & Hanson, 2020). In this study, 4 head teachers and sixteen (16) teachers took part in the pilot exercise but were not involved in the whole research. The calculation of the sample sizes for the purpose of testing reliability was based on the finding that 1–10% of the parent sample size is sufficient for pilot testing (Sürücü & Maslakçi, 2020). The Cronbach's alpha coefficient, a measure of internal consistency dependability, was utilized to determine the questionnaire's reliability (Trochim 2006). This is as a result of the study's questionnaire having a Likert scale structure. An acceptable Cronbach's alpha value is defined as 0.70, a good value as 0.8, and an outstanding value as a value over 0.90.

3.7 Data Collection Procedures

The National Commission for Science, Technology, and Innovation (NACOSTI) and the Mount Kenya University Ethics and Research Committee was consulted for permission prior to performing the data collection. Additionally, the researcher asked the Homabay County Director of Education for authorisation to share details about the planned study in the county's primary schools. After informing the head teachers of the goal of the research, visit every school and

scheduling a meeting with them. The researcher visited these schools on the scheduled date and provide the sampled respondents with the questionnaires as well as conducting an interviews. After that, the completed questionnaires were gathered for the purpose of analysis. The researcher was record the respondents' answers to questions during the interviews. While the questionnaires were used to get quantitative data, interview guides were used to gather qualitative data. The questionnaire consumed around 20 minutes to complete, while each participant's interview lasted for about between 20 and 30 minutes.

3.8 Data Analysis

This is the act of examining, purifying, converting, and modeling data in order to find relevant information, make recommendations, and aid in decision-making (Mugenda, 2008). Both quantitative and qualitative data analysis was done, in this research, of which the quantitative data was analysed through descriptive statistics that took the form of frequencies, percentages, means, and standard deviations. For qualitative data, the theme framework was used for the analysis. Thematic techniques framework is used to find, examine, and present patterns or themes in data as well as to interpret different facets of the study issue (Mihas, 2019). In order to find patterns of significance and possible interest points before, during, or even after analysis, this entails reviewing and rereading the full collection of data.

3.9 Ethical Considerations

Suri (2020) asserts that ethical issues should be taken into account while doing any study. Concerns and quandaries about the proper conduct of research—more especially, the avoidance of unfavorable circumstances for study participants—are referred to as ethical problems. The researcher made sure that research ethics are upheld in this study by establishing ethical criteria for doing the research in a way that upholds ethical ideals. The participants were given

permission documents to complete, and the researcher made sure they are comfortable with the work by going over the study protocol with them. The participants were informed that there was no financial compensation or other forms of inducement for taking part in the research. Furthermore, participants were guaranteed that the data was only utilized for research purposes and that there is no other ulterior motive for gathering (Saltz & Dewar, 2019). In order to maintain anonymity, the researcher guaranteed with the interviewees that the data they supply were used only for study. As a result, whatever information participants provide for the study was handled with the highest care, decency, and secrecy. Developing a connection based on mutual respect and was taken into consideration in order to accomplish this. However, pseudonyms was used to protect participants' identities.



CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

This section presents how data is analysed and presented that was observed and performed to provide the findings on research objectives. It first provides the demographic data of the study respondents, and the responses. The results were based on research objectives which were; to investigate how teachers' ICT proficiency and knowledge level affect ICT integration in CBC implementation in public primary schools in Ndhiwa Sub County; to assess how the availability of ICT instructional materials affects CBC implementation in public primary schools in Ndhiwa Sub County; and to establish the extent to which teachers' attitude on ICT usage during learning and teaching influences integration in curriculum implementation. The study administered the questionnaires to teachers, while head teachers were interviewed.

4.2 Response Rate

Out of the 160 teachers and 32 primary school head teachers who were sampled for the research, ninety (90) teachers duly filled the questionnaires, while 17 head teachers participated in the interview. This implies that the study achieved response return rate of 56.3 percent for teachers and 53.1 percent of head teachers. This is in accordance to Fraenkel et al. (2012) who states that a study is deemed successful if the response rate is more than 50%.

4.3 Demographic Characteristics of Respondents

The study collected the respondents' background information, which served as the foundation that guided some of the conclusions and explanations of the research project. Therefore, the demographic data studied were: age range, gender, formal computer proficiency training, and the highest academic level attained. The findings were depicted in the below subsequent tables.

4.3.1 Gender of Respondents

Respondents were probed on their gender, and the results were as displayed Table 4.1.

Table 4.1: Response by Gender

Category of respondent	Gender	Frequency	Percentage
Teachers	Male	26	28.9
	Female	64	71.1
	Total	90	100.0
Head teachers	Male	9	53.0
	Female	8	47.0
	Total	17	100.0

Table 4.1 shows that the proportion of male respondents was more than double (71.1%) that of female respondents (28.9%), which reflects the gender gap that still exists in public primary schools in the Ndhiwa sub-county. However, as for the head teachers, it was evidenced that gender parity was almost being achieved, with male head teacher population being 53.0%, while their female counterparts at 47.0%. The study also sought to established the age distribution of the respondents and the results were as shown in Table 4.2

Table 4.2: Response by Age

Age in years	Category			
	Teachers		Head Teachers	
	f	%	f	%
< 30	10	11.1	0	0.0
31-40	18	20.0	2	11.8
41-50	33	36.7	2	11.8
> 50	29	32.2	13	76.4
Total	90	100.0	17	100.0

According to the study findings, majority of the studied primary school teachers at 36.7% were between 41 and 50 years of age, 32.2% were above 50 years, while 20.0% were between 31 to 40 years. Only 11.1% of the teachers were less than 30 years. As for the head teachers, over three quarters of the respondents (76.4%) were above 50 years, while those between 41 to 50 years and 31-40 years were at 11.8% each. None of the head teachers was below 30 years.

4.3.2 Highest Level of Education

Given that teachers are increasingly being exposed towards the ICT usage and programs as they advance in their professional training, the study also sought to establish the respondents' greatest degree of professional training. The study therefore probed both the teacher and the head teachers on their maximum level of professional qualification. Table 4.3 depicts the response

Table 4.3: Highest Level of Education

	Teachers		Head Teachers	
Post graduate degree	10	11.1	3	17.6
Bachelor Degree	28	31.1	8	47.1
Diploma certificate	20	22.2	5	29.4
P1 Certificate	32	35.6	1	5.9

The study found that most of the teachers at 35.6% had only P1 certificate, 22.2% had diploma certificate, while 31.1% had bachelor degree certificate. Only 11.1% had post graduate certificate. For head teachers, 47.1% had bachelor degree certificate, 29.4% had diploma, while 17.6% had post graduate degree certificate. It is expected of professionally qualified teachers to have learned the pedagogy and subject matter. As a result, every teacher should have the opportunity to use ICT to improve CBC pedagogy and content for the benefit of the learners. This would also be consistent with the main idea of TPACK, which is a method of considering the subject matter and computer literacy that teachers need in order to successfully incorporate

technology into their courses.

4.4 Teachers' Computer Skills and Knowledge

The first objective sought to examine how the level of ICT knowledge of teachers influences ICT integration on implementation of CBC in in Ndhiwa sub county, Homa bay county. Respondents were therefore asked to rate their ICT knowledge on computer technological skills in general like browser and navigation skills. Rating the knowledge were to be done based on the scale on which 5=Master; 4= Above Average; 3= Average; 2= Little; 1=None. Table 4.4 shows the response.



Mount Kenya University

Table 4.4: Teachers' Response on their Level of ICT knowledge

Statement	Mean	SD
General Skills		
I am capable of shutting down a computer appropriately	4.3	0.6
I am capable of using Help menus to find answers to my questions	2.6	0.8
I can understand file extensions and differences between file types (e.g.doc, gif.ppt, pdf.docx)	3.4	0.7
I'm familiar with basic computer system parts and concepts (e.g CPU, motherboard, hard drive, random access memory- RAM, etc.)	2.7	1.2
I'm able to perform a safe reboot of the operating system with keystrokes	2.4	0.6
Able to install and uninstall a programme	2.1	0.6
Able to use the mouse right-click menu functions	4.0	0.8
I am able to understand the difference between closing/minimizing/hiding windows	3.8	0.7
Aggregate Mean score and SD	3.1	0.7
File Management Skills		
Able to move unwanted files into my recycle bin and delete them permanently from my hard drive	3.5	0.7
Able to organize, copy and paste files in directories	3.0	0.8
Able to navigate through files and directories (e.g.using Windows Explorer)		
Aggregate Mean score and SD	3.1	0.8
Word Processing Skills		
Capable of saving, printing and previewing documents		
Capable of using undo/redo functions	4.5	0.7
I can edit, copy, cut and paste a block of text or selected objects	4.1	0.9
I can select and change fonts sizes and types, styles (e.g. boldface, italics)	3.5	0.7
Capable of creating itemizing lists (e.g. bullets, numbered lists)	2.7	1.1
Capable of inserting pages to a formal report with preliminaries and the main Body	1.7	0.6
Capable of naming and inserting pages for tables and figures in a document	1.9	0.7
I am able to insert automatic table of contents	1.3	0.4
I am able review a word document online	1.7	0.5
I am able use picture tools formatting commands such as cropping and wrap text	1.3	0.5
I am able put several files in a zip	2.2	0.9
I am able lock a document with a pass word	1.2	0.5
I am able share information through Google drive sheets	2.0	0.8
Able to insert symbols, and insert charts using excel	2.5	1.0
Aggregate Mean score and SD	2.3	0.8
Printing Skills		
I am able change printer parameters like page numbers, paper orientation, margins etc	1.7	0.8
I am able to change printing options from grayscale, normal, fast draft or best	1.8	0.5
Aggregate Mean score and SD	1.8	0.7
Online Communication, Browser and Navigation Skills Online		
Capable of using the browser basic commands to surf the Internet	3.5	0.8
Capable of composing, send, receive, reply to and forward email messages	4.1	1.0
Capable of attaching or detaching documents to/from email messages	3.8	0.5
Capable of using search engines to locate desired information	1.8	0.9
Capable of understanding the difference between Search Engines	1.7	0.8
Capable of understanding that some copyright restrictions apply to computer software and Internet documents	2.2	1.0
Capable of using gathered information from the Internet without violating copyright laws	2.5	0.9
Capable of demonstrating an understanding of what constitutes plagiarism	2.5	0.7
Aggregate Mean score and SD	2.8	0.8

Table 4.3 shows that the majority of teachers ($M = 2.7$, $SD = 1.2$) reported having minimal knowledge of fundamental computer system components and terms, such as motherboard, random access memory (RAM), hard drive, and central processor unit (CPU). On the other hand, the comparatively high standard deviation of 1.2 indicates that a sizable portion of teachers had opposing views. In a similar vein, the majority of teachers reported having little experience with safely restarting the operating system via keystrokes and using "help menus" to get answers to my inquiries ($M = 2.4$, $SD = 0.6$). This implies that if a teacher's computer became unresponsive (hung), they would be unable to restart it using keystrokes.

Moreover, the majority of instructors (Mean = 2.1, SD = 0.6) were unable to install and uninstall a software. However, the majority of educators assessed their own knowledge on file extensions and the distinctions between other file types, including, doc, html, gif and others, as average (Mean = 3.4, SD 0.7). The study established that teachers also shown a reasonable level of comprehension of the distinctions between stopping a program and shutting, reducing, or concealing windows (Mean = 3.8; SD = 0.7). Also, the most of the teachers said they were above average in their ability to utilize the mouse's right-click menu functions (Mean = 4.0; SD = 0.8) and to shut down computers in an acceptable manner (Mean = 4.3; SD = 0.6). Overall, it was determined that the teachers' overall computer proficiency was low (Mean = 3.1; SD = 0.7). similarly, during the interview session with the head teachers, here is what one of them had to say;

A significant number of teachers have not received adequate ICT training. Despite efforts by the Ministry of Education to promote the integration of technology, some teachers are still struggling with the basic use of ICT tools. The lack of continuous professional development and hands-on training makes it difficult for these teachers to integrate technology effectively into their CBC teaching approach (Head teacher, 10)

In terms of file management abilities, the majority of teachers said they knew very little about navigating through directories and files (Mean = 2.8; SD = 0.9). On the other hand, they gave their abilities to copy, paste, and arrange files in folders an average rating (Mean= 3.0, SD = 0.8). In a similar vein, the majority of teachers rated their proficiency at moving undesired files to the recycle bin and permanently erasing them from my hard drive as mediocre. The average score for file management abilities among teachers was 3.1, with a standard deviation of 0.8. This indicates that their skills were mediocre and that they need further training to improve. In terms of word processing abilities, instructors generally did horribly (Mean = 2.3; SD = 0.8).

Teachers rated their abilities to utilize the undo/redo tools as above average (Mean = 4.5; Standard deviation = 0.7) and to copy, edit, cut, and pasting of texts or chosen objects as more than average (Mean = 4.1, Standard deviation = 0.9). This suggested that teachers might quickly search the internet, get pertinent information, and make edits based on the needs of their learners. It was also established that teachers could print, save and preview papers with average knowledge and proficiency. They could also choose and alter font kinds, sizes, and styles, including italics, bold, and underlining.

Most of the teachers were also unable to insert pages, naming of figures and inserting tables in a word document, use bullets and numbers in creating itemized lists, insert an automatic table of contents, make online reviewing of a word document, and much more. Most of them were also not able to utilise Equation Editor, inserting charts through Excels, enter symbols, lock a word document that must only be accessed with a password, exchange data using Google Drive Sheets, utilize photo tools formatting commands like cropping and wrap texts, and compress many files together. The fact that nearly all of the teachers in public primary schools in Ndhiwa Sub County were unable to apply picture tools formatting features or commands like cropping

and text wrapping (Mean = 1.3; Standard Deviation= 0.5), application of equation editor (Mean= 1.3; Standard Deviation = 0.6), or locking a word document with a password (Mean= 1.2; SD = 0.5) is even more concerning and worrying, yet, to properly prepare and deliver the lesson plan to the pupils, a teacher must be able to do all of these important and fundamental tasks.

With regard to printing abilities, the majority of teachers (Mean= 1.7; SD = 0.8) said that they were unable to modify printer settings such as paper orientation, page numbers, margins, and proportions. Teachers were severely hampered by this since part of their job was to prepare handouts, newsletters, and notes that communicated essential information and forthcoming events in an organized and clear manner. Furthermore, the majority of teachers (Mean= 1.8; SD = 0.5) were unable to alter the printing selections from grayscale, regular, quick draft, or best.

In general, most of the teachers in public primary schools in Ndihiwa Sub County were insufficiently proficient with computer printing. The survey also sought to determine the teachers' proficiency with internet browsers, online navigation, and online communication, of which majority of teachers reported having an average understanding of how to navigate the Internet using the browser's basic instructions (Mean = 3.5; SD = 0.8). Furthermore, since identical operations are carried out via mobile phones, teachers' capacity to create, receive, send, respond to, and forward email messages was shown to be exceeding average (Mean = 4.1; SD = 1.0). However, the majority of teachers lacked the necessary abilities to participate in a variety of online communication activities. For instance, most of teachers said that they were unable to distinguish between search engines like Yahoo and Google directories (Mean = 1.7; SD = 0.8) and the techniques for using search engines to find and filter needed information (Mean = 1.8; SD = 0.9).

Most teachers miss out on important information that may be helpful to them and their pupils when they are unable to effectively search for a specific piece of information on the internet using search engines. Furthermore, teachers did not fully comprehend that they may use information collected from the Internet without breaking copyright rules, and that certain copyright limitations also apply to Internet and computer software publications (Mean= 2.2; SD = 1.0). Lastly, most of the teachers said that they lacked the ability to explain what plagiarism is (Mean= 2.5; SD = 0.7) and the fundamentals of protecting one's computer security and online privacy (Mean ean = 2.6; SD = 0.8).

4.5 Availability of ICT Resources and ICT Integration in CBC Teaching and Learning

The second study objective examined the availability of ICT materials and resources and its influence on implementation of CBC in public primary schools in Ndhiwa sub county. To achieve the objective, the teachers were requested to indicate the extent at which ICT materials and infrastructure were available in their respective schools, of which; 4=Sufficiently Available (SA); 3= Moderately Available (MA); 2= Sparingly Available (SPA); and 1=Not Available (NA). Table 4.5 shows their response.

Table 4.5: Availability of ICT Resources for CBC teaching and learning

Statement	1	2	3	4		
	%	%	%	%	M	SD
Desk top Computers for teachers & pupils use	14.4	21.1	43.3	21.2	2.7	0.6
Interactive white boards	27.8	22.2	22.2	27.8	2.5	1.3
Overhead projectors	30.0	31.1	22.2	16.7	2.3	1.0
Internet connection	27.8	11.1	41.1	20.0	2.4	0.7
Laptops for teachers	55.6	11.1	16.7	16.7	1.9	0.5
Source of electric power	11.1	11.1	18.9	58.9	3.3	0.5
Tablets for pupils	10.0	50.0	22.2	16.7	2.4	0.7
VCD/DVD Player	23.3	30.0	40.0	6.7	2.3	0.9
Video decoder/player	26.7	18.9	25.6	28.9	2.6	1.1
Copy scanner	16.7	13.3	31.1	38.9	2.9	0.7
Photocopy Machine	27.8	11.1	38.9	22.2	2.6	1.0
Television	16.7	16.7	33.3	33.3	2.5	0.9
Radio	11.1	11.1	63.3	14.4	2.8	0.5
Digital Camera	45.6	28.9	25.7	5.6	1.9	0.6
Wifi	28.9	22.2	32.2	16.7	2.4	1.2
Aggregate Mean Score					2.6	0.7

Table 4.5 revealed that the majority of schools (43.3%) had desk computers that were only minimally equipped for usage by teachers and pupils. It was also significant that 14.4% of teachers said that desktop ICT equipemnt were not accessible in their classrooms, suggesting that increasing ICT literacy among teachers and learners was unlikely. In addition to desktop computers, whiteboards, overhead projectors, internet access, video decoders, and many more tools are necessary for the progressive integration of ICT in CBC implementation. Regarding the availability of interactive whiteboards, responses were mixed given that 27.8% said they were not accessible, 22.2% said they were available sometimes, 22.2% said they were available substantially, and 27.8% said there were enough computers for teachers and learners.

It was also established that projectors were either unavailable in the majority of schools (30.0%) or only sometimes accessible (31.1%). Teachers indicated internet access as either adequately available (41.1%) or somewhat available in the majority of the schools. Nonetheless, 27.8% of educators said that there was no connection. This implies that teachers' and pupils' use of ICT in CBC implementation was constrained in the absence of internet access. More than half of teachers (55.6%) said that their schools did not provide teachers with computers. Nonetheless, the fact that 44.4% of teachers said they had at least one computer was positive. A laptop computer proves to be an incredibly useful working tool for educators who are constantly switching between classes and tasks. These responses were also shared by the SCDE, when he also said;

Many schools, particularly in rural areas, lack the necessary ICT infrastructure. Inadequate access to computers, internet connectivity, and digital learning resources hampers teachers' ability to incorporate technology into their lessons, regardless of their competence level.

Several schools had adequate supply of electricity, as evidenced by 58.9% of teachers who said it was accessible, 18.9% who said it was only somewhat available, and 11.1% who said they had no supply at all. Availability of electricity in schools is justified by the fact that Ndhiwa Sub County is linked to the national electrical system and is also well-supplied. As reported by 90.0% of teachers, most schools have tablets accessible by pupils, particularly in primary courses. Comparably, the majority of schools have the bare minimum of ICT infrastructure, but sometimes very little. The percentage of teachers who said that a copy scanner, television, video decoder/player, photocopy machine, and radio were not accessible was just 23.3%. Approximately 45.6% of instructors said that a significant portion of schools lacked digital cameras. A digital camera might be useful as pupils investigated different scientific and geography themes, in addition to being a fantastic source of interest and curiosity. Lastly,

different schools had different levels of internet availability. According to response by teachers, 28.9% of them had no wifi, 22.2% had it sparingly, 32.2% had it moderately, and 16.7% had it substantially. Due to the expanding worldwide trend of completing transactions digitally, wifi connectivity is becoming a must have in both households and organizations. ICT resources were found to be generally fairly accessible (Mean = 2.6; SD = 0.7). This suggested that majority of Ndhiwa sub county public primary schools have the ability to completely incorporate ICT into implementation of CBCs in schools. Although most institutions are having ict infrasrtructure in their schools , several teachers confirmed several challenges that hinder them from making use of the tools. A good chank of respondents outlined the materials required for the successful application of the ICT . Their concern clearly demonstrated that even institutions with sufficient access to ICT resources, there was a lack of implementation of ICT integration in the classroom. Many factors contributed to this, most of which had to do with the administration of the school and the teachers. It was noteworthy, yet, that many schools lacked essential ICT resources, depriving teachers and pupils of the opportunity to integrate ICT into their instruction.

4.6 Teachers' Attitude on ICT Integration in Teaching and Learning

The third objective of the study sought to establish teachers' attitude on ICT application in CBC teaching and learning in public primary schools in Ndhiwa sub-county. Respondents reacted differently to the statements and their responses were coded; 1 denoted Strongly Disagree (SD); 2 denoted Disagree (D); 3 denoted Agree (A); 4 denoted Strongly Agree (SA). A mean more than 2.5 reflected agree while a mean of less than 2.5 reflected disagree. Table 4.6 illustrates the result.

Table 4.6: Teachers' Attitude on application of ICT in CBC Teaching and Learning

Statement	SA	A	D	SD	Mean	SD
	%	%	%	%		
To be a competent teacher in the present era, computer knowledge is a must	27.8	33.3	16.7	22.2	2.7	1.2
Teachers should use internet material to supplement what they get from text books	33.3	47.8	20.0	14.0	3.1	0.9
Teachers should invest in a personal computer/laptop	31.1	22.2	30.0	16.7	2.7	1.0
Use of the internet resources as teaching aids can result pupils better understanding	46.7	42.2	5.6	5.6	3.3	0.7
Pupils should be encouraged to source information from internet	36.7	25.6	16.7	21.1	2.8	0.9
I avoid using computers whenever I can	27.8	28.9	26.7	16.7	2.3	1.0
ICT integration in teaching and learning can lead to pupils improved grades	25.6	22.2	33.3	18.9	2.5	1.1
ICT integration requires a lot of time	36.7	36.7	11.1	15.6	2.1	0.7
Working with computers makes me feel isolated from other people	25.6	33.3	18.9	22.2	2.4	1.0
ICT integration in teaching and learning should start at secondary school education	30.0	27.8	20.0	22.2	2.3	0.9
Computers are difficult to use	34.4	26.7	16.7	22.2	2.3	0.8
Use of computer reduces paper work for Teachers	40.0	40.0	11.1	8.9	2.9	0.5
I store most of my information in computer than in files	16.7	18.9	22.2	42.2	2.1	0.7
Aggregate Mean Score					2.6	0.7

Based on Table 4.6, the study established a diverse teachers' opinion (Mean = 2.7; SD = 1.2) on the statement that computer knowledge is a necessary prerequisite for a competent teacher in the contemporary era. As a result, even though 61.1% of teachers agreed, a sizeable number at 38.9% disagreed. A few teachers contended that although learning computers is vital, the media has overstated the importance of computer literacy. Response from an open-ended portion of the teachers' questionnaire, reveals some of their opinions and convictions on how pupils learn computers. It expresses, for example, some teachers' conviction that they can provide learners with high-quality instruction even if they do not include ICT into their lessons. Such ideas might

result in unfavorable attitudes and a sluggish adoption of ICT among teachers. These responses were also echoed by the head teachers, when one of them said;

Certain teachers resist adopting ICT tools due to discomfort with new technologies or a lack of motivation to learn new skills. This resistance can stem from fear of the unknown, over-reliance on traditional teaching methods, or a perceived lack of time to engage in ICT training amidst their teaching responsibilities (Head Teacher, 14)

However, more than 80.0% of teachers said that educators should utilize online resources to augment the information they learn from textbooks. A sizable portion of teachers believed that computer-related work could be done just at school and didn't need having to be done at home. Also, majority of teachers (88.9%) agreed that using online resources to supplement instruction during CBC implementation may improve learners' comprehension (Mean = 3.3; SD = 0.7). Consistent use of online resources as teaching tools may help teachers become more proficient in computer technology and develop a more favorable attitude toward the integration of ICT in teaching and learning for optimal CBC implementation.

The majority of teachers (62.3%) agreed that learners need to be encouraged to use the internet as a source of knowledge. But 37.8% of teachers were hesitant to let primary or elementary school pupils depend too heavily especially unsupervised on the internet for information. During the interview session with the head teachers, one of the head teachers had this to say;

Learners should only use the internet up to a certain amount of its resources while completing homework. Teachers and parents are reluctant to encourage learners to utilize the internet as a source of knowledge because they are afraid that pupils may unintentionally get unwelcome material from it. (Head teacher, 7)

It was understandable why 52.2% of teachers disagreed that using ICT in the classroom may help students get higher grades (Mean = 2.5; SD = 1.1). The comparatively large standard deviation of 1.1, however, showed that teachers' opinions on this matter were anything from uniform.

Ironically, 64.4% of teachers said they save more information in files than on computers, despite 80.0% of teachers stating that using a computer decreases their amount of paperwork. This suggests that even while teachers understood the value of keeping information in electronic form, they had not yet embraced the use of technology for information management and preservation. The majority of teachers confirmed that they try to avoid using computers whenever possible (56.7%), that ICT incorporation takes a lot of time (73.4%), that using computers isolates them from other people (58.9%), that ICT application in CBC teaching and learning should begin from secondary schools and not from primary schools (57.8%), and that using computers is challenging (61.1%). The reinforcement of these claims results in a negative attitude about using computers for a variety of activities, which has an adverse effect on the integration of ICT in teaching and learning for CBC implementation. The general attitude of teachers regarding the use of ICT in teaching and learning for CBC implementation was found to be merely moderately favorable (Mean = 2.6; SD = 0.7).

4.7 Discussion of the Findings

4.7.1 Teachers knowledge of ICT for CBC teaching and learning

The first research objective was to investigate how teachers' ICT knowledge and proficiency affects ICT integration and CBC implementation in public primary schools in Ndhiwa sub county. According to the survey, the majority of the teachers knew very little about the motherboard, random access memory (RAM), hard drive, central processor unit (CPU), and other fundamental computer system components (Mean = 2.7, SD = 1.2). Furthermore, the majority of teachers were unable to safely restart the operating system using keystrokes and had minimal understanding of how to utilize "help menus" (Mean = 2.4, SD = 0.6). Lack of familiarity with computer basics, such as restarting, may severely limit teachers' inventiveness and self-assurance when integrating ICT in teaching and learning for CBC implementation.

The results concur with that of Kamaruddin et al., (2017), which also established that teachers' proficiency with and understanding of ICTs determines their capacity to integrate technology into lessons and recognize its value as a versatile teaching and learning tool. Nurhabibah et al. (2018) also discovered that in Indonesian vocational high school, instructors lacked significant ICT-related abilities and self-confidence and that men had a greater degree of ICT literacy than women. In addition, compared to the older group, the comparatively younger teachers—those under 40—exhibited a greater degree of ICT literacy. Nurhabibah et al. (2018) established that teachers with limited ICT knowledge had difficulties in optimally delivering their services.

Teachers assessed their own ICT literacy as average in a number of areas, including knowing the distinctions between file formats (gif, doc, and html) as well as file extensions (Mean = 3.4; SD = 0.7). Respondents (teachers) also showed a reasonable level of comprehension of the distinctions between stopping a program and shutting, reducing, or concealing windows (Mean = 3.8; SD = 0.7). The results are comparable to those of Choge (2019), who evaluated the majority of head teachers of public elementary schools' abilities to close, minimize, or hide windows and exit a program as average, of which the study also found that majority of the head teachers were above average when it came to knowing how to properly shut down a computer and utilize the mouse's right-click menu. Overall, it was determined that the teachers' overall computer proficiency was average (Mean = 3.1; SD = 0.7). These results were also consistent with those of Alazam et al. (2012), who found that the majority of vocational and technical instructors in Malaysia had intermediate ICT proficiency and used the technology in the classroom at a moderate level. It was also shown that there was a substantial association between teachers' ICT proficiency and the incorporation of ICT in the classroom. Enu et al. (2018) discovered in a related research that Ghanaian teachers' ICT proficiency was at a moderate level. Although most

of the teachers use ICT for both personal and general objectives such as talking and connecting on Facebook and WhatsApp with friends and family, it was albeit to an average extent. Lack of ICT infrastructure and ICT integration expertise was blamed for teachers' weak ICT proficiency and inadequate ICT integration for CBC teaching and learning.

Teachers' performance on the word processing abilities test was usually appalling (Mean 2.3, Standard Deviation = 0.8). The majority of teachers lacked the skills necessary for creating itemized lists with bullets or numbered lists, insert pages into formal reports that included both the introduction and the main document, naming and inserting pages for figures and tables in a document, inserting an automatic table of contents, reviewing a word document online, use Equation Editor. The results support those of Oulo (2013), who also found that 75% of Bondo district teachers lacked email accounts and were just somewhat computer proficient. Similarly, Ogundele and Etejere (2013), found that while teachers are frequently adept at basic computer survival skills like downloading and sending documents, they hardly ever explore deeper features that can improve their instruction, like checking student work online.

ICT usage in CBC teaching and learning in public primary schools in Ndhiwa sub-county significantly impacted by teachers' ICT knowledge and literacy. This indicates that instructors with higher levels of ICT literacy integrate technology into their classes more often than those with lower literacy levels. The results support those of Mbithe (2016), who discovered a substantial positive connection ($r = 0.366$, $p < 0.001$) between teacher ICT competence and ICT integration. Additionally, the results aligned with the research conducted by Rastogi and Malhotra (2013), which demonstrated that instructors with higher ICT literacy levels saw technology as more beneficial, had increased confidence, and showed less resistance while using it.

4.7.2 Influence of Availability of Teaching Resources on ICT Integration for CBC implementation

The second study objective sought to establish how the availability of ICT resources affects the implementation of CBC in state owned primary schools in Ndhiwa Sub-County. According to the report, 43.3% of teachers said that desk computers were not all that available in adequate quantity for usage by both staff and pupils. Furthermore, 14.4 percent of teachers said that computers were not accessible in their classrooms, suggesting that proper implementation of CBC through application of ICT is greatly hampered. Similarly, Abuya (2019) highlights that the supply of modern ICT structure and teachers' digital literacy are requisites for the effective deployment of ICT in schools, therefore the absence of computers opposes the teachers' efforts to integrate ICT in CBC learning. Furthermore, even the most tech-averse teachers would get curious and eventually take action if a school has ICT infrastructure.

With 21.2% of teachers believing that there are enough desktop computers in their classrooms and 43.3% believing that they are only moderately available, it can be concluded that the majority of public primary schools in the Ndhiwa sub-county have the bare minimum of desktop computers needed for ICT integration to be successful for good CBC implementation. Similarly, studies by Mbuguah et al. (2015), Amuchie (2015) and Uriah et al. (2016), all discovered that the success of teaching and learning with computers was greatly hampered by the inadequate availability and poor quality of desk top computers. Nwana et al. (2017), also showed that teachers were not using some essential resources required for teaching computer education, like projectors, electronic whiteboards, and programmed teaching materials, due to their unavailability. According to Nwana et al. (2017), in addition to desktop computers, additional necessary tools for the progressive integration of ICT in teaching and learning include internet access, video decoders and overhead projectors. Overhead projectors were either unavailable in

the majority of schools (30.0%) or only sometimes accessible (31.1%). This suggested that teachers would not always be able to use their ICT skills because of inadequacy in supply of these materials in school. Ultimately, in public primary schools in the Ndhiwa sub county, teachers' use of ICT for CBC implementation was significantly impacted by the availability of ICT resources. This indicated that the majority of teachers would involve in ICT integration for CBC implementation if the ICT materials or resources were adequate.

4.7.3 Influence of Teachers' Attitude on ICT Integration in CBC Teaching and Learning

The third research objective sought to ascertain how much a teacher's attitude toward using ICT for teaching and learning affects the integration of the CBC curriculum. The study found that 61.1% of teachers agreed that having computer skills is essential for being an effective teacher in the modern period, while 38.9% disputed the statement (Mean = 2.7; Standard Deviation of 1.2). This suggested that although a greater proportion of teachers thought having computer skills was a necessary for teaching, a sizeable portion had a different opinion. The findings supported Butucha's (2012) conclusion that, while a greater proportion of teachers thought that ICT may increase student learning in the classroom, almost as many of them were reluctant to name any specific advantages or link it to better outcomes. Same observations were made by Gakenga et al. (2015) as well as Ndibalema (2014), who noted that in spite of constant promotion of the advantages of ICT application in CBC teaching and learning, some instructors continue to deny that there are any real advantages to utilizing ICTs in the classroom.

More than 80.0% of the respondents (teachers) agreed that through CBC implementation, teachers need to augment their textbook knowledge using online resources. The results are consistent with those of Nzwili (2017), who found that ICT was seen as a crucial instrument by principals and teachers alike for enhancing performance, teamwork, learning outcomes, and

learning experiences. Similarly, Mureithi and Mwangi (2019) and Choge (2019), observed that teachers who believed that ICT was integrated into teaching and learning often utilized the internet to supplement their lesson plans. Also, of the teachers surveyed, 53.3% agreed that teachers should own a personal computer/laptop, while 46.7% disagreed. This suggested that a sizable portion of educators did not believe a personal computer or laptop was required for CBC implementation. In line with the findings, Nzwili (2017) discovered that 80.1% of Kitui County teachers lacked a laptop or personal computer that could be used for instructional purposes in CBC implementation.

The majority of teachers had not yet seen computers as essential tools for their jobs, as shown by their lack of initiative in purchasing a desktop or laptop. Paradoxically, as several teachers pointed out, some of the people who had a computer or laptop at home were also not using it; instead, they had gotten it primarily for their kids to use. Nonetheless, Nzwili (2017) comes to the conclusion that while teachers had a favorable opinion of adoption, they had little prior experience integrating ICT resources into the classroom.

The majority of teachers (88.9%) agreed that using online resources as instructional tools may improve students' comprehension ($M = 3.3$; $SD = 0.7$). Likewise, 62.3% of teachers said that pupils need to be encouraged to use the internet as a source of knowledge. On the other hand, 37.8% of teachers expressed concern about primary school learners using the internet unsupervised. Almasi et al., (2017) discovered that although students were using the internet for instructional reasons, the majority of them were using it as a social media platform for talking, networking, and watching movies. This led to time wasting in general, school avoiding, delays in turning in assignments, and poor academic performance. More significantly, pornography, sexual predators, cyberbullying and ruined reputations on Facebook are the four main online threats that

affect learners and young people in general, according to Christopher and Maria-Gorretti (2012). Keeping this knowledge in mind, some teachers have a pessimistic outlook and are reluctant to allow primary school learners to utilize the internet to find academic resources.

It was understandable why 52.2% of teachers disagreed that using ICT in the classroom may help pupils get higher grades in CBC curriculum (Mean = 2.5; SD = 1.1). However, Aboderin et al. (2011) point out that when learners were permitted to bring in their personal devices, such as phones, "internet dangers" were shown to be a greater concern. Teachers' concerns and disapproval of using the internet as a primary source of knowledge for learners seems misplaced given how often pupils seemed to access the internet via mobile devices. According to research by Almasi et al., (2017) of the students who were studied, 54.8% accessed the internet using mobile phones, 32.3% through internet cafés, 25 (8.1%) through houses, and 15 (4.8%) through personal computers and those provided by the schools. Therefore, it was clear that the majority of learners used their mobile phones to access the internet, with just a tiny fraction using personal computers at home or school computers. As a result, when pupils have more access to the internet and are eventually exposed via a variety of channels, they need supervision and counseling. The general attitude of teachers regarding the use of ICT in for CBC implementation was found to be merely moderately favorable (Mean = 2.6; SD = 0.7). This suggested that teachers were more inclined to include technology into their lesson plans when they had a favorable attitude toward ICT integration in CBC programs. In a similar vein, Mwila's (2018) research found that teachers' and students' attitudes about ICT integration in learning had a significant role in how well it integrated into the educational process. As a result, while head teachers and teachers generally have a good attitude toward ICT, they do not always use it

appropriately in their CBC teaching practices, indicating that they still need more specialized in-service training and incentives to put their theoretical excitement into reality.



CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides an overview of the findings and conclusions drawn from the discussion on the specific elements impacting ICT integration in CBC teaching and learning in public primary schools in the Ndhiwa sub county was the aim of the research makes recommendations based on the objectives, and identifies potential topics for more research. The SCDE and head teacher interview schedule, along with the teachers' questionnaire, were used to gather data.

5.2 Summary of Findings

According to the study's findings, the majority of teachers were not very acquainted with terms like motherboard, random access memory (RAM), hard drive and central processor unit (CPU). The majority of teachers lacked proficiency in several fundamental word processing abilities, including adding pages to a formal report that included both the introduction and the body, creating an automatic table of contents, using picture functions, formatting text with functions like cropping and wrapping. Nonetheless, in Ndhiwa Sub-County's public primary schools, teachers' ICT knowledge significantly impacted ICT integration for teaching and learning ($p < 0.05$). The majority of teachers confirmed that using computers isolates them from the rest (58.9%); that ICT application in CBC implementation should begin in secondary schools (57.8%); that they don't use computers every time (56.7%); that they find computers challenging to use (61.1%); and that they believe ICT application in CBC programs takes much of their time (73.4%). The reinforcement of these claims created a bad attitude against using computers for a

variety of activities, which in turn had a detrimental effect on the integration of ICT in CBC implementation in primary schools in the study area.

The general attitude of teachers regarding the use of ICT in CBC teaching and learning was found to be merely moderately favorable (Mean = 2.6; SD = 0.7). On the other hand, at public primary schools in the Ndhiwa sub-county, teachers' attitudes toward the integration of ICT in CBC teaching and learning had a statistically significant impact ($p < 0.05$). In terms of ICT infrastructure accessibility, the majority of schools (43.3%) had desk computers that were only modestly equipped for usage by teachers and students. Overhead projectors were either unavailable in the majority of schools (30.0%) or only sometimes accessible (31.1%). Teachers rated internet access as either adequately available (41.1%) or somewhat available in the majority of the schools. More than half of educators (55.6%) said that their schools did not provide teachers with computers. However, majority of schools have sufficient electrical sources because, according to 58.9% of teachers, the sources were readily accessible. Lastly, almost 30.0% of teachers said their schools lacked wifi. ICT resources were found to be generally fairly accessible (Mean = 2.6; SD = 0.7).

5.3 Conclusion

A lack of proper ICT infrastructure, such as insufficient computers, limited access to the internet, and unreliable electricity supply, significantly hampers the effective integration of ICT in CBC implementation. Many schools in Ndhiwa Sub County lack the necessary technological tools and infrastructure to support digital learning.

A key factor affecting ICT usage in CBC teaching and learning is the insufficient training and preparedness of teachers. Many educators lack the skills required to effectively use ICT tools in

the classroom, which reduces their ability to deliver lessons using technology. Inadequate professional development programs and ongoing support hinder the smooth adoption of ICT.

Positive attitudes toward the use of ICT from teachers and school administrators can enhance the integration of ICT. However, in Ndhiwa Sub County, the study reveals mixed perceptions, with some educators embracing the potential of ICT while others remain resistant due to discomfort or a lack of exposure to digital technologies.

5.4 Recommendations

The study found that lack of adequate ICT skills among teachers is often a significant barrier to the successful integration of ICT in CBC learning and teaching public primary schools. The Ministry of Education and other stakeholders should offer regular and comprehensive ICT training for teachers to enhance their skills in using digital tools and resources for teaching. The teaching colleges should introduce mandatory ICT training modules in teachers' continuous professional development programs.

Many public primary schools in Ndhiwa Sub County may have limited access to ICT infrastructure such as computers, internet connectivity, and other necessary digital tools. The ministry of education should therefore consider increasing investment in ICT infrastructure, ensuring that each school has adequate computers, internet access, and digital learning resources and in some cases, they should establish partnerships with private sector companies and non-governmental organizations (NGOs) to help in the provision of resources and equipment.

On negative attitude of teachers badly influencing ICT integration in CBC learning and teaching, school management and the ministry should develop targeted campaigns to address negative perceptions and resistance among teachers. They should also highlight success stories of ICT

integration in schools within and outside the county to motivate change. They should also facilitate ongoing, targeted ICT training to enhance teachers' digital skills and confidence. Workshops, seminars, and mentorship programs can be used to teach how ICT tools can effectively support CBC. Also, they should implement training programs that emphasize the benefits of ICT in learning, especially its ability to engage students and enhance their problem-solving and critical thinking skills.

5.5 Suggestions for Further Research

The following areas have been suggested for further research:

- i. A study should be carried out to establish how ICT integration affects pupil performance in CBC programs as this will offer insights into the effectiveness of ICT in education in CBC teaching and learning
- ii. A study should be done on how ICT integration changes teaching methodologies and classroom interactions in CBC implementation, given that ICT tools can potentially alter the traditional roles of teachers and students, offering new dynamics in teaching.
- iii. To provide relevant advice to the government about the degree of ICT integration and the different obstacles faced, similar study should be conducted nationwide

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APPENDICES

APPENDIX I: Introductory Letter

FELIX OCHOGO

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL MANAGEMENT AND LEADERSHIP

MOUNT KENYA UNIVERSITY

KISII CAMPUS

P.O BOX

KISII

Dear Respondent,

I am a Master of Education, Leadership and Management student at Mount Kenya University currently undertaking research on: **SELECTED FACTORS INFLUENCING INTEGRATION OF ICT IN THE IMPLEMENTATION OF THE COMPETENCE BASED CURRICULUM IN PUBLIC PRIMARY SCHOOLS IN NDHIWA SUB COUNTY, HOMA BAY COUNTY, KENYA**, as part of the course requirement, For this reason, therefore have identified your institution to take part in the study, and you have been selected as a respondent. kindly answer the questions as candidly as possible. There is no right or wrong answer, Do not indicate your name on the questionnaire.

Note that all responses obtained shall be purely used for the purposes of the study.

Thank you

Yours faithfully,

Felix Otieno Ochogo

CELL PHONE:0720 324194

EMAIL:felixochogo@gmail.com

APPENDIX II: Informed Consent Form

Researcher Name: _____

I appreciate your willingness to participate in this study. This form highlights the parameters and requirements for your participation. The study asks your opinion on the research issue as a whole. It is essential that you obtain clarification on the study's criteria and feel free to proceed.

In the succeeding phases of this study, your perspectives and recommendations are vital.

This study's findings will be compiled and presented in a report that is available to the public upon request. As a result, the final document will not contain any identity information, including actual name, character name, or personal identification number. Throughout, codes and bogus identity will be utilized.

Overall, your involvement and the information you offer are optional and uncompelled. You have the option of continuing with the study to its conclusion or withdrawing from the study at your own discretion, in which case material gathered from earlier interview phases will be discarded.

Your name _____
[Optional]

APPENDIX III: Questionnaire

INTRODUCTION.

This will be for collection of information concerning the object of this study.

All the responses shall be treated with firm confidentiality for the intention of this study only.

Indicate willingness and agreement to take part in the exercise.

Yes

No

SECTION A: DEMOGRAPHIC FACTORS

Age: _____

Gender: _____

Highest level of Education _____

- Post graduate Degree []
- Diploma []
- Bachelor Degree []
- P1 Certificate []



Mount Kenya University

SECTION B: KNOWLEDGE OF ICT

You are kindly asked to rate your ICT knowledge on general skills, file management skills, word processing skills, printing skills and online communication, browser and navigation skills. The rating of the knowledge should be done based on the scale on which 5=Master; 4= Above Average; 3= Average; 2= Little; 1=None.

Rate the level of knowledge	1	2	3	4	5
General Skills					
Familiar with basic computer system parts and concepts (e.g. central processing unit-CPU, motherboard, hard drive, random access memory- RAM, Able to use Help menus to find answers to my questions					
Understand file extensions and differences between file types (e.g. .doc, .gif, .html, .ppt, .pdf, .docx etc.)					
Able to shut down a computer appropriately					
Able to perform a safe reboot of the operating system with keystrokes					
Understand the difference between closing/minimizing/hiding windows and quitting a program					
Able to use the mouse right-click menu functions					
Able to install and uninstall a programme					
File Management Skills					
Able to navigate through files and directories (e.g. using Windows Explorer)					
Able to organize, copy and paste files in directories					
Able to move unwanted files into my recycle bin and delete them permanently from my hard drive					
Word Processing Skills					
Able to edit, copy, cut and paste a block of text or selected objects					
Able to use undo/redo functions					
Able to save, print and preview documents					
Able to select and change fonts sizes and types, styles (e.g. boldface, italics, underlining, etc.)					
Able to create itemized lists (e.g. bullets, numbered lists)					
Able to insert pages to a formal report with preliminaries and the main Body					

Able to name and insert pages for tables and figures in a document					
Able to insert automatic table of contents					
Able to review a word document online					
Able to use picture tools formatting commands such as cropping and wrap text					
Able to use Equation editor					
Able to insert symbols					
Able to insert charts using excel					
Able to lock a document with a pass word					
Able to share information through Google drive sheets					
Able to put several files in a zip					
Printing Skills					
Able to change printer parameters like page numbers, paper orientation, margins and proportions, etc.					
Able to change printing options from grayscale, normal, fast draft or best					
Online Communication. Browser and Navigation Skills Online					
I am able to use the browser basic commands to surf the Internet					
I am able to request, activate my email account					
I am able to compose, send, receive, reply to and forward email messages					
I am able to attach/detach documents to/from email messages					
I am able to use search engines to locate desired information					
I am able to understand the difference between Search Engines (e.g. Google) and Directories (e.g. Yahoo)					
I am able to understand that some copyright restrictions apply to computer software and Internet documents					
I am able to understand how I can use gathered information from the Internet without violating copyright laws					
I am able to demonstrate an understanding of what constitutes plagiarism					
I am able to know basic steps to ensure my online privacy and computer Security					

Mount Kenya

SECTION C: AVAILABILITY OF ICT INFRASTRUCTURE

Please indicate the extent to which ICT resources are available in your schools. The responses are coded such that; 4=Sufficiently Available (SA); 3= Moderately Available (MA); 2= Sparingly Available (SPA); and 1=Not Available (NA)

Statement	NA	SPA	MA	SA
Desk top Computers for teachers & pupils use				
Interactive white boards				
Overhead projectors				
Internet connection				
Laptops for teachers				
Source of electric power				
Tablets for pupils				
VCD/DVD Player				
Video <u>decorder</u> /player				
Copy scanner				
Photocopy Machine				
Television				
Radio				
Digital Camera				
<u>Wifi</u>				

Moun

SECTION E: ATTITUDE TOWARDS THE USE OF ICT

Kindly indicate the extent at which you agree or disagree with the following statement relating to your attitude towards the use of ICT. The responses are coded in such a way that; 1= Strongly Disagree (SD); 2= Disagree (D); 3=Agree (A); 4=Strongly Agree (SA).

Statement	SA	A	D	SD
To be a competent teacher in the present era, computer knowledge is a must				
Teachers should use internet material to supplement what they get from text books				
Teachers should invest in a personal computer/laptop				
Use of the internet resources as teaching aids can result pupils better understanding				
Pupils should be encouraged to source information from internet				
I avoid using computers whenever I can				
ICT integration in teaching and learning can lead to pupils improved grades				
ICT integration requires a lot of time				
Working with computers makes me feel isolated from other people				
ICT integration in teaching and learning should start at secondary school education				
Computers are difficult to use				
Use of computer reduces paper work for Teachers				
I store most of my information in computer than in files				

Thank you

APPENDIX IV: Interview Schedule for Quality Assurance Officers

1. Generally, what is the progress on the implementation of CBC in Ndhiwa Sub County?
2. Have teachers been adequately prepared to handle the CBC?
3. In your view, was the training of teachers adequate?
4. Did teachers acquire the necessary skills as per curriculum implementation process is concerned?
5. Are the ICT skills part of the training for teachers?
6. Are there challenges hindering the effective implementation of the curriculum in the Sub County?
7. How prepared is your office to handle and overcome the challenges?
8. Are there plans to train more teachers on the ICT skills?
9. What other recommendations would you give to improve the curriculum delivery in schools?



APPENDIX V: Head Teacher Interview Schedule

1. Age: _____
2. Gender: _____
3. **Highest level of Education** _____
 - Post graduate Degree []
 - Diploma []
 - Bachelor Degree []
 - P1 Certificate []
4. Generally, what is the progress on the implementation of CBC in Ndhiwa Sub County?
5. Have teachers been adequately prepared to handle the CBC?
6. In your view, was the training of teachers adequate?
7. Did teachers acquire the necessary skills as per curriculum implementation process is concerned?
8. Are the ICT skills part of the training for teachers?
9. Are there challenges hindering the effective implementation of the curriculum in the Sub County?
10. How prepared is your office to handle and overcome the challenges?
11. Are there plans to train more teachers on the ICT skills?
12. What other recommendations would you give to improve the curriculum delivery in schools?

APPENDIX VI: NACOSTI PERMIT

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 441094	Date of Issue: 21/August/2024
RESEARCH LICENSE	
	
<p>This is to Certify that Mr. FELIX OTIENO OCHOغو of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Homabay on the topic: INSTITUTIONAL BASED FACTORS AND ICT INTERGRATION IN THE IMPLEMENTATION OF THE COMPETENCY BASED CURRICULUM IN PUBLIC PRIMARY SCHOOLS IN NDHIWA SUB COUNTY, HOMA BAY COUNTY, KENYA for the period ending : 21/August/2025.</p>	
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APPENDIX VII: INTRODUCTORY LETTER



DIRECTORATE OF GRADUATE STUDIES

MED/2019/46810

8th August, 2024

*National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA*

Dear Sir/Madam,


RE: FELIX OTIENO OCHOGO- REGISTRATION NO. MED/2019/46810

The purpose of this letter is to introduce the above named student who is pursuing **Master of Education** in the **Department of Educational Management and Curriculum Studies** in the **School of Education**.

The title of the research is **"Institutional Based Factors and ICT Integration in the Implementation of the Competence Based Curriculum in Public Primary Schools in Ndhwa Sub County, Homa Bay County, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **August, 2024 and October, 2024**.

Any assistance accorded to the student will be highly appreciated.

Thank you.


Dr. Samuel M. Karanga, PhD
Director, Graduate Studies
Enc.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Director of the Director,
Graduate Studies

APENDIX VIII: AUTHORIZATION LETTER



REPUBLIC OF KENYA
MINISTRY OF EDUCATION
State Department for Basic Education

Telegrams: "SCHOOLING" Homa Bay
Telephone
When replying please quote
cdehomabay@gmail.com

COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P.O BOX 710
HOMA BAY

REF: MOE/CDE/HBC/ADM/11/VOL.V/02

DATE: 16TH OCTOBER, 2024

✓ **MR. FELIX OTIENO OCHOGO**
NACOSTI/P/24/39260

RE: RESEARCH AUTHORIZATION.

Following your application for authority to carry out research on "INSTITUTIONAL BASED FACTORS AND ICT INTERGRATION IN THE IMPLEMENTATION OF THE COMPETENCY BASED CURRICULUM IN PUBLIC PRIMARY SCHOOLS IN NDHIWA SUB COUNTY IN HOMA BAY COUNTY " I am pleased to inform you that you have been authorized to undertake research in Homa Bay County for the period ending 21st August, 2025.

Kindly note that ,as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the County Director of Education Office after completion both the soft copy and hard copy.

Thank you in advance.


FOR COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P.O. BOX 710, HOMA BAY
Email: cdehomabay@gmail.com

OWITI W. O
FOR: COUNTY DIRECTOR OF EDUCATION

Cc.
COUNTY COMMISSIONER
HOMA BAY COUNTY.

APPENDIX IX;ERC APPROVAL CERTIFICATE



REF: MKU/ISERC/4126
TO: FELIX OTIENO OCHOGO

Date: 07 August 2024

REG: MED/2019/46810

Dear Sir/Madam,

RE: INSTITUTIONAL BASED FACTORS AND ICT INTEGRATION IN THE IMPLEMENTATION OF THE COMPETENCE BASED CURRICULUM IN PUBLIC PRIMARY SCHOOLS IN NDHIWA SUB COUNTY, HOMA BAY COUNTY, KENYA

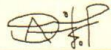
This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2980**. The approval period is **07/08/2024 - 06/08/2025**.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,



Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC



APPENDIX X: TURNITIN REPORT

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APPENDIX XI: RESEARCH SITE MAP

