CHALLENGES FACING TEACHERS AND LEARNERS WHILE INTEGRATING ICT IN TEACHING AND LEARNING HOME SCIENCE IN SECONDARY SCHOOLS: A CASE OF KIAMBU COUNTY

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DECLARATION

Declaration by the Candidate

This thesis is original work and has never been submitted to any other academic institution for bachelor or master's awards. The content of the project in full or part will not be reproduced by any person or institution without written permission from the author and University of Eldoret.

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DEDICATION

I dedicated this thesis to my lovely mother Jane Nyanchama who has been a source of motivation in my study, my daughter Gianna Beryl and my niece Shantel Nicole, whose lovely attitude, incomparable patience and understanding has been a pillar during my study period and enabled me to complete this thesis.

ABSTRACT

Despite the growing prevalence of ICT integration in various subjects, the adoption of ICT in teaching and learning Home Science at the secondary school level in Kiambu County has been sluggish and inadequate. This study aimed to uncover the challenges faced by teachers and learners when incorporating ICT into Home Science education. The research objectives included assessing the attitudes of teachers and students towards ICT integration, exploring the role of school administration in promoting ICT use, evaluating teacher competence in utilizing ICT for Home Science education, and determining the availability and utilization of ICT resources for learning Home Science. This study was guided by two theoretical frameworks: the Diffusion of Innovation theory and the Technology Acceptance Model theory. The research design employed in this study was descriptive, and a multi-stage selection technique was utilized. In the initial stage, purposive sampling was employed to select schools that offer Home Science, followed by the adoption of cluster sampling in the second stage. The study was conducted among all secondary schools in Kiambu County that offer Home Science as part of their curriculum. Participants included principals, Home Science teachers, and form three students from the selected schools. The study's total sample size consisted of 533 respondents, which was further divided among principals (23), Home Science teachers (30), and form three students (480). However, complete responses were obtained from 496 participants, including 14 principals, 29 teachers, and 453 students. Questionnaire, interviews and observation schedule were used as research instrument to obtain quantitative and qualitative data. The validity of the inquiry instruments was ascertained by the project supervisors. A pilot test was undertaken in 5 schools in the County, which were not part of the main research. By the use of A Cronbach's alpha reliability a 0.7 coefficient was obtained from the pilot test, which meant that the questionnaire was acceptable for the study. The evaluated, classified and qualitative data was categorized into appropriate themes and coded while the quantitative data was analyzed using descriptive statistics, Statistical Package for Social Sciences (SPSS). The analyzed data was presented in form of frequency tables, figures and percentages. Further, chi-square analysis was used to showcase how the independent variable relate with the dependent variables and the extent to which the independent variables affected the dependent variables. The findings indicated that teacher and student attitudes, teacher competency, school administration and availability of ICT resources had a notable effect on the integration of ICT in the learning of Home Science in secondary schools in Kiambu County. This is shown by the respondent's agreement as indicated by an average mean of 3.13. The study concluded that integrating ICT to the learning of Home Science in secondary schools is a worthy course, which will help the students to easily learn and grasp what they are being taught as indicated by the mean 3.07. ICT also, will enable teachers to simplify their content and improve the learners' experience in Home Science as indicated by a mean value of 3.13. These findings were further reinforced by the chi-square results that indicated a statistical significance of the factors ($p < 0.05$), which means that students and teachers attitudes have an impact on the integration of ICT in teaching and learning and hence, the school administration have an important role in ensuring the use of ICT in the teaching and learning process.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADSI- African Digital Schools Initiative.

DOI- Diffusion of Innovation Theory

HSC- Home Science

ICT- Information Communication and Technology

KICD- Kenya Institute of Curriculum Development

MOE- Ministry of Education

MOEST- Ministry Education Science and Technology

NESP- National Education Sector Plan

OECD - Organization for Economic Cooperation and Development

TAM- Technology Acceptance Model

T/L- Teaching and Learning

TPACK- Technological Pedagogical Content Knowledge.

TSC- Teachers Service Commission

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter offers crucial background information related to the topic, alongside the following elements: an articulation of the research problem, the definition of research objectives, formulation of research questions, an explanation of the research's significance, a delineation of the research's scope and limitations, establishment of underlying assumptions, presentation of the theoretical framework, construction of the conceptual framework, clarification of operational definitions for key terms, and concludes with a summary of the chapter.

1.2 Background of the Study

Home Science is a multifaceted discipline that aims to enhance the quality of life for individuals, families, and communities. It encompasses a diverse range of subjects such as A few subjects that help students develop important life skills are health education, cooking classes, home management, costume and fashion design, and culinary arts (KICD, 2017). In Kenya, Home Science has been recognized as a critical component of the curriculum by Kenya Institute of Curriculum Development (KICD) advocating it to be compulsory included due to its practical relevance (KICD, 2017).

Amidst the global shift towards integrating Information Communication and Technology (ICT) into education, Home Science holds tremendous potential for leveraging technological tools to enhance teaching and learning. ICT can transform traditional classroom methods into dynamic, interactive, and engaging experiences for students.

Concepts that might have been challenging to grasp using conventional teaching methods can be clarified and enhanced through the integration of multimedia, simulations, and interactive platforms (Gichimu, 2016).

The integration of ICT in giving class instructions is a global phenomenon, with various models being explored to optimize its implementation. These models range from treating ICT as a subject matter on its own to embedding it seamlessly within the curriculum as method of improving academic outcomes (OECD, 2016). Even as benefits of ICT integration extend beyond mere computer literacy; they encompass the development of skills required for the 21st-century workforce, including critical thinking, creativity, collaboration, and adaptability (Hussain Morgan & Al-Jumeily, 2011).

In Kenya, the State Department, Ministry of Education, Science, and Technology (MOEST) and the Curriculum Developer have taken significant steps to incorporate ICT into education. Initiatives like providing ICT resources to schools and digitizing educational content reflect a commitment to harnessing the power of technology for improved learning outcomes (World Bank, 2018; Omuya, 2011). Additionally, the Competency-Based Curriculum (CBC) introduced in Kenya emphasizes ICT utilization as a cornerstone of its implementation (KICD, 2017).

While there is a growing investment in ICT in education nationally (Nyambane & Nzuki, 2019), tentatively the perception of using ICT in class by teachers and learners in Kiambu County remains uncertain. Despite Kiambu County's relatively advanced infrastructure, which should ideally facilitate ICT integration, understanding the perspectives of educators and students in this context is vital. This gap in understanding led to the necessity of investigating the perceptions of teachers and learners regarding the

utilization of ICT in the instruction and learning of the Home Science subject within secondary schools situated in Kiambu County Therefore, the aim of this study is to explore the opportunities and limitations presented by integrating ICT in Home Science education in Kiambu County. By delving into the attitudes, experiences, and barriers faced by tea cheers and learners, the research seeks to uncover insights that can guide the effective incorporation of ICT tools in Home Science instruction. Ultimately, the study aspires to support the tremendous efforts to increase education quality and lining up with the needs of the modern era, where technological mechanisms play an ever-increasing role.

1.3 Statement of the Problem

Giving learning instructions of Home Science in secondary schools in Kenya using Information and Communication Technology (ICT) is currently characterized by a notable sluggishness and inadequacy (County Director of Education 2022). Despite the evident potential for leveraging technology to enhance curriculum delivery and improve student learning outcomes. This issue is particularly pronounced in Kiambu County, which, despite its proximity to urban centers and relatively better infrastructure compared to remote regions, mirrors the broader national trend of limited ICT incorporation.

Within the education segment, the slow adoption of ICT in Home Science education stands out as a prominent challenge. This concern has been acknowledged by the Ministry of Education, as indicated in the Ministry strategic Planning (2012), whose emphases was on viewing technological resource scarcity in schools which constrained the utilization of technology in instructional practices. This deficiency poses a challenge for educators tasked with delivering quality Home Science education within such

resource constraints, and it also poses difficulties for students who lack access to essential digital tools and resources that could enhance their learning experiences.

Furthermore, the limited integration of ICT into Home Science education is rooted in the practical nature of the subject itself, demanding hands-on engagement and physical demonstrations. Both teachers and students might perceive Home Science as inherently resistant to technology-based teaching, given its reliance on substantial practical work and experimentation. Moreover, the financial aspect is a substantial barrier to implementing ICT in Home Science education, particularly in financially constrained schools. Many schools across Kenya are unable to offer Home Science as a subject due to the prohibitive costs associated with acquiring equipment and resources essential for practical exercises.

Given these formidable challenges, there is an urgent call to conduct a deep investigation of the multifaceted issues that undermine the effectiveness of applying ICT in Home Science education within Kenyan secondary schools. Moreover, there is a critical need to pinpoint strategies capable of fostering the adoption of technology in this specific subject area, thereby elevating teaching and learning outcomes. With a focused lens on Kiambu County as a case study, this research endeavors to illuminate the hurdles encountered by teachers and learners when endeavoring to incorporate ICT into Home Science education, thereby contributing to a richer understanding of the issue and, ultimately, driving positive change in the educational landscape.

1.4 Purpose of the Study

The primary aim of this study is to uncover and comprehend the challenges encountered by both educators and students when integrating Information and Communication Technology (ICT) into the teaching and learning of Home Science at the secondary school level. By focusing on Kiambu County as a case study, this research aims to look at the impediments hindering effective ICT integration as well as uncovering strategies that can enhance the utilization of technology in Home Science classroom.

1.4 Main Objective

This research's main mandate is to find out challenges teachers and learners face in the integration of ICT in teaching and learning of Home Science in Kiambu County secondary schools.

1.4.1 Research Objectives

The following objectives acted as an aid in the study and they sort,

i) To evaluate the attitude of teachers and learners towards ICT integration in teaching and learning of Home Science.

ii) To find out the role of school administration on ICT integration in teaching and learning Home Science.

iii) To evaluate the teacher competency in ICT integration in teaching and learning of Home Science.

iv) To determine the availability of resources in ICT integration and their use in teaching and learning of Home Science.

1.5 Research Questions

Research questions for this research study were as follows,

i) What is the attitude of teachers and learners towards ICT integration in teaching and learning Home Science?

ii) Does the school administration play a role in ICT integration in teaching and learning Home Science?

iii) How competent are teachers in ICT integration in teaching and learning of Home Science?

iv) How can available resources be utilized for ICT integration?

1.6 Justification of the Study

Through investigation, the research thesis seeks to contribute insights that can inform policies and practices, ultimately improving the value of teaching and learning experiences in the field of Home Science. Research has shown that integration of ICT improves the quality of teaching and learning (Omuya,2011). Currently the Government of Kenya is committed to ensuring schools are well equipped with ICT infrastructure. Thus, the findings will hopefully help bring out challenges teachers and learners face while integrating ICT and come up with ways of overcoming the challenges.

1.7 Significance of the Study

The study's findings will have significant implications for education stakeholders. They will help the education authorities understand in detail the barriers of ICT integration in teaching Home Science to develop targeted strategies and give them insights on solving the challenges. The study will also help policy-makers and investors in making right and

informed policies on ICT in education, as well as invest rightly as a result of understanding teachers' and learners' abilities and challenges. Also, the study enhances competencies by establishing a knowledge base for using ICT as a pedagogical tool. Uncovering attitude factors informs interventions for positive ICT integration outlooks. Sharing findings with parents and communities encourages investments in ICT infrastructure. The results also will be used a reference for future research by other scholars. Overall, the research strives to improve education quality in a technology-driven era.

1.8 Scope of the Study

The scope of the study is centered on investigating the challenges teachers and learners encounters when integrating (ICT) into the learning and teaching of Home Science in schools. The study's geographic focus is Kiambu County in Kenya. It encompasses an exploration of factors such as limited contact to digital devices, inadequate teacher preparation, and the practical nature of the subject that may deter the effective use of technology. The research aims to delve into the perceptions, attitudes, and experiences of both teachers and learners regarding ICT integration in Home Science education. By concentrating on Kiambu County as a representative case study, the research seeks to provide insights that are contextually relevant and can contribute to addressing the broader challenge of integrating ICT in teaching secondary school education.

1.9 Limitation of the Study

The research was limited by the following:

i) It is noted that not all counties were covered. Therefore, the findings and generalizations of the study were confined to Kiambu County alone.

ii) The sampled respondents featured Home Science students who were not well exposed to technology use in learning. In such circumstances, the researcher had to interpret and assists students in completing the questionnaire

1.10 Assumption of the Study

Assumption are those principles that are accepted as being true based on logic or reasons, but without proof or scientifically have not been tested. Therefore, this research was done under the following assumptions that;

i) Secondary School teachers selected would be ready to partake the study willingly as well as giving correct information.

ii) The Home Science instructors and learners remained in the same school through the period of study.

1.11 Theoretical framework.

This research study was guided by two prominent theories: the Diffusion of Innovation (DOI) Theory and the Technology Acceptance Model. The Diffusion of Innovation (DOI) theory, developed by Rogers in 1962 and further expounded upon in 1995, defines the process through which an innovation is disseminated via communication channels among members of a social system. This theory proves valuable in examining how individuals implement and embrace technology. It comprises five key components: social systems, invention, message, interval, and channels. According to Rogers (2010), an individual's

perceptions and attitudes toward technology significantly influence their decision-making, adoption, and utilization of any technological innovation.

The relevance of Diffusion of Innovation theory in the study is that it helped in the discovering the evolution of ICT in the learning and teaching space in the county. The traditional classroom environment in Kenya and subsequently in Kiambu County is that of a teacher-learner interaction through textbook and a black/white board. The start of adoption of ICT into the schools and its tailoring to meet the needs of teachers and learners can best be understood under the principle of this theory. The problem that comes up is how to make diffusion of an innovation rapidly go up across many individuals and organizations. Difficulties are always encountered in the adoption of new ideas even when their importance is apparent. Many innovations usually require a long period of time, frequently of many years from the time they are made available to the time they are widely adopted.

As noted by Singhal, Cody, Rogers, and Sabido (2003), for an idea to gain acceptance, it should meet specific criteria. Firstly, it must be easily comprehensible; secondly, it should be available for experimentation; thirdly, it should be observable; and finally, it should yield visible results. Communication channels, encompassing institutional, interpersonal, and mass communication, serve as the means through which potential adopters become aware of innovations. In contrast, a social system consists of interconnected entities collaborating to address common problem-solving and achieve shared objectives. Within this study, this theory is employed to elucidate how the adoption of ICT in schools offers numerous pathways for effective and functional administrative management. It also underscores the pivotal role of attitudes in ICT adoption. Principals' and teachers'

attitudes play a crucial role in the innovation-decision process, as highlighted by Rogers (1995). The perceived advantages of specific ICT tools are largely contingent on an individual's attitude toward them and their willingness to embrace them. Attitudes significantly influence the degree of ICT acceptance and utilization, often driven by the perceived benefits that ICT can offer. Moreover, the social system has a responsibility to demonstrate to school management and social structures that ICT's role is to enhance education and facilitate learning in schools.

Tolba and Mourad (2011) points to failures in accomplishment and acceptance of e government services which has raised concern among the researchers in the field and industry practitioners. They relate this concern to the inappropriate application of Diffusion of Innovation theories and the difficulty to assess the factors associated with accelerating the rate of diffusion. This theory helped to show how the perception of teachers, students and the administration of school in Kiambu County affect the degree at which ICT is being applied in the context of instructing Home Science in secondary schools within this county.

Technology acceptance model (TAM) the most relevant and seen as the most cited theory in order to determine Factors affecting the use of technology encompass perceptions of its ease of use, its practical utility, personal attitudes towards its adoption, and the observed impact it has on behavior, as articulated by Davis in 1989. TAM postulates that there are two main factors that determine incase a computer system will be accepted by its user; the superficial ease of use and superficial usefulness. The theory further inputs on the perception of the user. Acceptance of technological advances is a three-stage process, according to TAM, in which external stimuli cause cognitive reactions (perceived ease of

use and perceived utility), which in turn inform an efficient response and attitude toward using technology that affects user behavior (Davis, 1989; Davis 1993).

TAM represents behaviour as the perceived ease of use and behavioral. According to follow up studies, behavioral intention can be substituted by attitude towards behavior (Davis, 1993). Ajzen (2011), views this as an affective evaluation of potential consequences of behavior. The likelihood that an activity will occur increases with the magnitude of the emotive response. Critics of this model contend that it overlooks the role of social influence in shaping an individual's intention to use a system, with this intention serving as a mediator of actual system use. It's argued that perceived ease of use directly influences perceived usefulness of technology. The TAM model was deemed suitable for this study because, if Home Science teachers perceive ICT as both useful and user-friendly, it is likely to positively impact their attitudes, which in turn will influence their actual usage.

This theory was key in understanding and guiding the researcher on how to look at the attitudes on ICT by the teachers and the leaners, which was a key objective of this study. It presents various aspects of ICT that have impact on the users, which are likely to have an effect on the user attitude and perceptions.

1.12 Conceptual framework

The purpose of this study was to pinpoint the difficulties that instructors and students encounter while incorporating ICT into the teaching and learning of home science in secondary schools. How factors relate to improve English is shown in the figure below.

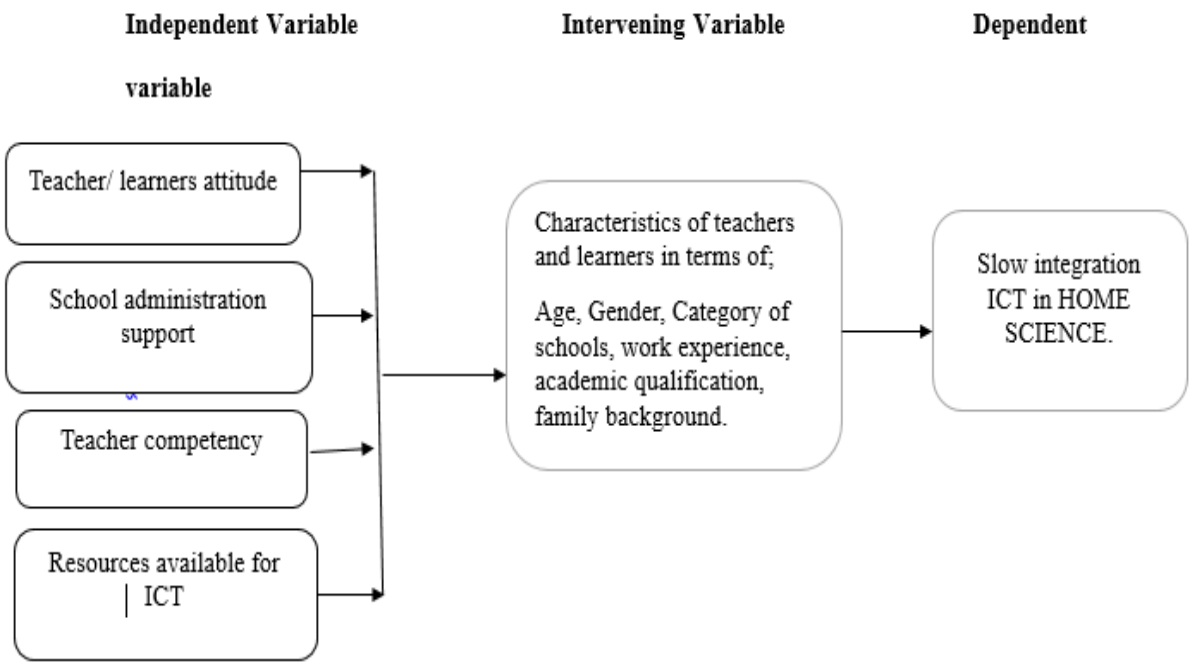


Figure 1: Conceptual Framework

Source: Researcher (2022))

1.13 Operational definition of terms.

ICT integration- it's an electronic computerized device aided by human and interaction of tools that can be used for teaching and learning in numerous ways as well as for personal use (Ofodu, 2007). In this study, the term was used to refer to the deployment of technology to convey lessons to students in a Home Science class.

ICT resources: a broad range of technological tools used for communication, information creation, dissemination, storage, and management (Laaria, 2013). The technology tools that home science teachers employ in their teaching and learning are discussed in this research study. such as a power source, a projector, a computer, the internet, a cell phone, etc.

Ease of Use: the extent to which a person thinks using a specific system would be easy (Davis, 1989). It alludes to the teachers' perception in this study that using ICT requires no effort. For instance, syncing projectors in the classroom, printing and internet information searches, etc.

Perceived Usefulness: the extent to which a person thinks that implementing a particular system would improve work performance (Davis, 1989). In this study, it refers to how much home science teachers think adopting ICT in the classroom could affect how well they do their jobs. Playing practical video snippets on needlework, cooking, and home administration, for instance.

Diffusion of Innovation: it the process where innovation is passed by use of channels of communication among members of social system (Rogers,1995). In this research study has been used to refer to process where teachers use ICT facilities to pass information to learners.

1.14 Chapter Summary

In this chapter the researcher has outlined and elaborated problem of the study. ICT integration has not been fully embraced as it was anticipated in classroom instructions especially learning Home Science subject. Home Science being perceived as an expensive subject due to the nature of its practical can utilize ICT for example playing videos for clothing and textile, foods and nutrition and home management to cut down on the costs. Number of students selecting Home Science subject from other technical remains low in most schools due to limited facilities in those schools hence integrating ICT can come in handy to solve the problem. It is in this chapter that background to the

study and statement of the problem has been covered exclusively. The objectives and research questions that provides guidance for the study had been stated. The justification and significance of this study has been covered as well. The conceptual and theoretical framework has been well explained in this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The existing research on the use of ICT in secondary school-level home science teaching in the county of Kiambu is reviewed in this chapter. The chapter analyzes the literature on integrating ICT into education, as well as how teachers and students feel about doing so. HOME SCIENCE, the role of school administrators in teaching and learning HOME SCIENCE, teacher proficiency in integrating ICT in teaching and learning HOME SCIENCE, the availability of materials for in ICokauruT cooperation and their use in educating and learning of HOME SCIENCE, and criticism of the lite.

2.2 ICT Integration in Teaching and Learning

ICT encompass a broad array of products capable of storing, retrieving, manipulating, transmitting, or receiving digital and electronic messages. Examples include personal laptops, desktop computers, Robots, email programs, and even mobile devices are examples (Scholten, Velde, & Manen, 2009). ICT is characterized by Okauru (2011) as the digital applications and processing which display information on computer systems and devices, involving tasks like uploading, retrieving, transforming, and transferring data. ICT integration, as described by Pisapia & Parks (1994), involves using ICT to introduce, reinforce, enhance, and apply various skills. Furthermore, Earle (2002) connects Integration of ICT and the idea of completion, emphasizing the integration of all aspects of a system to form a unified whole. When technology is employed in a class, for instance the lesson content and instruction, both of which are critical components of learning, must be intertwined. As a result, the teacher's increased provision of ICT tools

to pupils cannot constitute ICT integration because instructional difficulties are partially addressed.

ICT integration, according to Kotrlik & Wiliams (2003), is the use tools of ICT like internet, CD Roms, technologies of e-learning, to aid in classroom teaching and learning. De Watteville & Gilberts (2000) suggests that ICTs can be used to justify the means of achieving educational goals that have eluded us for decades, as well as some new ones. Technology will help more than it harms if enough resources are committed, thoughtful effort is made, and patience is used. ICT can be utilized to help faculty develop in a transformational, learning-centered way. It may be tough since the instructor must deal with both new technological obstacles and the paradigm brought about by new learner-centered model, however technological aspect is frequently used in department to begin a discourse for excellent learning and teaching practices. (Buckley, 2002).

Many academic studies have pinpointed a number of factors that affect how ICT is integrated into teaching and learning. Identified influences by Balanskat, Blamire, and Kefalla (2007) occur at the teacher, school, and system levels. Additionally, other scholars such as Clausen (2007), Chen (2008), Lim & Chai (2008), and Neyland (2011) have studied institutional backing and teacher competency as macro and micro factors influencing the usage of virtual education in Sydney high schools. Sherry and Gibson (2002) propose a comprehensive analysis of ICT integration, considering technological, individual, organizational, and institutional factors.

Research conducted by Lakkala, Lallimo, & Hakkarainen (2005) in Finnish schools revealed that technology usage makes academic content more relevant by supporting

inquiry models and promoting an epistemology that encourages high-level creative knowledge generation. The adoption of technologically enabled collaborative inquiry techniques is predicated on the educational environment supporting productive cooperation and encouraging the development of innovative and sophisticated epistemologies. In Australia, government initiatives, as highlighted by Brandy and Kennedy (2003), have addressed the challenges of the information era in schools. For instance, the Government of Queensland launched a three-year ICT for learning strategy in 2002 to articulate its vision for ICT integration in Queensland public schools for teaching and learning. The Queensland State's Training and Educational Reforms for Future Generations policies go into detail on these efforts, released to the public in 2002 (Bindloss, 2002).

The ICT for learning strategy was essential in introducing students and teachers to new technologies, creating a dependable and long-lasting technological infrastructure in schools, increasing ICT funding in Queensland schools, and encouraging teachers through professional growth workshops. Queensland is not alone in its ICT innovation trajectory. All Australian states, as well as the majority of countries around the world, have created comparable projects and tactics (Finger, 2003).

The Malaysian government has put education strategy that ensure that ICT is integrated in learning and teaching (T&LICT) aiming to meet the requirement for society to access information and a technologically literate workforce in the twenty-first century. Students must enhance their ICT and thinking abilities, as well as take responsibility for their own learning, in order for schools to embrace an information-literacy curriculum. Such requirements would be addressed in a technological way of teaching and learning

platforms that prioritizes students' autonomy and self-regulation. The school project is an example of a large-scale educational reform endeavor aimed at improving classroom teaching and learning practices in such a setting as shown by the research done with Smart School Project Team (1997). Bermama (2005) depicted that all Malaysian schools are intended to have adopted the smart school project by the end of 2010. Up to date the practice has not yet been achieved in totality. The Ministry of Education in Malaysian wants to ensure that students use ICT in learning and engaging with teachers so that all master ICT skills quickly, participate in lively learning, develop a permanent culture for usage of productive ICT, and challenge their minds as they follow the process (Bahagian, Pendidikan, 2004).

ICTs have grown in popularity in Africa during the last decade, especially in education. The current global movement in education requires that teaching shift from teacher-centered to learner-centered has benefited the use of ICTs in education. Insufficient empirical research and lack of cross-country evidence have hampered attempts to quantify or study ICT adoption in Africa. Using ICT in education can increase teaching and learning, student and teacher research output, and school management and effectiveness (Kashorda 2015). However, implementing ICT in education in impoverished nations is fraught with challenges. There is just one computer per 150 students in most African countries, compared to 15 in affluent countries.

Studies in South African classrooms have discovered evidence of outstanding ICT usage in tiny and minor patches, which is troubling for a nation that focuses to improve the quality and equity in education. Lundell & Howell (2000) believe that failure to use ICT is not necessarily due to inadequate of resources, but rather how educators employ the

existing instructional instruments in the classroom. The South African Department of Education (DoE, 2007) has produced a white paper on e-education (DoE, 2004) with guidelines for teacher education and professional growth in ICT. The agenda on ICT implementation was poorly done even though some individual in the government tried to fight against socio-economical inequalities (Pan African Research Agenda 2008-2011).

According to Okebukola (2002), Nigerian policy on computer education was adopted in 1988. Aside from distributing and installing personal computers, the author believes the project should have included computer teaching and innovation in all secondary and primary schools. Similarly, Aduwa & Iyamu (2005) indicate that over 90% of Nigerian public secondary schools do not use computers in the classroom, implying that the chalkboard and textbook still dominate classroom activity. Based on these data, the researcher came to conclusion that even though there is importance of ICTs in education, in Nigeria secondary schools have yet to fully implement them in high school education, and efforts to integrate ICTs into secondary school curricula have largely stalled. The study advised the government to take a make sure that ICT working policy statements for secondary education are implemented.

Kenya has placed a high value on ICT to be used in schools, as indicated by the recent adoption of the National ICT Strategy for Education and Training, as well as in the Vision 2030, which places ICT at the center of growth. Computer use may be dated back to the early 1980s, with widespread adoption occurring in the late 1990s (Laaria, 2013). By 2012, approximately 15.5 percent of the people had subscribed to the internet, the majority of whom worked in the business sector or for the government. Apart from mobile phone internet access, there are approximately 4500 cyber cafés stalls that always

provide internet access to the majority of the people; nonetheless, access remains limited, particularly in rural regions (Kipsoi, Chang'ach & Sang 2012).

Despite a decade of significant technological investments, ICT integration and implementation in schools in developing nations remains restricted. Like other developing countries, Kenya's poverty has hampered the use of technology in classrooms (Nchunge, Sakwa & Mwangi, 2012). Initially intended to help students be ICT gurus, the focus has shifted to using ICT to improve the quality of the school and in teaching and learning processes. ICT access in Kenyan public schools is still inconsistent. Around 7425 secondary schools exist in Kenya, with 85% in rural areas. Around 65% have electricity, and 1300 have at least ten computers, albeit connectivity is restricted. Makhonu (2010) discovered that some schools possessed computers, but only one in the principal's office. So, few schools lacked adequate ICT tools for teaching and learning. Also, the study found that high student-to-computer ratios were a barrier when integrating technology into education. Due to sluggish implementation, the benefits of using ICT in schools has not been experienced or has been observed inequitably.

According to research, the education industry is substantially investing in ICT, yet technology adoption and integration has lagged behind other industries. According to Manduku, Kadenyi & Kosgey (2012), whereas several sectors have adopted ICT, such as medical services, banking, communications, and transportation, school adoption appears to lag. Insufficient usage of ICT in Kenyan classrooms has been studied (Manduku, *et al*, 2012; Laaria, 2013; Hennesy, 2010). Many underdeveloped countries cannot afford the costs of installing ICT infrastructure like telecommunications systems software, hardware, transportation, maintenance, and spare parts for repairs.

Purchasing facilities should be privatized to cut costs and increase competition, according to Hannessy, Harrison & Wamkote (2010). A lack of energy and communication are among Kenya's general infrastructural problems (Manduku *et al*, 2012). As a result, many schools are unable to maintain internet connections. Using ICT in education requires government funding, donor support, and strong governance. Many African countries including Kenya have suffered from poor or nonexistent ICT policies, poor project management and the usage of disparate systems and standards due to corruption. Many ICT initiatives are disorganized, resulting in competition rather than complementarity. Many schools have purchased computers that are cab be used for ICT integration and deployment, but due to mismanagement of resource they are not functional (Manduku *et al*, 2012). Due to these perceived limitations, this study intended to establish instructors' and students' opinions of ICT usage and application in teaching and learning in Kiambu County public secondary schools.

2.3 Attitude of Teachers and Learners towards Integration of ICT in Home Science

Since they are the ones that install ICT initially, it is essential to comprehend teachers' perspectives and attitudes about it (Donelly, 2010). When utilizing ICT to teach curriculum content, certain studies claim that teaching attitudes are crucial (Ertmer, 2005). according to Shaft, Sharfman, and Wu (2004), they are the sole approach to anticipate behaviors related to ICT integration in the classroom. In this approach, use and attitudes are linked: "If teachers' use of technology is to change, their ideas about technology must shift as well" (Bolivar, Garcia & Sánchez 2012).

Hong (2016) conducted an open-ended, semi-structured interview with 23 teachers from various sections of Colorado, USA, to learn about their perspectives on ICT integration.

Teachers who took part in the study had a good attitude toward ICT as an instructional tool, according to the findings. They valued ICT as a pedagogical tool and a source of instructional resources. Teachers desired to discover new ways to use ICT to successfully provide instructional materials to students, and they demonstrated their willingness to incorporate ICT into their lessons on a regular basis. This is because they believe that information and communication technology (ICT) is a current trend with several benefits for pupils. Furthermore, the study discovered that a lack of ICT resources, particularly computers, as well as an unstable internet connection, were key roadblocks to ICT implementation in the classroom.

Daher, Baya'a, & Anabousy (2018) found that the teachers had positive attitudes and beliefs in an experimental study on the integration of ICT by in-service Mathematics instructors as an innovative practice in lower secondary. Despite their favorable attitudes, teachers were wary of incorporating technologies into their classes since they lacked experience and faced a variety of challenges while doing so. In a classroom with ICT enhancements in Pretoria, South Africa, in-service secondary school teachers' demands for integrating technology were evaluated through online surveys and focus groups. According to the poll, teachers enjoyed using computers in their lessons. Teachers were interested in finding out more information on using computers in the classroom. However, due to a lack of expertise and skills, teachers found it difficult to use ICT in the classroom. According to Ottestad (2013), online research involving 247 administrators and 386 educators from Norwegian elementary and secondary schools found a correlation between the leaders' attitudes and behaviors towards the use of ICT in classrooms.

Msila (2015) interviewed teachers to learn more about their opinions on integrating digital technology into the classroom. Compared to older teachers who were put off by the introduction of ICT, younger teachers were more accepting. According to the study, teacher competence and positive attitudes toward ICT are more crucial for successful ICT integration. In a similar vein, Yapici & Hevedanli (2012) revealed favorable opinions among pre-service biology instructors about ICT in biology classroom, regardless of gender or class. Positive attitudes among instructors promote the use of ICT in classrooms. However, nothing was known regarding Biology instructors' attitudes towards ICT integration in Eritrea's Southern Region secondary schools. This was helpful in finding out the challenges that teachers faced while integrating ICT in the teaching and learning Home Science in Secondary schools.

Oriahi *et al*., (2010) indicated that when learners like a subject or have a positive attitude towards a subject much time is spent on the same. In this case a positive attitude towards ICT improves ICT skills of an individual. ICT integration in the teaching and learning Home Science highly depends on the attitude of both the teacher and learners for efficient integration on the same. A study by Rajesh (2013) indicated that influence of ICT in teaching and learning is based on the perception and attitude of teachers who are perceived to be responsible for using technology. A study by Shah (2015) on the attitude of teachers on ICT integration in English language showed that teachers had a positive attitude towards the use of ICT in teaching and learning. Though the study only focused on quantitative data where only questionnaires were used as a tool to gather information, this study utilized variety of tools to collect both quantitative and qualitative data. Another study by Consolo, Cette, Bergeaud, Labhard, Osbat, Kosekova & Vivian (2021)

was conducted on the attitude of teachers on ICT in teaching of English also showed that teachers had a positive attitude towards ICT but the research was also limited to quantitative research design only. Attitude is a strong like or dislike towards something as defined by (Serem, 2011). As noted by Chelagat (2019), a positive attitude towards Home Science has brought a great improvement on the enrolment of the subject in secondary schools although the enrollment not yet stable (Aming'a, 2018). This shows that both teachers and learners should have a positive attitude towards ICT for it to be effectively integrated in the teaching and learning. Home Science being an integrated subject that requires ICT in its teaching and learning process, both teachers and learners need to embrace it during the teaching and learning process. Poor knowledge about something has been associated with bad attitude towards it (Kiberenge 2010). Positive attitude towards ICT integration in Home Science subject dictates the knowledge both the teacher and learners will gain from it. For ICT integration to be implemented fully in teaching and learning Home Science it will depend on the attitude of both the teacher and learners. Another study by Ogalo (2019), examining the attitude of teachers on ICT on English among secondary schools showed that teachers had positive attitude and the study was guided by TPACK theory and teachers' cognition theory. Therefore, this study will find out the attitude of both teachers and learners on ICT integration in the teaching and learning of Home Science using mixed methods research design, Diffusion of Innovation theory to gain in-depth information on the same and Technology Acceptance Model which is guided by two factors; perceived usefulness and perceived ease of use, this implies that if a teacher perceives ICT to be useful then they will perceive it as ease to use.

2.4 School Administration on the Use of ICT in Home Science Teaching and Learning

Numerous academic studies have demonstrated the crucial role that school leadership plays in bringing about change, fostering creative thinking and professional efforts, and transforming pedagogy through the use of ICT (Schiller, 2002). Despite the fact that technical infrastructure is crucial, effective ICT adoption requires a determined leadership in place. While competent leadership is one of the most important factors in determining an institution's academic performance, visionary leadership is required for long-term school improvement and sustainability (Gakuu and Kidombo, 2010).

Brannigan (2010) noted that one of the most important factors to consider in the usage and integration of the ICT successfully in education is leadership. The leadership must be in position to advocate for inclusion of ICT in the learning and teaching in their institution. Lack of leadership skills has always been a reason for education systems and structure failure to integrate ICT in education and motivating the teachers to take a bold step of the minds (Moyle, 2006). A s a result, today's school principals must improve on how kids learn, performance standards of the school, engaging on evidence-based decision-making methods, and continuous improvement skills in addition to managing the school's day-to-day routine tasks. The school manager's capability to plan, initiate, and sustain improvements in a department, including ICT, is thus dependent on his or her leadership characteristics.

According to Fullan (2003), administrators must have the capacity to understand the elements and characteristics of long-term planning basing the view that every day there is new emerging technology issues like; using of appropriate technology to communicate

effectively with members of the staff, parents, and the community. It's crucial to comprehend how effectively current and accessible technologies can be incorporated into all aspects of the teaching and learning process, as well as the legal and ethical concerns associated with technology licensing and usage. Despite their general support for ICT usage, school leaders don't seem to have a clear vision or plan for integrating information and communication technologies in education (Gakuu and Kidombo, 2010).

Since it has the potential to either help or hinder the adoption of ICT in schools, the role of school administrators in ICT integration is crucial (Gikonyo, 2012). Staff development and ICT research are more likely to suffer when the duty for ICT integration is given to a single teacher or a small team of teachers who are more interested in infrastructure administration than technological innovation in teaching. In accordance with Yuen et al. it is essential for school administrators to create a collaborative learning environment where teachers can share their ICT experiences and reinforce each other's effective practices. This team learning environment can foster knowledge sharing and encourage teachers to experiment with new ICT tools and techniques, ultimately enhancing the quality of teaching and learning. Therefore, school administrators play a critical role in supporting the successful integration of ICT in teaching and learning, and they must prioritize the development of a collaborative culture that promotes continuous learning and experimentation with technology.

As transformational leaders, school administrators must demonstrate that they live the principles they promote. Transformational leaders think that consistency between words and actions helps them create credibility (Tondeur *et al*., 2007). As an educational leader, the principle in particular can influence many facets of the educational environment,

including ICT integration. Ojwang (2012) found that strong, encouraging leaders were more likely to broaden and intensify the use of ICT in a school. By serving as role models and participating actively in this effort, principals increase the likelihood that the goal of integrating information and communication technologies in teaching and learning will become a reality.

Only 9.5% of Kenyan teachers from NEPAD and cyber e-schools claimed that their school leaders supported the integration of ICT, and this support was correlated with the principals' conviction in the use of ICT, according to a study by Keiyoro et al. (2011). According to 40% of respondents, the degree of support was between 50% and 70%. While only 2.4 percent reported having no support, 47 percent stated they had very lukewarm support. Teachers said that principals' use of the internet indicated that they were still lagging in integrating ICT into teaching and learning. Other reasons put up include a lack of resources, a principals' negative attitude towards the use of ICT in the science curriculum teaching and learning, and administrative ignorance of the role of ICT in teaching and learning.

The results of a study by Manduku et al. (2012) indicate that the adoption and integration of ICT in Kenyan schools were significantly influenced by the opinions and experiences of school administrators and instructors. This demonstrated the requirement for high-quality pre-service and on-the-job training to enable educators to properly use computers in the classroom. Kipsoi *et al*., (2012) proposed that the government modify national strategies for ICT implementation while simultaneously reviewing programs for teacher training and staff development. His research suggested that ICT curriculum and managerial skills be integrated into head teacher training. This study sought to ascertain

how much school administrators in Kiambu County's public secondary schools influence the use of ICT in teaching and learning.

2.5 Teacher Competency in ICT in Teaching Home Science

According to Bömeke, Gustafsson, and Shavelson (2015), teacher competency is multifaceted and dynamic rather than a fixed state of knowledge and abilities. Assessing teacher competency is essential for teacher education and professional development as a result because it is unquestionably edifying and developing. A number of recent research have looked at the subject-specific teaching skill of mathematics (Kaiser et al., 2017). Alake-Tuenter et al. (2013) found study on the proficiency of teachers of inquiry-based science at the primary school level.

According to Archibong, Ogbiji, and Anijaobi-Idem (2010), ICT adoption and utilization in school systems are predicated on teacher ICT proficiency. It becomes difficult for a teacher to embrace the usage of ICT if they are not skilled. The majority of research have found a strong relationship between teachers' usage of ICT and their degree of ICT competency. (Buabeng-Andoh, 2012b; Chai, 2010; Hsu, 2010). Ghavifekr & Rosdy., (2015), teachers who are well equipped and prepared to use ICT are more successful in technology-based learning. However, no information has been given out on teacher competence in ICT integration on teaching and learning Home Science subject. Therefore, this research intended to find out how teacher competency influence ICT integration in learning and teaching.

Teachers who are using ICT in classroom perceived it as useful for personal work (Higgins & Moseley,2011). This shows that teacher’s competence has scanty knowledge on ICT integration in the teaching and learning Home Science in secondary schools. This

study intended to fill the gap between teacher competence and ICT integration by finding out the challenges teachers face. From the study the researcher found that teacher competence played a vital role in ICT integration and recommended that there should be both preservice and in service training for teachers so as to improve their skills on ICT.

According to a study conducted in Malaysia in 2012 by Hamzah & Asimiran, there is no correlation between instructors' ICT readiness and their age or level of teaching experience. The same study found a substantial impact of the teacher's educational background on the overall preparedness of ICT integration. The goal of this study was to close the ICT integration gap in the teaching and learning of home science. According to the study's findings, ICT-competent teachers were more confident when integrating ICT than their less-competent counterparts, who received training from computer teachers and students on how to use ICT tools.

Shaheen, Naqvi & Khan (2013), according to their study on employees training and organization performance, it was concluded that institutions with competitive teachers with well skills on ICT improved performance of the institution in all sectors. This includes in the teaching and learning. From the study it clear, that teachers with well skills in ICT in teaching and learning can improve and increase likeliness of the subject from the students. Teacher competence is challenge that should be improved in order to ensure that teachers integrate ICT in teaching and learning.

Teachers must effectively integrate ICT and new tools into teaching and learning in a digitized society with updated curricula. This can be done by reorganizing the learning environment, fusing new technology with new pedagogy, and promoting cooperative interaction, collaborative learning, and even group work (UNESCO, 2011). This

demonstrates that the success of ICT integration will be greatly influenced by the teachers who will implement it.

In a study by Kapp (2012) New technologies and games are becoming more prevalent in education in the twenty-first century, and teachers are considered as being crucial to the implementation of these tools. This study aimed at finding out the relationship between teacher competence and ICT integration in the teaching and learning Home Science. Another study by Kangas, Koskinen & Krokfor (2017) the research looked at the relationship between teacher's role on game-based learning and its actual use. The research concluded that teachers played an important role in enhancing learning and motivation aspects designing game-based learning program. The ability of teachers to integrate ICT is another aspect that should be investigated to see if it positively impacts the outcome.

Another study by Omariba, Ondigi & Ayot (2016) to examine the challenges facing teachers in integrating ICT in Kiswahili, concluded that although integration of ICT improved teaching and learning, it should not be assumed that availability of ICT tools improves efficiency. The research helped in showing that not only attitude and availability of ICT tools are necessary for integration but also teacher competency plays a vital role which is being investigated in the current study to show their relationship.

A study by Ogembo, Ayot & Ondigi (2015) to investigate teachers' willingness to integrate ICT in teaching and learning in Msambweni, Kwale county Kenya which sought to find out how demographic factors influenced teacher willingness to Integrate ICT, the findings showed a positive relationship. However, the study did not cover the relationship between ICT integration and teacher competence which very crucial, hence this study

sought to close the gap by finding out how teacher competence influenced ICT integration.

According to another study by Wambiri & Ndani (2016) that investigated the preparedness of lower primary teachers on the implementation of teaching with ICT in Kenya and established that teacher competence has influence on ICT adoption by teachers. This was done for primary school teachers hence it should be extended to secondary schools especially in home science. The same study concluded that provision of ICT tools does not guarantee that teachers will integrate ICT in the teaching and learning hence, it recommended for ICT training for teachers to improve their skills. The study was supported by Tezci (2011) on factors that influence preservice teachers ICT usage in education which revealed that teacher attitude toward ICT differ based on teacher level of knowledge and teaching experience with the use of ICT. This shows that teacher competence is highly dependent when integration hence concurring with the current.

2.6 Available ICT resources and their use on ICT Resources for Education and Learning

Computers, laptops, printers, scanners, software, data projectors, and interactive teaching boxes are examples of digital infrastructures that are part of ICT. The ICT devices are the latest tools, concepts and techniques used in learners-to-teacher, learners-to-learners interaction for example: - clicker devices, mobile applications, flipped classroom) for information and communication technology.

According to a study by Brun & Hinostroza (2014), despite the optimal conditions being in place, just a few particular resources, such as a computer and projector, were available.

Aisha's (2017) study on the ICT resources, abilities, and issues that students in higher education confront revealed that these issues include lack of internet connection and the absence of necessary software, among others, the study only focused on higher education and not secondary schools. Belay, Khatete & Mugo (2020) many schools are well connected with electricity and some resources like computers were available but not sufficient.

For effective ICT integration, ICT resources should be provided. ICT integration in Home Science can only be effective where there are enough and sufficient resources to support it. A study by Aming'a, (2018) showed that schools not offering Home Science subject lack the facilities and finances that can maintain the subject because the subject seems to be expensive unlike the other practical subjects. The study focused on facilities like Home Science laboratories, cooking facilities, sewing facilities among others but nothing was mentioned on ICT facilities.

Nyaga (2016), for effective ICT integration the ratio of learners to ICT resources should be reasonable. This still remains a challenge especially in Home Science subject where the ICT facilities still remains a challenge hence the slow integration of ICT. The government of Kenya has tried to connect electricity to most secondary and primary schools in most areas in the country but embracing ICT in teaching and learning of Home Science has been a challenge. This predicament has been highlighted by Nzuki & Nyambane (2019), who identified barriers such as insufficient access to digital devices and infrastructure, deficient teacher training, and the absence of comprehensive ICT policies and guidelines. Therefore, this study intended to find out other available ICT resources and their use in teaching and learning Home Science.

A study by Ngeera, Kibaara & Gichohi (2018) to investigate the influence of ICT infrastructure on quality distance teaching and learning in Kenyan University established that the use of ICT infrastructure influenced the quality of distance teaching and learning. The study recommended that the learning management systems that are developed should be capable of hosting various features which help make the distance teaching and learning a success to all students from different parts of the country and world at large. The current study focused mainly on available ICT facilities and their use in teaching and learning home science which has not been covered on its own. From the findings the researcher found out that most of the applications used were MS word which was mainly for typing exams, MS excel for analyzing exams and slides for projecting notes. The researcher recommended that teachers to be trained on the use of other applications so as to ensure successful ICT use in teaching and learning Home Science.

Adoption of ICT in teaching and learning is highly affected by inadequate resources in the institutions. The resources include computers, internet connectivity, electricity supply among others and if these resources are not sufficient it becomes difficulty for teachers and learners to integrate ICT in teaching and learning (Korte & Husing,2007). From the research findings of the current study, the schools that had these facilities like Computer laboratory were mainly for computer classes and other facilities like computers were used for typing exams analyzing exams and storage of past papers. This made it difficult for the Home Science teachers and learners to access the facilities for purposes of Home Science lessons. The researcher recommended that teachers to utilize available resources in integrating ICT in the teaching and learning of Home Science in secondary schools.

2.7 Critique of the Existing Literature Relevant to the Study

Teaching and learning Home Science using ICT may have challenges. A study by Sweeny (2010) showed that teachers showed concern about using Technology i.e., instant messaging but learners may not take work given seriously and will not use what they have learnt in school in their postings. Further the research showed that using computers in learning, learners may not understand the content because of scrolling the computer screen which may lead to getting inaccurate information. Mutisya & Makokha, (2016) ICT integration can be difficult to apply into lesson structures. This is because such lesson requires a lot of time to prepare. On the other hand, since such lessons are being liked because the work sometimes looks attractive, some teachers may take much of their time to make the work look more attractive and this will divert the attention of learners to admiring the beautifulness of the work than the core function of the work.

2.8 Research Gap

ICT integration research have demonstrated that integrating ICT into teaching and learning improves student performance and the quality of learning. Additionally, incorporating ICT encourages cooperative learning, simplifies abstract and difficult subjects, and raises student interest in the subject matter. ICT integration, in other words, supports a student-focused learning environment. ICT integration provides a variety of benefits that might be referred to as opportunities, but it also has a number of downsides. Challenges like lack of enough ICT tools is a major concern that has slowed down the integration of ICT. Some of the ICT tools available are not well utilized in the teaching and learning but for other purposes. Many teachers are not utilizing ICT in teaching which is linked to lack of competency, teachers who were competent in integration of

ICT seem to use it with ease and confidence unlike those without (Kangas, Koskinen & Krokfor, 2017). This poses a challenge with needs to be looked into by offering in service training to teachers so as to improve their confidence. It necessitates educational transformations such as modifying the curriculum, assessing students, and, most crucially, shifting the role of teachers from knowledge custodians to pedagogy facilitators. The accessibility of ICT resources, teachers' preparedness for ICT integration, and attitudes toward ICT integration in teaching-learning are all very necessary for effective ICT integration in teaching and learning. However, it is unclear if Home Science teachers and incorporate ICT into classroom education with the goal of increasing Home Science learning. By the use of this, the study attempts to close the gap between the arising challenges teachers and students face on ICT integration in order to improve the quality of teaching and learning.

2.9 Chapter Summary

In summary ICT integration is very important in the teaching and learning of Home Science subject in this 21st century where most of the work is done by use of computers. Most schools have not embraced ICT in teaching and learning especially in Home Science subject despite having key facilities like computers and projectors. Most studies have indicated positive attitude from both teachers and learners towards ICT which is believed to greatly influence its use in classroom but its yet to be established why it has not been embraced fully in classroom despite the positive attitude. ICT is believed to make work easy and enhance the quality of teaching and learning. Home Science subject is a practical oriented subject, its seen as expensive subject due to its nature of practical hence enhancing ICT in the teaching and learning can help reduce such costs.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter discusses the methodology used to aid towards attaining the objectives of the study. It considered diverse methods that were utilized to collect data and the choice of samples that was used and the motives for selecting the methods.

3.2 Research Methodology and Design

The research utilized a qualitative research methodology. Based on Creswell (2013), qualitative research is a methodological approach that seeks to understand the intricate context and meanings attributed to phenomena within their natural settings. This approach aligns with the study's objective of comprehensively exploring the challenges faced during the integration of ICT in Home Science education. By employing qualitative research, the study can uncover rich and nuanced insights, providing a holistic perspective on the topic and enabling the emergence of unanticipated themes and patterns.

A research design, as defined by Miles and Huberman (1994), is a detailed plan that outlines how a research study was to be carried out, how variables can be made functional so that they can be measured, how to select a sample, the way the data is to be collected, and how the results are to be analyzed. The research design used in the study was descriptive. This is due to the fact that the primary study variables were qualitative. A descriptive study also aids in exploring the subject matter in depth and revealing the underlying causes in detail.

3.3 Study Area

The research was carried out in Kiambu County, Kenya, situated in the former Central Province. Its capital is Kiambu, with Thika as its largest town. The county comprises thirteen sub-counties: Githunguri, Gitundu North, Githunguri South, Kabete, Kiambaa, Kikuyu, Lari, Limuru, Ruiru, Thika East, and Thika West are among the Gatundu subregions. It borders the counties of Nairobi County and Kajiado County on the southern side, Machakos on the eastern side, Murang'a on the northern and north-eastern sides, Nyandarua on the northern and north-eastern sides, and Nakuru County on the western side. The County of Kiambu hosts 383 secondary schools, including 6 national schools, 18 extra county schools, 52 county schools, 203 subcounty schools, 3 special schools, and 101 private schools. With an annual enrollment of approximately 300,000 students in Form One, the county has a population of 2,417,735, covering an area of 2,449.2 km². The climate is moderate, favoring agriculture, particularly pineapple, tea, coffee, and cabbage cultivation, among others. Tourist attractions include Kilimambogo's fourteen falls, Gatundu falls, and Evergreen falls.

The map of Kiambu county is as shown in appendix G. Showing the location and all its sub counties respectively.

3.4 Target Population

Borg and Gall (1989) established that population refers to a group of individuals relevant to the study. It is the full set of items from which samples are taken. Therefore, the target population in this study comprised of 1600 students, 75 heads of schools in Kiambu County offering Home Science, and the 90 Home Science teachers.

3.5 Sampling Frame

A sampling frame is a list cases in which a sample can be picked from. It shows the target population from every category that the researcher seeks to obtain the sample. The researcher targeted 75 principals, 90 Home Science teachers and 1600 Home Science learners in Kiambu County. This is because it's not all schools in the county offer Home Science as one of the teaching and learning subjects.

3.6 Sample Size and Sampling Technique

Kothari (2004) claims that sampling is the process of choosing a small number from a larger group in order to estimate or predict the frequency of an unknown piece of information, condition, or outcome. Sampling technique refers to a strategy or approach for choosing a sample from a larger group... Thus**,** the study used multi-stage sampling technique. In stage one, the study adopted purposive sampling technique to identify the 75 schools offering Home Science as a teaching and learning subject. In stage two, using a cluster sampling method, to arrive at the number of schools to participate in the research, The formula adapted from Kothari (2004) is as shown below;

k=N/n

k= Clusters

N= population size

n= sample size

These two main steps in cluster sampling were used;

- Divide the size of the target population N by sample size n to get the clusters.

- Then, a sample is randomly selected from the clusters.

Among the population of 1775 which comprised of principals, teachers and learners the study targeted 30% of them, which was 533 participants (Mugenda & Mugenda ,2003).

n = 0.3*target population from every category

0.3*1775= 533.

K=1775/533

K=3 clusters

Table 3.1 Sample population

	Target population	**Sample population(30%)**
Principals	75	23
Home Science teachers	100	30
Form three Home Science learners	1600	480
Total	**1775**	**533**

Source: Researcher (2022)

The researcher arrived at the sample size by using proportionality and purposive sampling to select respondents from the identified schools. This confirmed that every member of the populations had an equal chance of participation as bias is minimized (Kombo and Tromp, 2006). From each school the researcher needed averagely 20 students but due low numbers of students in certain schools, a maximum number of

twenty-five (25) students were to participate this was to cater for schools with less than twenty students in that particular class. Those classes with more than 25 students, the number was purposively selected. The form three students were chosen because the researcher felt that since most of the practical work are introduced in form three syllabus, they were in a position to give a detailed information as compared to form ones and twos.

3.7 Research Instruments

Research instruments are the tools that were used to collect data. The study utilized a combination of research instruments to gain in-depth information from the study. These included interview schedules for principals, questionnaires for Home Science teachers and form three learners and observation checklist to get the real situation on the application of ICT in teaching and learning Home Science subject as well as availability of resources for ICT.

3.7.1 Questionnaire

The researcher preferred questionnaire because little time is needed when using a questionnaire (Borg and Gall, 1996). According to Cohen and Marion (1994) a questionnaire is seen as the best tool of survey in carrying out education research as compared to other instruments. Questionnaire is free from biasness and respondents are given enough time to give a detailed response (Kothari, 1994). The questionnaire included both open and closed ended questions. Two sets of questionnaires were designed, one for HOME SCIENCE teachers and the other set for HOME SCIENCE students. The questionnaire focused on, attitude of teachers and learners on ICT, effectiveness of content delivery when using ICT in teaching and learning and ICT

resources available for use in teaching and learning Home Science. The questionnaire was divided into sections which included;

In Section 1 and 2 the participant was required to give general information especially about the school and information about themselves respectively. Section 3 was used to obtain responses on the research items on ICT facilities available in specific schools. Section 4 section obtained responses to research items on attitude of teachers and learners towards ICT integration. The researcher used a Likert Scale to determine the attitude of students and teachers on ICT integration to learning. The Likert scale used was Poor-1(P), fair-2(F), good-3(G), very good-4 (V.G), and excellent-5 (E). Lastly, section 5 contained items concerning the research question on Teacher competency in ICT integration and section 6 section provided responses to the research items on the role of school administration in ICT integration as shown in appendix C and D

3.7.2 Interview Schedule

Interview schedule is an appropriate tool because it helps the interviewer to cover all dimensions under study through probing the participant. Interview schedule consist of oral questions by the interviewer and oral responses by the participant (Borg and Gall, 1996). One set of Interview schedule was designed for the selected principals. The interview schedule focused on teacher competency on use of ICT and ICT resources available and their use in teaching and learning Home Science.

Interview schedule covered the following, personal and school information concerning Home Science, the available ICT resources in the schools, connectivity and use of internet in the schools, competency of Home Science teachers through observation especially ICT lessons as shown in appendix B

3.7.3 Observation Schedule

Due to the classification, measurement, and counting that takes place during the process, the observation schedule is especially useful for information pertaining to characteristics of material items. An observation schedule was employed to examine and evaluate the teaching abilities of the instructors as well as the ICT resources accessible for instruction and learning. subject of HOME SCIENCE. The researcher managed to observe 13 schools in the county as shown in appendix E.

3.8 Pilot Study

A pilot test was carried out in five schools offering Home Science which included, 5 principals, 6 Home Science teachers and 40 Home Science learners in the Kiambu county. These schools were marked and were not included in the main study. Mugenda and Mugenda (2003) claim that pilot research with a homogenous tenth of the entire sample is suitable for the investigation. The main aim of the piloting was to test the study tools and determine their reliability in collecting the data needed for this study.

The Cronbach's alpha reliability coefficient was computed using SPSS computer package to measure internal consistency of the items. Cronbach alpha reliability coefficient rule of 0.6-0.7 are generally considered acceptable and those of more than 0.8 are very good but those with more than 0.90 may not be good because they may indicate some form of redundancy as they may be testing same questions but in a different guise. And those below 0.6 are generally problematic as indicated by (Ashcraft and Parker 2009).

The results from the study stated that Teacher/ learners attitude items had a 0.84 coefficient, School administration support had a coefficient of 0.762, Teacher competency had a coefficient of 0.789, and ICT resource availability has a value of

0.876. Accordingly, Cronbach's Alpha values for all variables were greater than 0.7. In order to capture the variables, the scales employed in this research were accurate, according to the research.

Table 3.2 Reliability Results

Variable	No. of Items	Respondents	α=Alpha	Comment
Teacher/ learners attitude	5	51	0.841	Reliable
School administration support	4	51	0.762	Reliable
Teacher competency	4	51	0.789	Reliable
Resources availability for ICT and use.	4	51	0.876	Reliable
Ease of Teaching and Leaning Home Science	4	51	0.734	Reliable

Source: Researcher, 2022

3.9 Validity and Reliability of Instruments

Validity

Research is legitimate when it can draw significant conclusions from its findings, and its applicability is determined by how well its data reflect the research's original objectives (Zohrabi, 2013). The supervisors evaluated the items' content appropriateness to determine the validity of the instruments and made suggestions for adjustment to increase their validity. As a result, it was guaranteed that the items evaluated how well the data obtained covered the topics that were the subject of the inquiry (Mugenda, 2008). According to Mugenda & Mugenda (2008), the researcher verified the accuracy of the study tools by consulting with experts and professionals. The researcher obtained face

validity through discussing with colleagues from same field and made corrections where necessary. The validity of the questionnaire was examined by the researcher supervisors and two additional human resource specialists chosen from the ministry in the county seat of Kiambu in order to determine the relevance of the content. These experts reviewed the questionnaire to make sure it was appropriate, succinct, clear, and relevant, that it had purpose, and that it wasn't objectionable. Before being utilized in the study field, the questionnaire was modified and altered in accordance with the advice of the two experts to strengthen the validity of its contents.

Reliability

According to Orodho (2008), reliability is a gauge of how consistently a research tool or technique produces its findings across time. If a subject's results on the same test administered twice are comparable in the test-retest measure, the measurement is regarded as dependable. Internal consistency and dependability were evaluated using Cronbach Alpha. A measurement of the link between variables in a particular investigation is called internal consistency. Heale and Twycross (2015) state that a score of less than 0.9 denotes excellent consistency, less than 0.8 good consistency, less than 0.7 acceptable consistency, less than 0.6 dubious consistency, and less than 0.5 bad consistency. The internal consistency approach was employed by the researcher to assess reliability.

The researcher avoided using leading or biased questions and gave explicit instructions to the respondents in the survey questions to achieve this internal consistency. The researcher also pretested the survey with a sample of participants to identify any potential issues with the questions and refine the survey instrument accordingly. Finally, the

researchers monitored the data collection process to ensure that the respondents understood the questions and answered them to the best of their ability.

In this study an internal consistency of 0.7 was chosen as the minimum level of reliability. The results stated that Teacher/ learners attitude items had a 0.84 coefficient, School administration support had a coefficient of 0.762, Teacher competency had a coefficient of 0.789, and Resources availability for ICT had a 0.876 coefficient. The variables of the study all got Alpha values that are beyond 0.7 from Cronbach. As a result, the study determined that the scales utilized in this study were precise in terms of capturing the variables.

3.10 Data Collection Procedure

Official introduction letter to do the research was obtained from the University of Eldoret and presented to National Commission for Science, Technology and Innovation (NACOSTI) to acquire a research permit. The research permit was produced to the relevant authorities or participants of the target research areas where permission was required. After obtaining the permission from the County Commissioner, Education Directors and the Principals, the researcher was introduced to the respondents. Appointment was made with the relevant administrator's procedures, with the convenient time for interview and administration of questionnaire. Self-administration of the research instruments was done. A total of 23 principals were scheduled for interview sessions, 30 Home Science teachers and 480 learners were issued with questionnaire. Thereafter, all the questionnaire forms were collected for data coding, filling, processing, analysis, and presentation.

3.11 Data Analysis Technique and Presentation.

After the collection of data from the field, the data was coded, processed and analyzed. Qualitative data was interpreted keenly. The data was evaluated, classified and categorized into appropriate themes and then coded them for analysis. The categories identified were assigned numbers, which resulted into a nominal scale Creswell (2011). The coded data was then entered into an SPSS spreadsheet and then subjected to descriptive analysis through the software.

The data analysis was mainly quantitative. The responses of the respondents were cleaned by removing the extreme values, and the incomplete responses. The data was then keyed to SPSS spreadsheet, version 20, for analyzing using descriptive statistics and inferential statistics. Frequency counts, score tables, and Chi-Square tables were drawn and presented in form of percentages, charts and frequency tables.

3.12 Ethical Considerations

The researcher ensured confidentiality and anonymity protection of voluntary participants. The participants were not be allowed to write their names on the research instruments for confidential reasons and also to allow in-depth collection of data without fear. The researcher sought permission to undertake the research from university of Eldoret and NACOSTI to carry out data collection. This was to give relevant authorities to get the confidence and informed consent of the respondents.

In addition to ensuring confidentiality and anonymity of voluntary participants and seeking permission from relevant authorities, the researcher also considered obtaining informed consent from both the students and teachers for the study. The informed consent sought included providing clear and understandable information about the study, its

purpose, potential risks and benefits, and the right to withdraw from the study at any time. The researcher also ensured that the students are not coerced or pressured into participating in the study and that their participation is voluntary. The researcher also took measures necessary to protect the well-being and safety of the participants, including minimizing any potential harm or distress that may arise from participating in the study. Finally, the researcher must adhere to ethical guidelines and principles such as honesty, integrity, respect for persons, and beneficence, and seek guidance from institutional review boards or ethics committees as needed.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1 Introduction

The research analysis of data acquired in the field is presented in this chapter. The objective of this study was to find out the challenges teachers and learners face when incorporating ICT in teaching and learning of Home Science in secondary schools. The findings were presented in tables, figures, and text then the data was analyzed using descriptive research design methodology. The chapter starts with a description of the respondents' demographic characteristics and the data obtained. A full summary of outcomes relevant to each research objectives follows.

4.2 Return Rate

A total of 510 self-administered questionnaires which included thirty (30) Home science teachers and 480 form three learners were delivered in the twenty-three (23) schools within Kiambu County. The twenty-three (23) principals from the schools that participated in the study were booked for an interview. This brought a total of 533 respondents. These respondents were obtained through cluster sampling based on their involvement with the Home Science subject. The obtained responses are shown in table 4.1 below. Overall, the response rate was 93.1%, which is an acceptable rate based on the minimum requirement of 50% in research response (Mugenda & Mugenda, 2003). 0ne questionnaire from a teacher was not fully filled to be used in the study analysis. The researcher discarded the incomplete questionnaire. The resulting complete questionnaires were taken as the new sample size used for analysis and interpretation of findings. From

the student sample, twenty-seven (27) questionnaires were also not returned or were not fully filled. This non-response is attributed to the persons that received the questionnaires withdrawing from the study or not committing to finish answering the questions.

The researcher similarly, left out the unreturned questionnaires and used the returned ones, and fully filled as the new sample size for analysis. The researcher also reached to 14 principals out of the scheduled 23. Due to administration emergencies that altered the principals' itinerary and the limited time of data collection, the researcher chose to take the responses from the 14 principals that were reached. Table 4.1 below shows the response rate for the study.

Table 4. 1: Response Rate

	Issued Questionnaires	**Returned Questionnaires**	**Rate of Return (%)**
Principals	23	14	60.9
Home Science teachers	30	29	96.7
Form three Home Science learners	480	453	94.4
Usable Questionnaires	**533**	**496**	**93.1%**

Source: Researcher (2022)

4.3 Respondent Demographics

The student and teacher who were respondents were requested to identify the type of school they were teaching or learning at, their gender and their duration in the school. This was helpful in determining the suitability of the respondents in giving data for this study as well as how ICT has been used to aid learning of Home Science in schools. The following sections show results from the analysis of the obtained data.

4.3.1 School Classification

The researcher asked the teachers to indicate the classification of their schools. This was essential in showing how different kinds of schools coped and had integrated ICT to the teaching of Home Science. The obtained results are shown in table 4.2 below.

Table 4. 2: School Classification (based on Teacher Response)

		Frequency	Percent (%)
Valid	National	3	10.3
	Extra county	5	17.2
	County	6	20.7
	Sub County boarding	7	24.1
	Sub county Day	8	27.6
	Total	29	100.0

Source: Researcher (2022)

The results showed that all categories of schools from the national level to sub county day were engaged in the study. The majority of the teachers that participated in the study were sub-county day schools 8 teachers which is equivalent to 27.6%, these were followed by the sub-county boarding, 7 teachers with 24.1%, county schools, 6 teachers with 20.7%, extra-county schools, 5 teachers which is 17.2% and national schools 3 teachers with 10.3%.

On the student population, the participation is shown in table 4.3 below. Where the researcher asked the students to indicate the category of the schools.

Table 4. 3: School Classification (based on Students Responses)

		Frequency	Percent
Valid	National	80	17.8
	Extra county	87	19.2
	County	97	21.3
	Sub County boarding	95	21.0
	Sub county Day	94	20.7
	Total	453	100.0

Source: Researcher (2022)

Majority of the students were drawn from sub-county day schools (27.6%) followed by those from the sub-county boarding schools (24.1%). In the third position in terms of the most respondents were drawn from the county school (17%) and the sub-county day schools were the fourth with (14.8%) and the national schools were the least from which respondents were drawn from with a 9.6%. These findings indicate that all kinds of school were involved in the study and the findings obtained from it can be used to generalize to all the schools in the county.

4.3.2 Category of School

The researcher also sought to find the category of every school from which participants were drawn. There are three categories that the researcher looked into boy schools, girl schools and mixed schools.

The findings are as shown in table 4.4 below.

Table 4. 4: Teachers and their Category of Schools

		Frequency	Percent
Valid	Boys	10	34.5
	Girls	14	48.3
	Mixed	5	17.2
	Total	29	100.0

Source: Researcher (2022)

The results indicated that most respondents were from girls' schools (48.3%) this is because the subject is majorly offered in girls' schools, followed by boys' schools, which was 34.5% and lastly, mixed schools, which were 17.2%. This indicated that the researcher had included respondents from all school categories hence the findings could be applicable to the entire school population in the county.

4.3.3 Descriptive Statistics for Students

The researcher explored various aspects of teacher and learner perspectives towards the integration of ICT in learning Home Science in schools. The objectives were to evaluate the attitude of teachers and learners towards ICT integration in teaching and usage in learning of Home Science subject; to find out the role of school administration on ICT integration in teaching and learning Home Science; to evaluate the teacher competency in ICT integration in as a method of giving instructions in Home Science class and to determine the availability of resources in Based on all of these factors, a descriptive analysis was conducted, with the findings reported in the following sections.

4.4 Student and Teacher Attitudes towards ICT

The researcher sought to evaluate the attitude of students towards ICT integration in the learning of Home Science in secondary schools. A set of five statements was devised to help measure the attitudes of students on ICT application. The students were supposed to

tick the level with which they agree the statement given using a scale of 1 to 5 with 1 being strongly disagree and 5 being strongly agree. The obtained results are shown in table 4.5 below.

4.4.1 Student Attitude towards ICT use in Home Science Learning

The findings as shown in table 4.5 below shows the students attitude towards ICT

Table 4. 5: Descriptive Statistics (Student Attitudes toward ICT)

	N	Mean	Std. Deviation
ICT lessons are interesting	453	4.37	.936
I understand well when taught using ICT	453	3.82	.784
A lot of work is covered when taught using ICT	453	4.08	1.015
I am active when taught using ICT	453	3.96	1.003
A lot of time is spent when using ICT	453	2.28	.784
Valid N (listwise)	453		

Source: Researcher (2022)

From the findings it indicated that most students were in agreement that lessons conducted by the use of computers are interesting, with a mean of 4.37 which was a positive deviation of 0.936. The respondents disagreed to the statement that a lot of time is spent when using ICT in class with mean of 2.28 with a standard deviation of 0.784. This was confirmed by the results of the statement, much work is covered when using ICT to learn was agreed to by the students as evidenced with a mean of 4.08 with a standard deviation of 1.015. The majority of students also accepted that they could participate actively in computer-based instruction, with the statement receiving a mean score of 3.96 and a standard deviation of 1.003. The average score for the claim, "I understand well when taught using ICT," was 3.82, with a 0.784 standard deviation. Overall, the students' attitudes on the use of ICT in learning home science were favorable.

These results are comparable to those of Danner and Pessu (2013), who investigated student attitudes and the impacts of the use of ICTs in learning at Benin University in Nigeria. They found that learning through the use of ICTs enhanced students' enjoyment of the topics that utilized technology. Students reported that using technology in the classroom made learning more exciting and fulfilling. In accordance with the research, more than 80% of the learners either strongly agreed with or agreed that using technology in class or for various assignments increased their happiness. Furthermore, 572 of the students thought that using technology facilitated a better comprehension of a variety of subjects. In an experimental study on in-service Mathematics teachers' integration of ICT as an innovative practice in lower secondary, Daher, Baya'a, & Anabousy (2018) discovered that the teachers had favorable attitudes and beliefs.

While researching the use of ICTs in Nigerian colleges, Ameen, Adeniji, and Abdullahi (2019) negative attitudes on ICT in the learning process could be attributed to low performance of students. Despite the school investing a lot of money to purchase projectors, the scholar noticed that students did not use them to make demonstrations during class. Instead, lecturers and students preferred to read textbooks and take handwritten notes. The university was criticized by students and professors for not offering instruction on how to use the ICTs that were accessible, such as computers and projectors, and for hiring conservative trainers who favored conventional teaching techniques. Teachers and pupils also brought up the issue of the internet connection's poor quality.

These findings are supported by the results of the Chi-Square, which helped to further show the relationship between ICT integration and learners' attitude as shown in the table 4.6 below.

Table 4. 6: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.463	1	0.012
Likelihood Ratio	8.033	1	0.033
N of Valid Cases	453		

The p-value demonstrates that research variables are not independent of one another and should be categorical variables exhibit a statistically discernible link. The findings showed a statistical significance of the factors ($\chi 2 = 11.463$, $p = 0.012<0.05$), which can be said that student attitudes have an impact on the integration of ICT in teaching and learning.

4.4.2 Teacher Attitudes towards ICT in Teaching Home Science

Teachers were also given a questionnaire aimed at determining their attitudes on use of ICT in teaching. The teachers were asked to show how they agreed with statements that were provided in a Likert scale. A Likert scale was best suited for this this study since it is qualitative in nature and seeking to obtain the opinions of the respondents on the provided variable (attitude towards ICT by the teachers).

The result found are outlined as shown in table 4.7 below.

Table 4. 7: Descriptive Statistics (Teacher Attitudes towards ICT)

	N	Mean	Std. Deviation
Normal teaching time is enough for ICT integration.	29	3.45	1.088
Makes lesson interesting	29	4.17	.759
Easy to teach with	29	3.17	.889
Does not take a lot of time preparing	29	2.24	.739
A lot of content is covered in a short time	29	3.14	1.187
Valid N (listwise)	29		

Source: Researcher (2022)

From the findings it was noted that majority of the teachers agreed to the fact that ICT makes the lessons interesting with a mean of 4.17 with a standard deviation of 0.759. The attitude towards the sufficiency of the time allocated to ICT lesson received a moderate feeling (good) with a mean of 3.45 and a standard deviation of 1.088. Further, the teachers also were okay with the ease with which they could teach using ICT, with the statement getting a mean of 3.17 with a standard deviation of 0.889. The teachers disagreed to the statement, ICT lessons do not take a lot of time preparing with a mean of 2.24 and a standard deviation of 0.739. This is an indication of how the teachers spent much time in preparing lessons that could be taught using ICT. The teachers were also not in agreement concerning the content that is covered with ICT given the mean of 3.14 and a standard deviation of 1.187. Overall, the teachers showed a positive attitude towards the ICT lessons. However, there were reservations on the use of this technology given that most teachers struggled preparing ICT lessons and that they had not been given enough training on handling the computers and other necessary applications that could help them deliver their lessons.

The adoption and real usage of computers in classrooms and in the administration of students' work are significantly influenced by the attitude of the teacher. The educator's mindset toward technological advances in the teaching and learning process is one of the factors impacting the attainment of meaningful usage of computer technology, according to Albirini (2006). Therefore, it is essential for instructors to foster a positive attitude toward ICT because this has an impact on how well it is incorporated into the teaching and learning process. The researcher also wanted to know how ICT may be applied to teaching and learning in a classroom. The majority of respondents claimed that they produce and preserve lecture notes as well as arrange assignments for students using ICT. Very few teachers reported doing research on subjects they were teaching using ICT and then using power point presentations to deliver the material to their pupils. The results show that teachers have a favorable attitude toward using ICT in teaching and learning. They promoted introducing teachers to technology via school-sponsored ICT classes, conferences, and workshops, as well as training teachers on the advantages of ICT in both teaching and learning.

When asked if the school sponsored the in-service training for the teachers on the use of ICT, 96.6% of the respondents said that their school does not offer any sponsorship. This means that most teachers are left to find their means to learn and improve on their ICT skills. Further, on the question of if ICT can influence good content delivery of Home Science in teaching and learning, majority of the teachers agreed with the reason that ICT gives an array of strategies to use in delivering content; in video form, picture format and also through simulations. This makes it easy for the students to learn, understand and

remember the content they have been taught. Overall, the study reveals that teacher attitudes play a great role in influencing the process of ICT integration.

According to the table 4.8 below a chi-Square analysis test was carried out to establish if there was any relationship between ICT integration and teachers' attitude.

Table 4. 8: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.114	1	0.041
Likelihood Ratio	0.305	1	0.036
N of Valid Cases	29		

The p-value, as shown in the chi-square result table 4.8, demonstrates that these variables are not independent of one another and that the categorical variables exhibit a statistically discernible link. In light of the statistical significance of the factors ($\chi 2 = 12.114$, $p = 0.041 < 0.05$), They can be stated to have an effect on how ICT is integrated into teaching and learning.

4.5 The role of school administration on ICT integration in teaching and learning Home Science

The researcher also sought to find out if the school administration gave support to teachers in the integration of ICT to teaching and learning of Home Science. The obtained data was descriptively analyzed and the results are displayed in table 4.9 below.

Table 4. 9: Descriptive Statistics

	N	Mean	Std. Deviation
The school administration is committed towards ensuring a successful integration of ICT to teaching of Home Science	29	3.34	.769
The school administration encourages teachers and students to use computers in learning Home Science	29	3.90	.772
Teachers get appreciated when they make an effort in using ICT in teaching Home Science	29	1.90	.900
School administration is willing to provide the needed resources to enable the integration of ICT in teaching Home Science.	29	3.28	.455
Valid N (listwise)	29		

Source: Researcher (2022)

From the results in table 4.9, majority of the respondents agreed that the school administration encourages teachers and students to use computers in learning Home Science with the mean being 3.90 and standard deviation of 0.772. The teachers also somewhat agreed that the school administration is committed towards ensuring a successful integration of ICT to teaching of Home Science with a mean of 3.34 and a standard deviation of 0.769. Similarly, the teachers were somewhat agreeing with the statement, School administration is willing to provide the needed resources to enable the integration of ICT in teaching Home Science with a mean of 3.28 and standard deviation of 0.455. These statements showed that many teachers were divided on the view of the school administration's commitment towards supporting the integration of ICT in learning in the schools and on providing support on ICT integration. Most teachers denied that teachers get appreciated when they make an effort in using ICT in teaching Home Science with a mean of 1.90 and a standard deviation of 0.900.

The study found out that there were mixed feelings on whether the school administration was supportive or not supportive of the integration of ICT in learning of Home Science in secondary schools. This was as a result of the principals not sponsoring the teachers to advance their ICT skills through training. These results concur with those of a study by Keiyoro et al. (2011), which revealed that few administrators from NEPAD and cyber e-schools in Kenya were supportive of ICT integration. The support was related to principals' belief in the value of ICT in teaching and learning. A slight positive correlation was observed between the school administration support to teachers and ICT integration. This suggests as the administration increases support to teachers there is a greater likelihood that there will be more ICT integration. Therefore, by serving as role models and participating actively in this initiative, principals are more likely to turn the ideal of ICT integration in teaching and learning into a reality.

Manduku et al. (2012) found that the adoption and integration of ICT in Kenyan schools were significantly influenced by the opinions and experiences of school administrators and teachers. This emphasized how crucial it is to provide teachers and administrators with effective pre-service and in-service training in order for them to utilize computers in the classroom. Kipsoi *et al*., (2012) proposed that the government revise national ICT implementation strategies while also reviewing teacher training and staff development programs. His research proposed incorporating ICT curriculum and managerial skills into head teacher training. The purpose of this study was to ascertain how much school administrators have an impact on how ICT is integrated into teaching and learning in secondary schools in Kiambu County. Although many teachers have favorable opinions toward the implementation of educational technologies, Ropp (2000) asserts that they

don't always have confidence in their own capacity to employ technology in a classroom setting with pupils. He claimed that a positive outlook and high levels of self-efficacy support learning and preparation for computers. It may be said that the administration of the school contributes significantly to the use of ICT in teaching and learning.

The table 4.10 below shows a Chi-Square analysis which was used to test if there is a relationship between the role school administration plays and the level at which ICT is integrations.

Table 4. 10: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.277a	1	0.023
Likelihood Ratio	8.044	1	0.033
N of Valid Cases	29		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.97.

Given the high value of the chi-square (2 = 9.277), the test was significant. The factors are not independent of one another, and there is a statistically significant association between the school management and the integration of ICT in the teaching and learning of home science in Kiambu County, as shown by the p-value of 0.023 0.05.

4.6 Teacher competency in ICT integration in teaching and learning of Home Science

The research also aimed at finding out how teacher competency influenced the integration of ICT in teaching and learning Home Science among secondary schools in Kiambu County. Data was collected to help show how ready and competent the teachers

were in realization a full integration of ICT to learning of Home Science. A cross tabulation of the data gathered was done to show how teacher competency and ICT integration interacted. The results are shown in table 4.11 below.

Table 4. 11: Teacher competency in ICT integration

		What's the classification of your					
		National	Extra county	County	Sub County boarding	Sub county Day	Total
Does the school sponsor your in-service training on use of ICT?	Yes	0	0	1	0	0	1
	No	4	5	5	7	7	28
Total		4	5	6	7	7	29

Source: Researcher (2022)

From the study findings it was noted that majority of the schools at all levels were found not to be offering sponsorship for the teachers to train on the use of ICT. Out of the 29 teachers that responded to this study, only one teacher from a county school noted that their school sponsors teachers to train on the use ICT services. This is an indication that schools are yet to commit to having teachers' better skills in delivering their lesson and course content through ICT.

When asked on the applications that the teachers use often, all 29 teachers listed MS Word, MS PowerPoint, Excel and the Internet are the applications often used as the programs that are often used. MS Word and MS PowerPoint were used to give notes to the students and also in typing examinations. Excel was used to tabulate student scores

and also to keep student records. The Internet was used to research for more facts and alternatives on the topic under study.

The study found out that teachers played an important role in the integration of ICT in the learning of Home Science. The study found out through observation that when the teachers were not well skilled, they spent a lot of time in trying to figure out what to do with the computers or how to deliver the content to the students. This burdened the students causing them to lose interest on the lesson. The findings coincide with those of Chege (2014) who found out that teacher competency in ICT skills played a key role in the efficiency of teaching students using computers. Further, the study revealed that when teachers are competent, they are confident to deliver content to students using ICT skills. Further, the confidence they display inspires the students and makes them excited to also learn the skills and also to grasp what they are being taught. From the study of Chege (2014), majority of the teacher respondents stated that their computer skills were fair, just in the current study. This means that there is a need to train the teacher to better their ICT skills so that they can deliver their content better in the classroom.

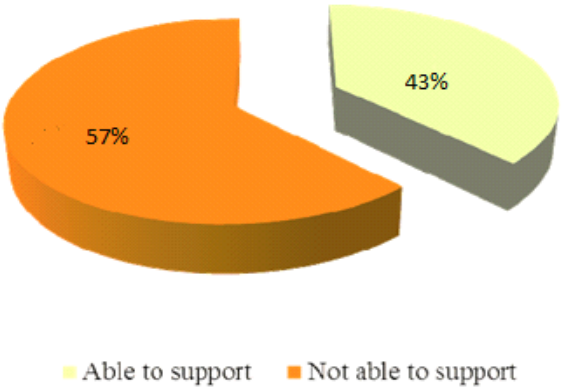
According to the study's findings (Omondi & Agak, 2019), teachers were crucial in the incorporation of ICT into the study of home science. The study found out that when the teachers were not well skilled, they spent a lot of time in trying to figure out what to do with the computers or how to deliver the content to the students. This burdened the students causing them to lose interest on the lesson. The findings coincide with those of Chege (2014) who found out that the effectiveness of using computers to instruct students was greatly enhanced by teacher expertise in ICT abilities. Further, the study revealed that when teachers are competent, they are confident to deliver content to students using

ICT skills. Further, the confidence they display inspires the students and makes them excited to also learn the skills and also to grasp what they are being taught (Omondi & Agak, 2019). This means that there is a need to train the teacher to better their ICT skills so that they can deliver their content better in the classroom (Omondi & Agak, 2019).

According to Tondeur et al. (2004), the ability to use a wide range of computer programs for a number of objectives constitutes teacher competency. Bordbar (2010) asserts that a key predictor of incorporating ICT in teaching and learning is teachers' computer proficiency. ICT integration in teaching and learning was influenced, according to the majority of respondents, by computer training. Between teachers' knowledge of information and communication technologies and the implementation of ICT in the teaching and learning process, a correlation coefficient of 0.404 was discovered. This reasonable association suggests that ICT training significantly affects the integration of ICT in teaching and learning. The study's conclusions indicate that training would assist teachers in learning ICT and increase their comfort level when utilizing ICT. ICT training was reported by 67.1% of respondents. 32.9 percent lack any computer training, 3.8 percent have a computer diploma, and 96.2 percent have an introduction to computers certificate. These results unequivocally demonstrate that nearly all of educators had prior computer training, supporting Knezek and Christensen's (2002) claim that teachers' proficiency with computer technology is a critical component of effective use of ICT in teaching. Overall, the study reveals that teacher competency builds teacher confidence hence influencing incorporation of ICT in educational settings.

4.6.1 Teachers' ability to support student-centered computer activities

In the past, the design and creation of student-centered activities were primarily the responsibility of the classroom teacher. However, the recent emphasis on constructivism has inspired researchers to take advantage of the newly emerging affordances of computers to create student-centered programming. Teachers' perceptions of effective techniques have an impact on how they deploy technologically enhanced, student-centered learning environments. Figure 2 shows the teachers' replies to the question of whether they might support technologically improved student-centered activities in the selected schools.



.

Researcher (2022)

Figure 2: Teachers' ability to support student-centered computer activities

Figure 2 shows that only a small percentage of instructors in the studied schools are able to use ICTs to promote student-centered activities (43 percent). 57% of the teachers lacked the skills necessary to promote student-centered activities. This demonstrates that the majority of teachers are unable to use ICT to design classroom settings where students are more engaged and may share experiences through group projects. The

capacity of the instructor to adapt educational activities to the requirements of the pupils, is the most crucial of all the aspects that contribute to effective technology integration (Fulton, 1997), It is conceivable that the majority of teachers instruct pupils on the fundamentals of technology while failing to incorporate technology into their lessons for student-centered activities. Therefore, it would seem that the present generation of young learners, known as "digital savvy" by Prensky (2001), frequently feels alienated from the conventional teaching methods that fail to effectively involve them in ICT use. Professional development opportunities must be made available to teachers on utilizing ICT in student-centered classroom practices. The approaches to professional growth should be those that emphasize peer contact and cooperation, which are frequently facilitated by online platforms like blogs. Teachers should be supported and encouraged to communicate these ICT trends and activities as some of them are already familiar with them.

4.7 Availability of resources in ICT integration and their use in teaching and learning of Home Science

The study also aimed at assessing the availability of resources in ICT integration and their application to home science education. A cross tabulation of support from schools and the type of school was conducted to show if there is a difference on school levels and the resources available to support ICT lessons. Table 4.12 below shows the obtained results.

Table 4. 12: Cross tabulation of School ICT Support and School Classification

		What's the classification of your					
		National	Extra county	County	Sub County boarding	Sub county Day	Total
Does the school support ICT?	Yes	4	4	5	7	5	25
	No	0	1	1	0	2	4
Total		4	5	6	7	7	29

Source: Researcher (2022)

From the study findings in table 4.12, the researcher noted that almost all schools offered support to ICT lesson by availing the tools needed to affect the lessons. The schools provided computers, projectors, and internet to aid learning. Further, the teachers noted that the students and teachers were encouraged to use the computer labs to gain knowledge on what they learn as well as develop their ICT skills. Teacher from the sub-county day schools however noted that they do not get enough support from the school due to lack of enough computers and other facilities that will aid the integration of ICT to their lesson.

Table 4. 13: Availability of Resources in Schools

		What's the classification of your					
		National	Extra county	County	Sub County boarding	Sub county Day	Total
How many computers are available for teaching Home Science?	Enough	4	2	4	5	0	15
	Almost enough	0	3	2	2	4	11
	Not all	0	0	0	0	3	3
Total		4	5	6	7	7	29

Source: Researcher (2022)

From the results in table 4.13 above, all teachers from the national schools that participated in the study stated that their schools had enough computers. These were followed by teachers from county schools, where 4 noted to be having enough computers and only 2 noted that they had almost enough. The extra county school teachers most (3) indicated that they had almost enough computers while (2) stated that they had enough computers in their schools. Of the seven teachers in the sub-county boarding schools, 5 stated that they had enough computers while 2 stated that they almost enough computers. The teachers from sub county day schools noted that they never had enough computers. Out of the 7 that gave responses, 4 noted that they almost had enough computers while 3 said they never had computers to aid their lessons.

In the interview the principals were asked to state if their schools had enough ICT facilities that could be used by teachers and the learners. Most principals responded that their resources were limited hence they could not be able to offer enough computers to the learners in their schools. This was a major impediment to ICT integration in learning in the schools. Further, the interview revealed that most teachers lacked sufficient ICT

skills, which also hindered the effectiveness of the teachers in using the system. Many teachers were taught through s system that did not incorporate ICT skills hence their limitation in using the computers to teach the students.

Most principals also experienced a challenge of frequent power outages, which affects the smooth learning the computer labs. Given that most schools lacked back up power source, the schools were dependent on the national grid power to conduct their lessons. Courtesy of organizations like Facebook and Safaricom, the principals said that they have access to the internet in their schools. This helps their teachers to research more on their lesson plans and give students well planned and arranged content.

Through the government initiative of equipping schools with ICT facilities and ensuring every public school has electricity, most schools have made progress in acquiring and installing enough computers in their labs, which can be used by the teachers and students to teach and learn, respectively. ICT equipment, which Mulwa & Kyalo (2011) discovered to be a crucial prerequisite for instructors' readiness to utilize e-learning in curriculum delivery, was confirmed by the study's findings. Schools must acquire the necessary ICT equipment in order to effectively use modern technology. The findings coincide with those of Belay, Khatete & Mugo (2020) who found out in their study that many schools have electricity and some resources, such as computers, are available but insufficient. ICT resources should be made available for effective ICT integration. ICT integration in Home Science can only be effective if adequate resources are available to support it. According to Aming'a (2018), schools that do not offer Home Science subjects lack the facilities and funds to keep the subject going because it appears to be more expensive than other practical subjects. The study concentrated on facilities such as

Home Science laboratories, cooking facilities, and sewing facilities, among others, but nothing about ICT facilities was mentioned. According to Nyaga (2016), a reasonable learner-to-ICT resource ratio is required for effective ICT integration. The available resources i.e., computers, projectors and electricity can be utilized to integrate ICT in teaching and learning.

4.8 Chapter Summary

The chapter has presented an analysis of the data obtained from the study population. The analysis was organized based on the study variables and objectives. The findings have been presented in tables, show frequency in percentages as well as descriptive data showing the average and standard deviation of the responses given. The analysis found out that those schools and teachers are making efforts towards integrating ICT into the learning of Home Science. However, not all school have managed to offer the needed resources and facilities that can help the teachers deliver successfully using ICT strategies. The research also found out that the schools do not offer sponsorships to the teachers to learn and develop ICT skills that will be used to teach their students. The study also indicated that most teachers struggle with preparing lessons and delivering them using computers. The following chapter will present the discussion of these findings and a conclusion.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the outcomes of the research objectives, summarizes the findings and inferences drawn from the results and discussion, and offers recommendations based on the goals and ideas for additional study. The study's goal was to evaluate how ICT was used to teach and learn home science in secondary schools in Kiambu County. The study's specific objectives were; to assess the attitude of teachers and learners towards ICT integration in teaching and learning of Home Science; to establish the role of school administration on ICT integration in teaching and learning Home Science; to assess the teacher competency in ICT integration in teaching and learning of Home Science and to assess the availability of resources in ICT integration and their use in teaching and learning of Home Science. Data was collected through the use of questionnaires and interviews from students, Home Science teachers and principals. The data were subjected to a descriptive analysis, and the results and conclusions are reported in this chapter.

5.2 Summary of Findings

The study revealed that students had a positive attitude towards the use of ICT in learning Home Science. The students noted that they were excited and could easily remember the content they were taught through the help of ICT. The study also showed that teachers were enthusiastic about using ICT to present curriculum to their students. Despite most teachers stating that they lack all the skills needed to apply ICT in their teaching, most showed a positive attitude towards bettering their skills. Through a descriptive analysis, the researcher was able to determine the attitude of the teachers and the leaners. With an

average mean of 3.11, which indicated that majority of the student respondent agreed to the posed statements on teacher and learner attitudes to ICT integration on Home Science learning. Students said that incorporating technology into the classroom made learning more engaging and rewarding. According to the data, more than 80% of the students either strongly agreed or agreed that using technology in class or completing various assignments made them happier. Furthermore, 384 of the students believed that using technology helped them learn and experience different skills in HOME SCIENCE better.

A questionnaire was also distributed to teachers to gauge their opinions on the use of ICT in the classroom. Educators were asked to show how, on a Likert scale, they agreed with certain claims. The results showed that instructors were in favor of incorporating ICT into both teaching and learning. The results also indicated that the teachers advocated for exposing teachers to technology through school-sponsored ICT courses, seminars and workshops on ICT, and educating teachers on the benefits of ICT in teaching and learning. However, when asked if the school sponsored the in-service training for the teachers on the use of ICT, 96.6% of the respondents said that their school does not offer any sponsorship. This means that most teachers are left to find their means to learn and improve on their ICT skills.

This lack of sponsorships hampered the use of technology in the classroom, resulting in low teacher proficiency in ICT in schools. The study also discovered that most Kiambu County schools have enough computers and electricity. However, most schools did not have access to the internet. This meant that teachers and students at these schools had limited access to computers.

Further, the study noted that national school and extra county schools were well equipped with resources that could allow for a smooth and efficient integration of ICT to HOME SCIENCE learning. Similarly, other school categories that included in the study (County and sub-county schools) had also made effort and received support from the government to actualize ICT integration to the overall learning in the schools. This meant that the HOME SCIENCE teachers and learners can also use these resources in furthering the experience of learning and teaching Home Science.

5.3 Conclusion

The following conclusions were made based on the findings of the study which was guided by the four objectives;

- Both students and educators were enthusiastic about the usage of ICT in the classroom. Teachers advocated for exposure to technology through school sponsored ICT courses, seminars and workshops on ICT.

- The school administration is crucial in the incorporation of ICT. However, the school administrations were not supportive in that they could not sponsor teachers to advance their skills which limits the application of ICT in teaching.

- Teacher proficiency in ICT skills is important for the efficacy of teaching with ICT since it enhances their confidence when incorporating ICT. However, the majority of teachers lacked essential ICT abilities for use in teaching, citing factors such as a lack of computer proficiency, a lack of digital content, and a lack of access to ICT facilities, among others.

- Facilities like computers, projectors, electricity and internet plays important role in integrating ICT in classroom. Most schools were equipped with computers however, teachers used them for typing assignments, typing examinations and analyzing examinations than using them to integrate ICT.

5.4 Recommendations

5.4.1 Recommendation for Policy and Practice

Based on the study findings, the researcher recommends that;

- Schools should consider creating an enabling environment where the students and teachers will often use the computers in learning. This will help improve their ICT skills, as well as cause them to quickly learn and understand.

- To improve teachers' ICT skills, the Ministry of Education should make ICT mandatory in universities and colleges. There is also a need for education stakeholders to regularly arrange for instructors to participate in in-service training on ICT topics and new trends.

- The Ministry of Education needs to guarantee that schools administrators develop ICT integration policies that are consistent with the National ICT Policy.

- The government should make sure that schools have enough ICT infrastructure, especially computers and access to energy, through its ministry of education. The Kenya Institute of Curriculum Development should make sure that all schools have access to digital information created for use in all courses.

5.4.2 Recommendation for Further Studies

This study had a limited scope. The integration of ICT was the main concern.in the teaching and learning of Home Science in Kiambu County Secondary Schools. However, there are other areas that integration of ICT can be used in Secondary schools even those outside Kiambu County. Therefore, the researcher recommends further study on ICT integration in other areas, such as resource and financial management at the school level.

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APENDICES

Appendix I. Letter of introductory to the respondents

Maureen Gesare,
University of Eldoret,
1125-30100, ELDORET.

Dear Respondents,

RE: RESEARCH PROPOSAL FOR A MASTERS DEGREE PROGRAMME

I am a postgraduate learner pursuing a Master's degree in education Home Science and technology at the University of Eldoret. I am conducting research for my final year program, which is a requirement of the degree programmed.

These interview questions and questionnaires are designed to gather information on **ICT integration in teaching and learning on Home Science in secondary schools in Kiambu county, Kenya.**

Your school has been selected to be part of my study sample. Kindly provide genuine information to the items.

All information will be treated with utmost confidentiality.

For this reason, DO NOT write your name on the questionnaire.

Thanks in advance

Yours Sincerely,

Maureen Gesare.
SEDU/CTE/M/005/20

Appendix II: Interview questions for the principals

i. How many years have you served as a principal in this school?

ii. When did your school introduce Home Science subject?

iii. How many times has Home Science been done at KCSE level and what is the general performance of the subject?

iv. Does your school have enough ICT fallibilities that can be used for teaching and learning Home Science? What is the ratio?

v. Does your school have internet connection for ICT integration in different classes?

vi. What can you say about your teachers on their competency in ICT?

vii. Do you observe your teachers' lessons? Which methods of teaching do they commonly use?

THANK YOU

Appendix III: Questionnaire for Home Science teachers

SECTION A: General Information

1. (a) Kindly tick where appropriate

What's the classification of your

(i) National ( )

(ii) Extra county ( )

(iii) County ( )

(iv)Sub County boarding or ( )

(v) Sub county Day ( )

b) What's the category of your school?

(i) Boys ( )

(ii) Girls ( )

(ii) Mixed ( )

2. **Personal information**

a). Gender: Male ( ) Female ( )

c). How many years have you been in this school?

Attitude towards ICT

In a scale of 1-5 kindly tick where appropriate. What is your take on ICT integration?

Poor-1(P) fair-2(F) good-3(G) very good-4 (V.G) excellent-5 (E)

	P	F	G	V.G	E
Normal teaching time is enough for ICT integration.					
Makes lesson interesting					
Easy to teach with					
Does not take a lot of time preparing					
A lot of content is covered in a short time					

e) Give your general view on ICT integration in relation to teaching and learning Home Science?

……

……

……

……

……

3. **School Administration and ICT Integration**

Do you think the school management has a vital role in the integration of ICT in teaching and learning? Yes [ ] No [ ]

(i) If yes, in what ways do the managers in your school support teachers in their efforts to integrate ICT in teaching and learning?

.....……

……

(ii) How many functional computers are there in your school?

.....

4. Using the scale of 1 to 5 below (where 1=strongly disagree, 2=disagree,3=Neutral agree,4=agree,5=strongly agree) indicate how much you agree or disagree with each statement below

	Statement	**1**	**2**	**3**	**4**	**5**
	The school administration is committed towards ensuring a successful integration of ICT to teaching of Home Science					
	The school administration encourages teachers and students to use computers in learning Home Science					
	Teachers get appreciated when they make an effort in using ICT in teaching Home Science					
	School administration is willing to provide the needed resources to enable the integration of ICT in teaching Home Science.					

5. **Teacher competency**

As a teacher which application of computer do you commonly use? And for what purpose?

……

……

……

Are you able to use ICT in preparation and teaching without help of any other teacher?

YES ( ) NO( )

- Does the school sponsor your in-service training on use of ICT?

  YES( ) NO( )

  If yes please specify if it is termly ( ) yearly( ).

- Dou you give assignment that require learner centered approach method especially where interaction of ICT is required. Yes [ ] No [ ]

6. **Available ICT resources.**

a). How many computers are available for teaching Home Science? Kindly indicate,

---

---

b). Does the school support ICT program?

YES ( ) NO( )

Comment……

……

c). Do you think ICT integration can improve the quality of teaching and learning Home Science?

YES ( ) NO( )

Give reasons,……..

……

……

d). Whats your take on ICT integration in teaching Home Science in realtion to available facilities?

……

……

……

……

Home Science content and ICT

a). Is there a content in Home Science that cannot be taught using ICT?

YES ( ) NO ( )

Name afew if any,

……

……

……

Can ICT influence good content delivery of Home Science in teaching and learning?

YES ( ) NO ( )

Give a reason,

……

……

……

THANK YOU

Appendix IV: Questionnaire for learners

SECTION A: General Information

1. (a) Kindly tick appropriately

what's the classification of your school?

(i) National ( )

(ii) Extra county ( )

(iii) County ( )

(iv) Sub County boarding or ( )

(v) Sub county Day ( )

b) Please indicate the category of your school?

(i) Boys ( )

(ii) Girls ( )

(ii) Mixed ( )

2. **Personal information**

Tick where applicable.

- Gender

Male [ ] female [ ]

- How old are you?

……

3. Attitude towards ICT

The rating is between 1-5 Tick where appropriate

STRONGLY AGREE-5 SA, AGREE -4 A, UNDECIDED -3 UD, DISAGREE-2 D, STRONGLY DISAGREE-1 SD,

	SA	A	UD	D	SD
ICT lessons are interesting					
I understand well when taught using ICT					
A lot of work is covered when taught using ICT					
I am active when taught using ICT					
A lot of time is utilized when using ICT					

- How many times in a week does your teacher use ICT to teach?

……

……

4. Teacher competency

Which application does your teacher use frequently when teaching Home Science?

……

……

……

Is your teacher able to use ICT without help of any other person?

Yes [ ] No [ ]

5. ICT facilities available.

How many computers are in your school specifically for learning Home Science?

……

Apart from computers which other ICT facilities are available at your school? Name a few……

……

……

With the available ICT resources are you able to assignment using ICT with ease.

Yes [ ] No [ ]

Thank you

Appendix V: Observation checklist

- Observe lesson
- Circle rating
- Make comments where necessary

Checklist	**Poor**	**good**	**v.good**	**Excel-lent**	**Comment**
The teacher has essential technology tools for the lesson					
The teacher uses technology without any problems					
The teacher demonstrates an understanding of different styles of student learning					
The teacher structures the ICT lesson to promote student learning.					
The teacher uses technology to allow students to observe things that would otherwise be difficult to be observed through normal tradition method					
The teacher uses technology to demonstrate complex ideas that would otherwise be difficult to learn					
The teacher uses technology to encourage student centered approach.					

Appendix VI: Introductory letter to Principals

Maureen Gesare

UNIVERSITY of ELDORET,

P.O BOX 1125-30100,

ELDORET, KENYA.

15 MARCH 2022.

THE PRINCIPAL,

……..…

……

……

Dear sir/madam

REF: RESEARCH ON CHALLENGES FACING TEACHERS AND LEARNERS WHEN INTEGRATING ICT IN THE TEACHING AND LEARNING OF HOME SCIENCE IN SECONDARY SCHOOLS, A CASE OF KIAMBU COUNTY KENYA.

I am in a process of carrying out a study on **CHALLENGES FACING TEACHERS AND LEARNERS WHEN INTEGRATING ICT IN THE TEACHING AND LEARNING OF HOME SCIENCE IN SECONDARY SCHOOLS KIAMBU COUNTY**. The needed information is to be gotten from the Principals, Home science teachers and Form Three Home Science learners. I plan to visit your school in the morning/afternoon of….....March 2022 for the research. I will require an interview session with you (Principal), observation of some home science lessons and deliver questionnaire to both Home Science teachers and form three learners.

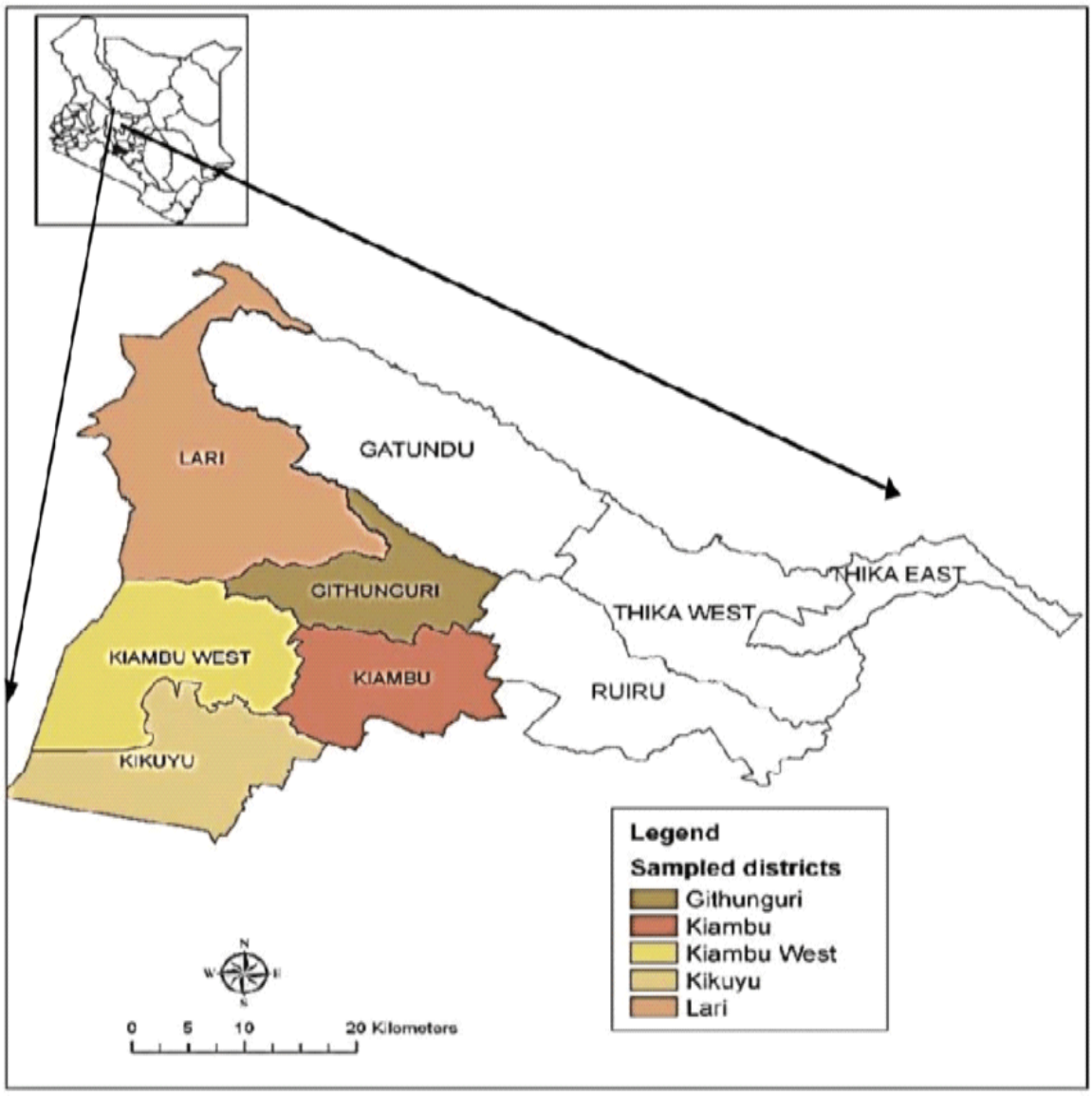
This research is a part of my Post Graduate course (Master of Education in Home science and Technology) at the University of Eldoret. Any assistance provided to me will be highly appreciated.

Thank you in advance.

Yours faithfully,

Maureen Gesare

Appendix VII: The entire research area, Kiambu county map, the sub-counties in the county



Appendix VIII: Research Licence

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 585146

Date of Issue: 25/February/2022

RESEARCH LICENSE

This is to Certify that Ms., Maureen Gwaro Gesare of University of Eldoret, has been licensed to conduct research in Kiambu on the topic: INTEGRATION OF ICT IN TEACHING AND LEARNING HOME SCIENCE IN SECONDARY SCHOOLS IN KIAMBU COUNTY for the period ending : 25/February/2023.

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The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

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Website: www.nacosti.go.ke

Appendix IX: Similarity Report

DrillBit

The Report is Generated by DrillBit Plagiarism Detection Software

Submission Information

Author Name	Maureen Gesare
Title	CHALLENGES FACING TEACHERS AND LEARNERS WHILE L
Paper/Submission ID	964391
Submission Date	2023-09-11 08:37:03
Total Pages	113
Document type	Thesis

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